July 6, 1948. W. A. RINGLER 2,444,895

SEALED BOX

Filed June 2, 1944 2 Sheets-Sheet 1

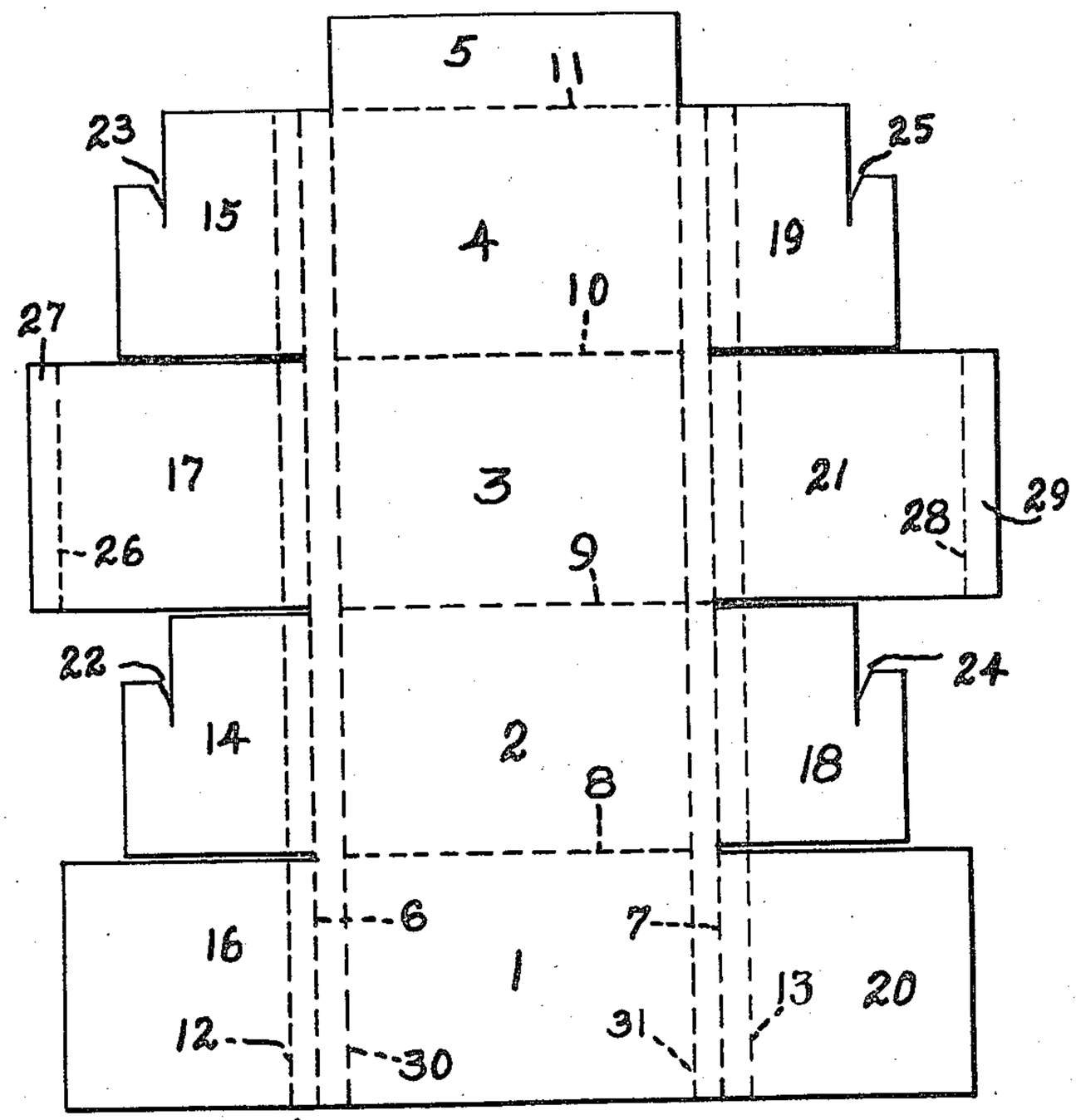

Fig. 1.

