H. J. BROWN.

CRATE LAYER.

APPLICATION FILED MAR. 13, 1916.

1,186,967. Patented June 13, 1916.

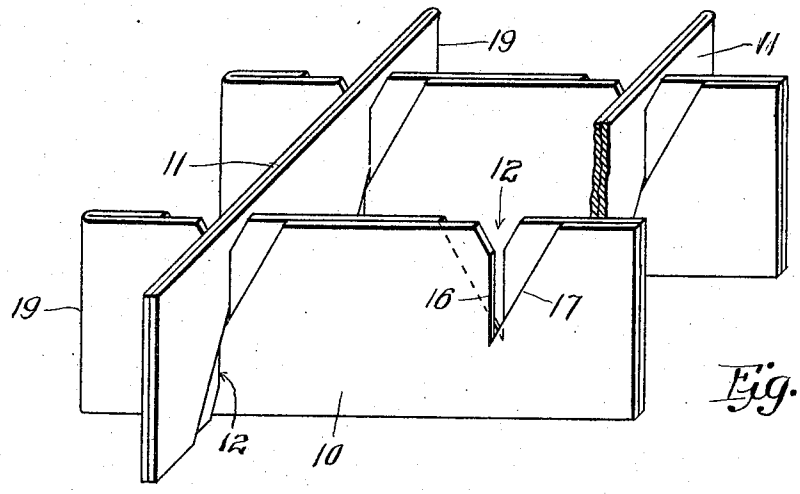


Fig. 1.

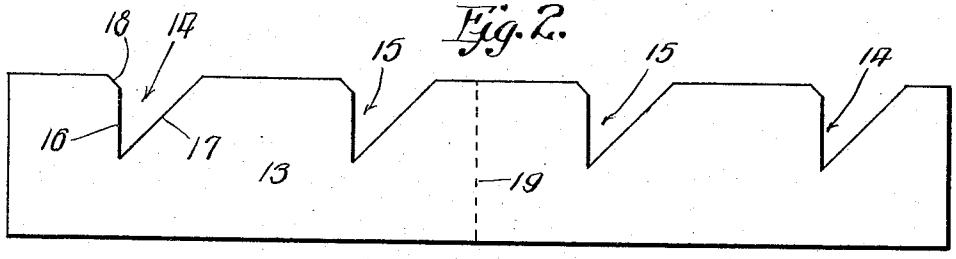


Fig. 2.

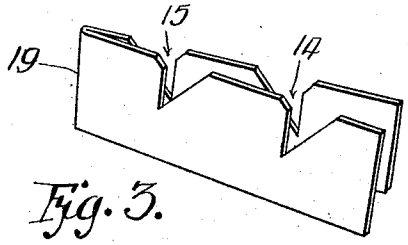


Fig. 3.

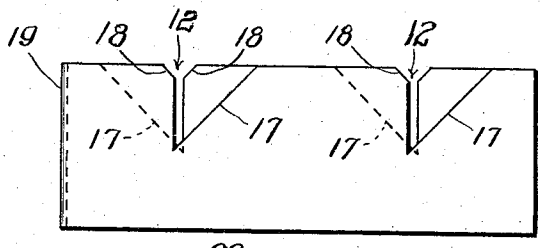


Fig. 4.

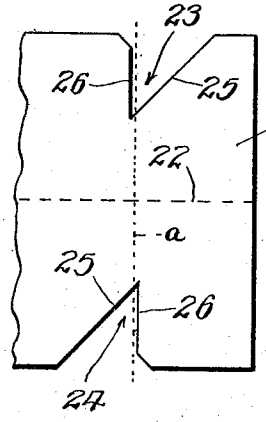


Fig. 5.

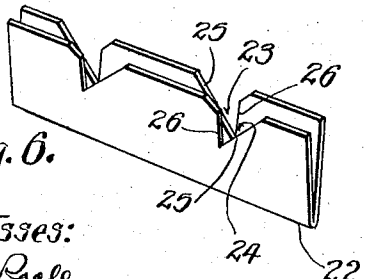


Fig. 6.

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UNITED STATES PATENT OFFICE.

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CRATE-LAYER.

1,186,967. Specification of Letters Patent. Patented June 13, 1916.

Application filed March 13, 1916. Serial No. 83,739.

To all whom it may concern:

Be it known that I, HOWARD J. BROWN, a citizen of the United States, and a resident of Marseilles, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Crate-Layers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the reference characters marked thereon, which form a part of this specification.

This invention relates to improvements in crate layers, adapted for use in the packing of biscuits, crackers, or like articles of a fragile nature, and placed within the cartons or containers for the purpose of separating the layers of the contents of the containers and for otherwise preventing the damaging or breakage of the same in the handling or shipment of the packed containers.

One form of a crate layer embodying the features of my invention consists, or is built up, of a plurality of partition or crate strips arranged in series extending at right angles to each other and having interlocking connection with one another at the several points of intersection, the completed crate layer being rectangular in form and providing a series of compartments separated by the several strips.

