June 23, 1953 J. A. O'REILLY 2,643,047

INTERLOCKED HINGED CLOSURE

Filed May 1, 1948 2 Sheets-Sheet 1

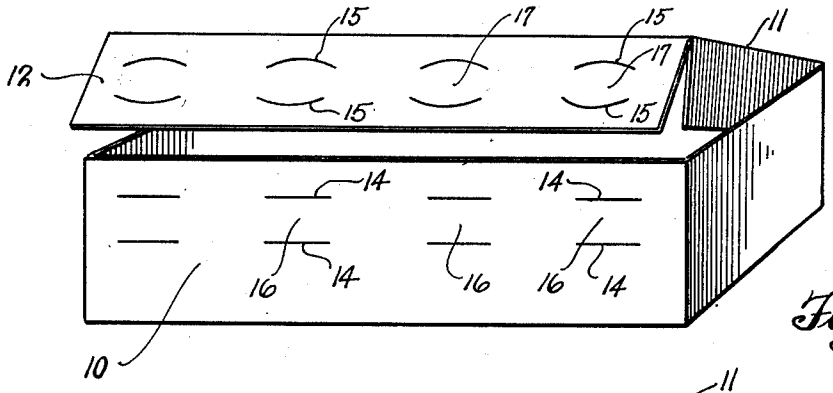

Fig. 1

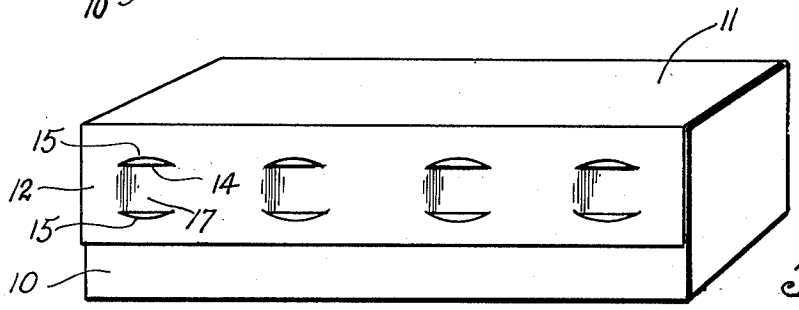

Fig. 2

Fig. 3

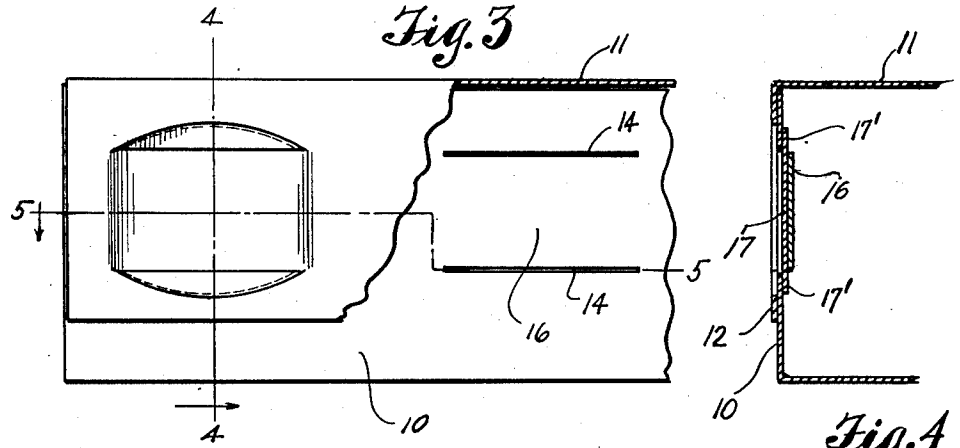

Fig. 4

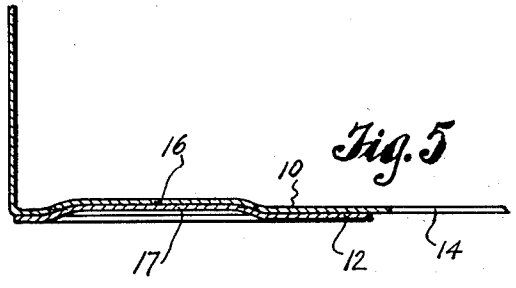

Fig. 5

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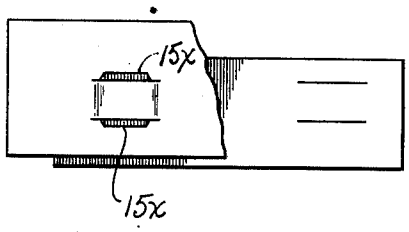