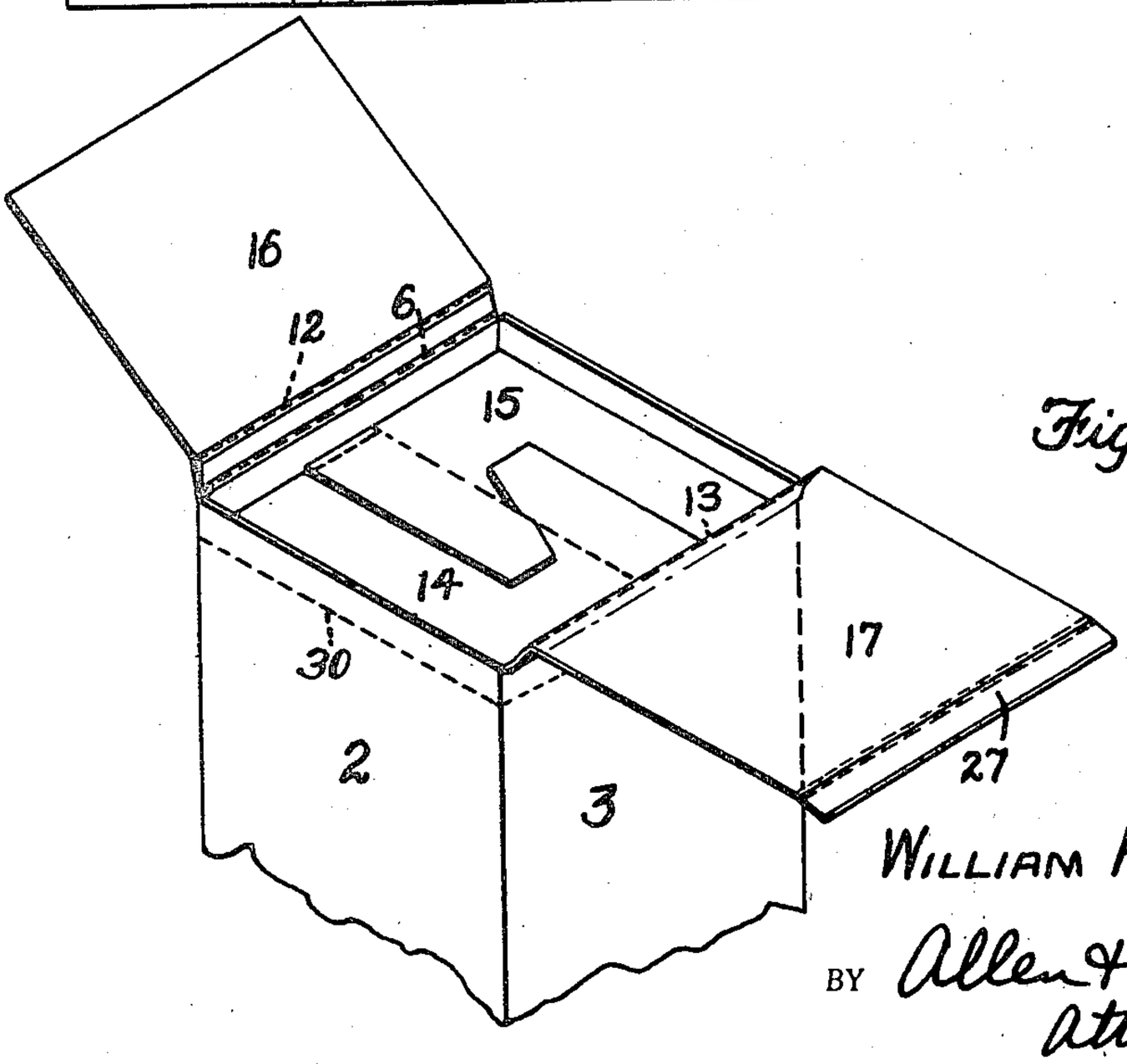

Fig. 2.