The invention relates particularly to the manner in which the strips are made, and further to a novel method employed in forming the locking notches in the margins of the strips, whereby the several strips are connected in interlocking relation to form the completed crate layer. The locking notches ordinarily provided in the crate strips are substantially equal in width to the thickness of the strip, and therefore are so narrow as to make the operation of removing the "trim" from the notches, after the same has been severed, exceedingly difficult, inasmuch as the "trim" has not sufficient body to be effectively and completely severed so that it can easily be removed and without undue expenditure of time and labor.

In order to facilitate the forming of the strips and the ease of cutting the notches and the removal of the "trim" therefrom, it is proposed to form the strip of two thicknesses or sections of the material to provide a complementary notch or notches in each section, and to fold the sections so that the complementary notches will form a locking notch considerably less in width than the complementary notches.

In the accompanying drawings there is illustrated an embodiment of my invention, in which—

Figure 1 is a perspective view showing a crate layer made up of several strips formed in accordance with the invention; Fig. 2 is a view in elevation, showing a single strip extended and the complementary notches formed therein; Fig. 3 is a view in perspective showing the manner in which the sections of a strip are folded to form the locking notches; Fig. 4 is a view in elevation of the strip folded in final form, showing the formation of the locking notches from the complementary notches; Fig. 5 is a view in perspective of the modified form of strip, showing the manner of folding the blank; and Fig. 6 is a fragmentary plan view of a blank, with complementary notches cut therein to form the modified form of strip.

Referring now to a desirable form of crate layer embodying the features of my invention, the same comprises two pairs of strips 10, 10 and 11, 11, arranged at right angles to each other, each pair of strips being parallel and intersecting the strips of the other pair at points spaced inwardly a distance from their ends. The strips are preferably cut from blanks of a suitable sheet material such as card-board, fiber-board, or the like, and so formed as to consist of two sections, which are folded or otherwise joined together in close relation, thereby providing a strip of a double thickness of the material. The pairs of strips are secured together in interlocking relation by the provision of locking notches 12, formed along a longitudinal margin of each strip, said notches extending inwardly at right angles to said margin a distance substantially equal to one-half the width of the strip. The locking notches of one pair of strips have interlocking engagement with the notches of the other pair of strips, at each point of intersection the pairs of strips being arranged so that the notches of one pair 10, 10 open upwardly or are located along the upper marginal portion of the strips, and the notches of the other pair of

strips 11, 11 open downwardly or in the opposite direction.

Inasmuch as the strips are identical in formation, it will suffice to describe the manner in which one of them is made. As a preferable construction, the strips are cut from blanks of sheet material in the form of comparatively narrow strips 13 (Fig. 2), which are equal in width to, but twice the length of, the completed strip. Along one of the longitudinal margins of the blank strip are provided a series of substantially V-shaped notches 14, 14 and 15, 15. These notches are spaced apart at equal distances throughout the length of said blank strip, and are arranged in precisely the same relation to each other as regards their configuration. These notches preferably consist of a series of cuts arranged in the following manner to form the edges of the notch: extending inwardly and perpendicularly or at right angles to the upper longitudinal margin of the strip there is formed an edge 16 having a length substantially equal to one-half the width of the strip. Extending from the inner end of the edge 16 and obliquely to the margin of the strip and said edge 16, at an angle of substantially 45°, is an edge 17, which intersects the perpendicular edge 16 to form the apex of the notch, and diverges from said point, thereby providing the notch with a comparatively wide or enlarged opening at the margin of the strip. The notch is completed by providing a comparatively short oblique edge 18, extending at an angle of 45° to the margin of the strip and intersecting the edge 16 a short distance from said margin of the strip. The purpose of the short oblique edge 18 is to provide a portion of the flared entrance of the completed locking notch, as will hereinafter appear.

A desirable method employed in the cutting of the strips and notches consists in cutting from single sheets of the material a plurality of strips having triangular shaped slots formed therein and located within the margins of the strip. The strips are then again cut along a line passing through and bisecting the slots, thus producing narrower strips having the notches formed along the margins thereof. In the operation of cutting the slotted strips, the material or "trim" is but partially severed from the slot, and hence, after narrower notched strips are cut, there are retained within the notches triangular shaped pieces, which tend to adhere to the material of the strip and particularly at the apex of the notch. To remove the "trim," the strips are arranged in piles of a suitable number, and the "trim" is removed by hand or by suitable mechanical means, by pressing downwardly upon, or otherwise extracting the "trim" from said notches. The operation of removing the "trim" is accomplished with very little difficulty, owing to the shape and size of the "trim" that is to be removed, in that it is sufficiently large or has sufficient body to permit convenient access thereto by the hand or tool used in removing the same, thus decreasing the time and labor completing the strips preparatory to the final operation of folding the strips. It is, therefore, by reason of the particular shape of notch employed that it is possible to clear the notch of the "trim" rapidly and easily.