Fig. 6

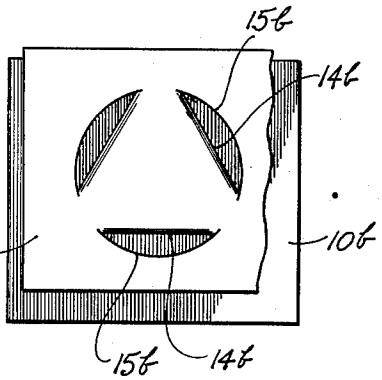


Fig. 7

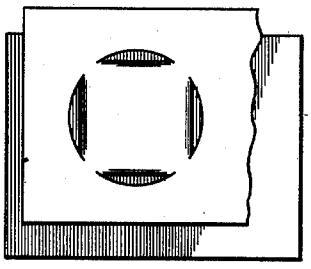
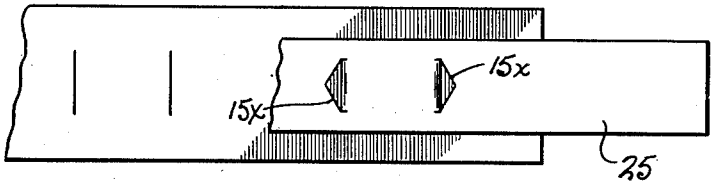


Fig. 8

Fig. 9



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Patented June 23, 1953

2,643,047

UNITED STATES PATENT OFFICE

2,643,047

INTERLOCKED HINGED CLOSURE

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1 Claim. (Cl. 229—44)

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This invention relates to improvements in interlocking connections. More particularly, it has reference to means for the securing together of pieces of resilient sheet material such as cardboard, Celluloid, thin pieces of sheet metal, and the like, by the interlocking of parts of one piece with parts of the other piece; it being the principal object of the present invention to provide an interlock or connection adapted for the joining of thin, resilient or flexible strips or pieces of sheet material that will effectively and satisfactorily hold the pieces joined together without the use of rivets, staples, adhesive means or other of the commonly used devices for this purpose. More specifically stated, the present invention resides in the provision of parts in the pieces that are to be joined, whereby an interlocking connection may be easily and readily made.

It is also an object of the invention to define certain parts in the pieces of material that are to be joined, by a novel disposition of slits, that provide partially detached portions in the two members that may be easily and readily engaged in an interlocking connection.

It is a further object of the present invention to provide an interlock that is especially applicable for use in securing together the wall portions of cardboard cartons or the like, such as used for the packaging of butter, ice cream, eggs, and various other products.

Still further objects of the present invention reside in the details of construction of parts that are to be interengaged and in the manner of interengaging them to effect the interlock.

In accomplishing the above mentioned and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a perspective view wherein the cover flap of a cardboard carton and a side wall member are slitted to provide for an interlocking connection in accordance with the present invention.

Fig. 2 is a perspective view of the carton showing the slitted portions of the cover flap and a side wall member of the carton secured in an interlocking connection.

Fig. 3 is an enlarged elevation of interlocked portions of the carton wherein a part of the cover flap is broken away to show a set of parallel slits in the underlying wall.

Fig. 4 is a vertical section taken on the line 4—4 in Fig. 3.

Fig. 5 is a horizontal section on the line 5—5 in Fig. 3.

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Fig. 6 is a view showing an alternative manner of slitting the cover flap.

Figs. 7, 8 and 9 are elevational views showing modifications in the arrangement of slits of overlapped parts to provide the present interlock.

Referring more in detail to the drawings—

For purpose of illustrating the present invention, I have shown in Figs. 1 and 2, a common form of carton as used for the packing of butter or ice cream. The carton is made from a cardboard blank that is cut, creased and folded to rectangular box-like form, providing a front wall section 10, and a cover portion 11 with an attached flap 12 designed to overlap with the wall 10 and to be joined therewith by the interlocking means embodied by the present invention.

To provide the present interlock, the front wall 10 is provided with a plurality of sets of parallel slits 14—14, which may be straight as shown on Fig. 1, or irregular as later described. They are spaced apart and coextensive. For a container of the type shown in Fig. 1, it is desirable that the several sets of slits be horizontally aligned. In a common type of butter carton, these slits would be approximately ⅜ inch apart and one-half inch long. However, the length and spacing of the slits is of no particular significance and may vary in accordance with the character of the material from which the carton is formed or with the use of the articles in which the interlock is made.

In the present instance, I have shown, in the article of Fig. 1, four sets of the slits 14—14 in the wall 10, arranged lengthwise of the wall at regularly spaced intervals. Formed in the cover flap 12 are correspondingly arranged sets of slits 15—15 which may be arcuately curved as in Fig. 2 or otherwise shaped as later described, and which at their ends are spaced substantially in accordance with the vertical spacing of the paired slits 14—14 and are of substantially the same extent as the slits 14—14. The medial portions of the paired slits 15—15 are arched away from each other.