WILLIAM A. RINGLER.
INVENTOR.

BY Allen & Allen
Attorneys

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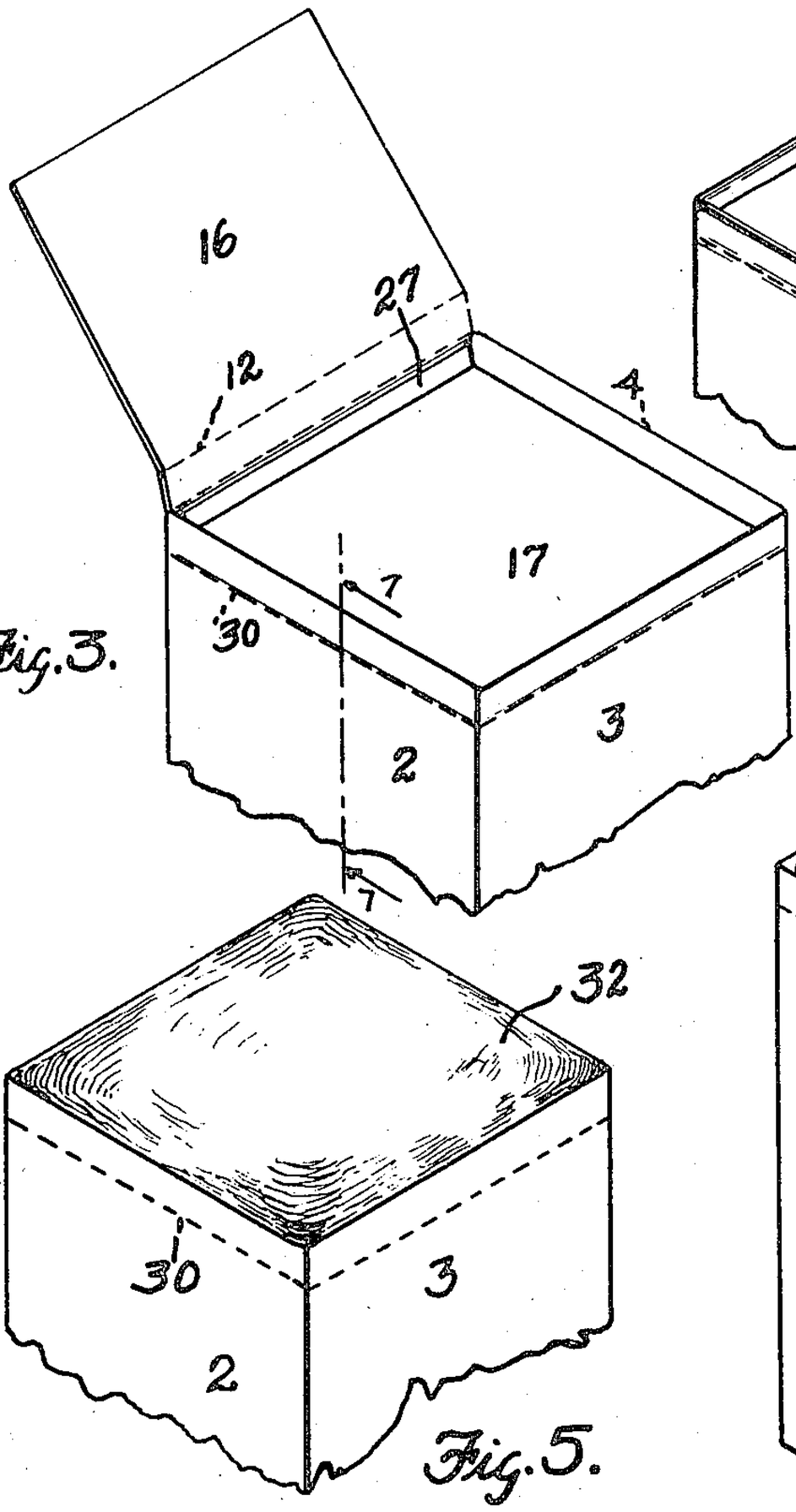

Fig. 3.