The strip, with the V-shaped notches provided along one edge thereof in the manner described, is now folded lengthwise upon itself along a transverse fold line (Fig. 2), extending perpendicularly to the longitudinal margins of the blank in a manner shown in Fig. 3 and into the position shown in Fig. 4. The fold line 19 is preferably located midway between the end margins of the strip, thereby dividing the same into two sections, each being provided with at least two of the V-shaped notches 14 and 15, which are the complements of the notches 14 and 15 of the other section of the strip. The complementary notches 14, 14, 15, 15 of the two sections of the strip are spaced substantially the same distance from the fold line, although it is to be noted that they are not exactly so, but are off-set longitudinally with respect to said fold line, in order that the perpendicular edges 16, 16 of each pair of complementary notches 14, 14, 15, 15 will be spaced apart or offset laterally from each other, when said notches are brought into close relation upon the folding of the strip. The amount of offset provided determines the space which will separate the perpendicular edges 16, 16 when the strip is folded, and likewise the desired width of the locking notch to be formed by said edges 16, 16. The width of the notch shown in Fig. 4 is considerably narrower than the complementary notches and, as before suggested, is substantially equal in width to the thickness of the strip. Thus it is apparent that the locking notches are formed by the edges 16, 16, only, of the complementary notches, and by a single thickness of the strip, inasmuch as the material adjacent to each notch formed is removed in the cutting of said complementary notches. In the same manner the short oblique edges 18, 18 at the upper ends of the perpendicular edges 16, 16 are so positioned after the folding of the strip as to form a tapered or flared entrance or opening 20 (Figs. 1 and 4) to the narrower portion of the notch below.

In Figs. 5 and 6 is shown a modified construction for a strip 21, wherein the same is folded along a longitudinal fold line 22, which divides the strip into two sections.

The complementary notches 23 and 24 are formed on the longitudinal margins of each section of the strip and on opposite sides of the fold line 22. In this modified form of strip the notches are arranged in reverse relation, that is, the oblique edges 25, 25 are located on opposite sides of an imaginary line *a* drawn parallel to the perpendicular edges 26 and midway between the said lines. Said notches are, furthermore, offset laterally with respect to each other, so that the perpendicular edges 25, 25 of the notches 23 and 24 fall on opposite sides of said imaginary line *a;* thus when said blank is folded along the fold line 22, as shown in Fig. 6, they will be spaced apart the width of the notch to be formed, in the same manner as in the strip previously described.

A strip made according to either of the forms described and illustrated produces a strip having the same advantageous features of construction, differing only in the manner of folding the same, this difference necessitating a variation in the arrangement of the notches. However, either method provides a strip of a double thickness of material, having its locking notches formed by providing large and conveniently shaped, complementary notches therein, prior to folding the same, said notches being so disposed and related as to provide a narrow locking notch of the desired width, which could not otherwise be easily and properly formed because of the difficulties attending the cutting and removal of the "trim", as hereinbefore set forth.

In view of the fact that the features of the invention may be variously modified, without departing from the spirit of the invention, it is evident that the scope of this invention need not be limited to the construction herein described and illustrated, except as expressly set forth in the appended claims.

I claim as my invention:

1. A crate strip formed of a plurality of sections placed one against the other and provided with complementary notches formed in the corresponding margins thereof, said notches being arranged in offset relation and forming a marginal locking notch narrower in width than said complementary notches.

2. A crate strip formed of a double thickness of sheet material, folded upon itself and provided with complementary notches formed on opposite sides of the line of fold and relatively disposed to form, when said strip is folded, a locking notch narrower in width than said complementary notches.

3. A crate strip formed of a double thickness of sheet material, folded upon itself, complementary V-shaped notches formed in the margins of said strip and disposed on opposite sides of the line of fold and forming a locking notch relatively narrower in width than said complementary notches, when said strip is folded.

4. A crate strip formed of a double thickness of sheet material, folded upon itself, complementary notches formed in the margins of said strip and disposed on opposite sides of said fold line, each notch having complementary edges relatively offset to form a relatively narrow locking notch, when said strip is folded.

5. A crate strip formed of a double thickness of sheet material, folded upon itself, complementary notches formed in the margins of said strip and disposed on opposite sides of said fold line, each notch having an edge perpendicular to said margin and an edge oblique thereto, said perpendicular edges being spaced apart, when said strip is folded, to form a relatively narrow locking notch.

6. A crate strip formed of a double thickness of sheet material, bent upon itself, complementary notches formed in one margin of said strip and disposed on opposite sides of the line of folding, said notches consisting of an edge at right angles to said margin and an edge oblique thereto, said notches being offset laterally from said line of fold to space said perpendicular edges apart to provide a relatively narrow locking notch, when said strip is folded.

In testimony that I claim the foregoing as my invention, I affix my signature in the presence of two witnesses, this 2nd day of March, 1916.

HOWARD J. BROWN.

Witnesses:
L. E. BENTLEY,
W. B. DAVIDSON.

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