The arrangement of paired slits 14—14 in the wall 10 defines partially detached wall sections 16 between the slits. Likewise, the paired slits 15—15 in flap 12 define partially detached sections 17 between them.

With the wall 10 and the flap so formed with the paired sets of slits 14—14 and 15—15, it will be understood that by placing the cover flap 12 over the side wall 10 as in Fig. 2, the partially detached sections 17 between the paired arcuate slits 15—15 of the cover flap will directly overlie the partially detached sections 16 between the

paired slits 14—14 of the wall 10. Also, it is to be understood that by pressing inwardly on the central portions of the overlying sections 17 while supporting the portions outside and adjacent to the underlying slits 14—14 in wall 10, the underlying sections 16 of wall 10 will be depressed to such extent that the arched upper and lower edge portions of the partially detached sections 17 will spring to the inside of the straight edge portions immediately above and below the slits 14—14 in wall 10 which define the depressed section 16, thus to provide an interlocking connection as best shown at the left side in Fig. 3, and in Fig. 4. In Fig. 4 it is noted that the partially detached portion 17 that is defined between paired, arched slits 15, has been pressed inwardly to such extent that the arched upper and lower edge portions, designated in Fig. 4 by reference numerals, 17' and 17', have been sprung and have passed to the inside of the wall 10 to engage there against above and below the slits 14—14 which define the inwardly pressed section 16.

The interlocking of parts as above described, at the several points prevents relative movement of the joined parts in a vertical direction with reference to the showing in Fig. 2, and also prevents endwise or horizontal movement. This is because the slits in overlapped parts are substantially of the same length and the upper and lower edge portions of the sections 17 fit closely against the ends of the slits 14 which contain them. It may be explained that in the present showing the curvature or shaping of the slits 15 may be to more or less extent than shown; the degree of curvature or shaping being governed to some extent by the material used; by the particular type of carton; by the strength of connection required or by the use to which the carton or connection is to be put.

It is anticipated that the interlocking of parts may be both manually and mechanically effected, but preferably by mechanical means.

While in Fig. 2 I have shown the paired slits 14—14 to be parallel and the paired slits 15—15 to be arched or arcuately curved, it is to be understood that the invention also anticipates other shapes. For example, the slits 15 might comprise outwardly outset portions, as at 15x in Fig. 6, parallel with the alignment of the end portions of the slits, or various other shapes that would provide for accomplishing the same results as the arched portions of slits 15. For example, the forms as shown in Fig. 8, or that of Fig. 9.

In Figs. 7 and 8 I have shown a connection employing an alternative arrangement of slits in the connected parts. In this arrangement, the straight slits 14b of the underlying wall member 10b are spaced equally from and at regular intervals about a center point and are perpendicular to radial lines diverging from the said center point instead of being in parallel relationship, and

the slits 15b of the outer, or overlying wall portion 12b are correspondingly arranged and are so curved as to provide for the interlocking of the edges of the partially detached section beneath those portions immediately outside the straight slits in the underlying piece.

In Fig. 9 I have illustrated a connection which is similar to that shown in Fig. 1, except that the slits 15x, of the overlying strip 25, are drawn to a point rather than being arcuately curved. In each of these modifications, the idea and the manner of applying and using the interlock are the same as disclosed in Figs. 1 and 2.

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

A folded blank carton comprising a body having a front wall and a hinged cover having a flap extending over and overlying the front wall when the cover is in closing position, means interconnecting the flap with the front wall to effect the closing and locking of the carton, said means comprising a plurality of pairs of parallel coextensive straight longitudinally and vertically spaced apart slits in the front wall and a plurality of pairs of arcuate longitudinally and vertically spaced apart slits in the flap with the arcs of each pair of slits extending outwardly with respect to a common point between each pair of slits and being on arcs taken from points in the body of the flap between each pair of slits, each pair of arcuate slits forming a pair of oppositely extending arcuate tabs in the body of the flap between each pair of arcuate slits, the arcuate slits having terminal ends with the distance between the terminal ends substantially equal to the length of the straight slits in the front wall and the width of the tabs being substantially equal to the length of the straight slits, the arcuate tabs of each pair being inserted through the respective pair of straight slits to effect the closing of the carton, the tabs and straight slits being substantially co-extensive, whereby a secure locking of the cover flap to the front wall is effected throughout their lengths and all relative movement between the cover flap and the front wall is substantially prevented.

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