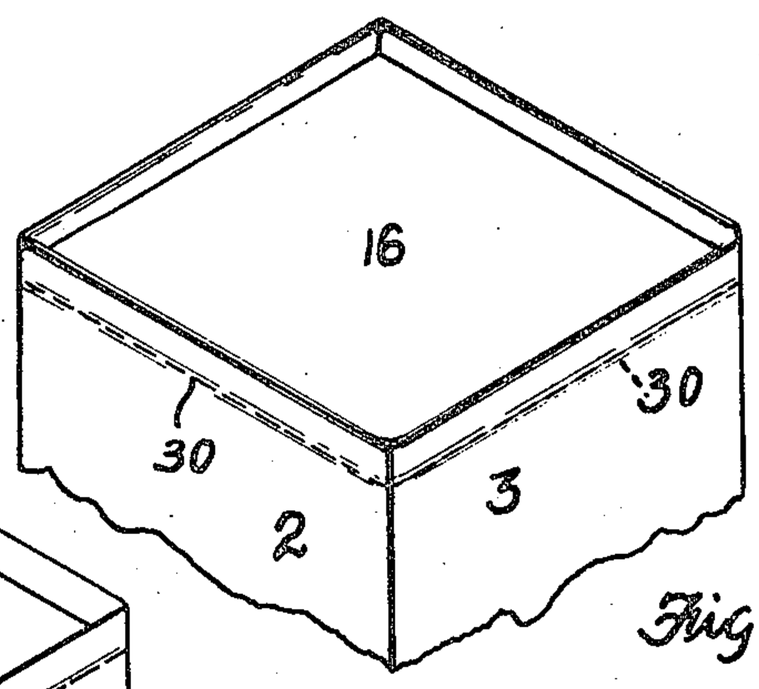

Fig. 4.

Fig. 5.

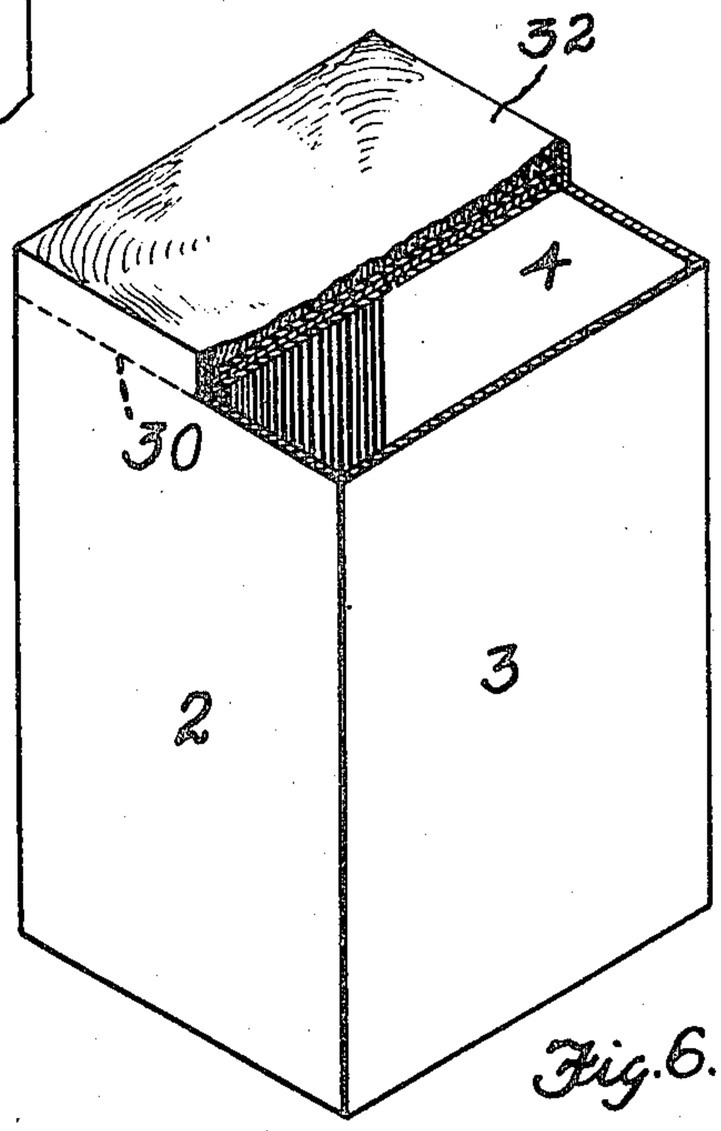

Fig. 6.

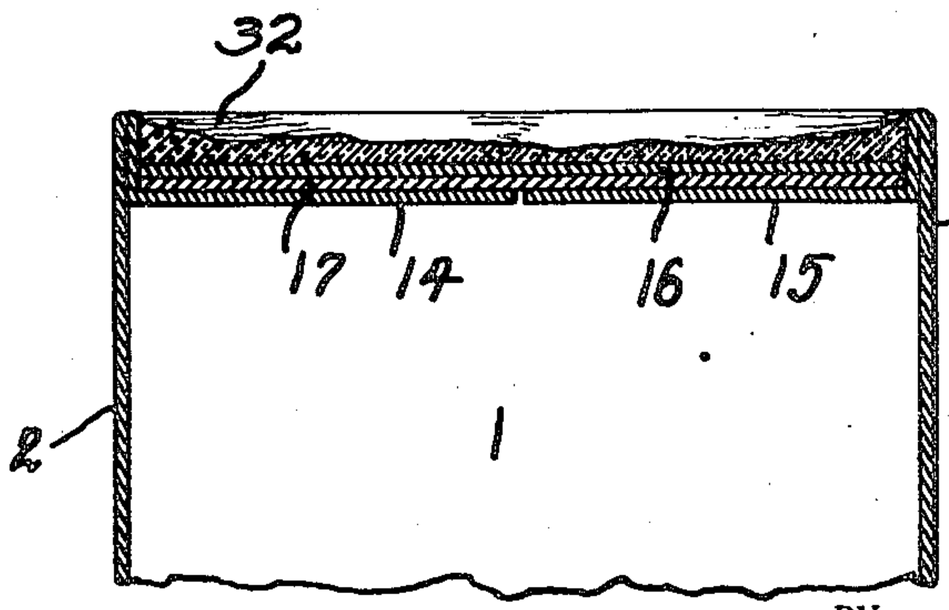

Fig. 7.

WILLIAM A. RINGLER.
INVENTOR.

BY Allen & Allen
Attorneys

Patented July 6, 1948 2,444,895

UNITED STATES PATENT OFFICE

2,444,895

SEALED BOX

William A. Ringler, Wayne, Pa., assignor to The Gardner-Richardson Company, Middletown, Ohio, a corporation of Ohio

Application June 2, 1944, Serial No. 538,429

10 Claims. (Cl. 229—39)

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My invention relates to boxes, particularly though not exclusively for frozen food products, and has for a fundamental object the provision of a paperboard carton which may be hermetically sealed.

Another object is the provision of a sealable carton which is of one-piece construction, and is thus both cheaper in cost and easier to use.

Another object is the provision of a carton in which the operation of closure is simple and natural, requiring no tools, and in which the closure is such as to provide a structure capable of being hermetically sealed.

Still another object is the provision of a structure which permits sealing in a simple manner and without the use of special tools and equipment, but which insures an hermetic tightness. My boxes are thus of especial value for household deep-freeze use, as will be apparent hereinafter.

These and other objects of my invention, which will be set forth below or will be apparent to one skilled in the art upon reading this specification, I accomplish by that certain construction and arrangement of parts, by that method, and in that sealed structure of which I shall now describe an exemplary embodiment. Reference is made to the accompanying drawings wherein:

Figure 1 is a plan view of a blank for my exemplary carton.

Figure 2 is a partial perspective view of the erected carton body showing an initial closure step.

Figure 3 is a similar view showing a second closure step.

Figure 4 is a similar view showing the completion of the closure.

Figure 5 is a similar view showing the sealed structure.

Figure 6 is a similar view showing, however, parts sectioned across the sealed end.

Figure 7 is a partial sectional view of the sealed carton.

In the practice of my invention, I provide a blank which may be formed into a tubular, one-piece, collapsed carton, with certain special features of construction hereinafter described. As shown in Figure 1, the body of the carton consists of body walls 1, 2, 3 and 4 in articulation with each other and with a glue flap 5. The body walls terminate endwise at longitudinal score lines 6 and 7, and are demarked from each other and from the glue flap by score lines 8, 9, 10 and 11.

The body walls are provided with end closure flaps, the slits between which extend to the score lines 6 and 7 as shown. When they are in closing position, however, the closure flaps are designed to extend across the tubular body of the carton inwardly from the ends of it, for a

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purpose hereinafter described. Therefore, the blank is traversed by score lines 12 and 13 spaced outwardly beyond the score lines 6 and 7. The distance between the score 12 and the score 6, and the distance between the score 13 and the score 7 may be varied; but is chosen to give the desired insetting of the closures. This insetting should be definite, but it need not be more than about a quarter of an inch in cartons of a size and made from a weight of boxboard suitable for most frozen foods in family-sized packages.

The closure portions of the closure flaps extend beyond the score lines 12 and 13. In the blank of Figure 1, the wall 2 is shown as having flaps 14 and 18, while the opposite wall 4 is shown as having flaps 15 and 19. These flaps are provided with means, such as those shown at 22, 23, 24 and 25, for interlocking with each other. Any suitable interlock will do.

The wall 3 is shown as having flaps 17 and 21. These flaps are not only dimensioned to extend across the body of the erected carton, but preferably have portions 27 and 29, demarked by scores 26 and 28, to extend upwardly toward the edge of the opposite wall 1 in the erected and closed structure.

The remaining wall has flaps 16 and 20 dimensioned to extend across the carton body in the inset position.

Since the closure elements are to extend across the carton body in an inset position, I find it useful to provide the body with score lines 30 and 31 defining this position. These may, however, be omitted if desired.

The blank of Figure 1 is tubed on the ordinary carton machinery in the ordinary way, with the adhesive junction of the glue flap 5 to the wall 1. It is advantageous to adjust the machine so that in the tubed structure, the glue flap lies outside the wall to which it is adhered, since then there will be no free, cut board edge inside the tubular body intermediate the side edges of the body walls. The blank is preferably made of proofed board, or is proofed after cutting and scoring. Again, the tubed structure may be proofed after formation if preferred. The nature of the proofing agent is not a limitation on my invention, and any of the known proofing agents may be used. The one chosen should be compatible with the sealing agent, the use of which is hereinafter described. Ordinary paraffin will serve for both.

The tubed carton is, of course, shipped and stored in the collapsed condition. For use, it is squared-up or erected, and an end closure effected as follows: The flaps 14 and 15 are engaged by means of their interlocks, and they are then depressed into the end of the carton body whereupon they spring into position as an inset platform, as shown in Figure 2. Next, the flap

17 is folded over and depressed so that it coincides with the platform, its extension 27 lying upwardly against the opposite wall, as in Figure 3. Next, the flap 16 is bent over and depressed, as shown in Figure 4.

The carton now has a closure inset from its ends. The dimensions of the closure flaps—at least of flaps 16 and 17—is such that they fit snugly, requiring them to be forced into position under gentle pressure, so as to form a tight closure across the box body and at the corners. The closure presents outwardly the aspect of a shallow tray. An hermetic seal may be effected by pouring into this tray a sealing substance, as at 32 in Figures 5, 6 and 7. Again, the nature of the sealing substance is not a limitation on my invention. It should be compatible with the board and with any proofing agent thereon. It is advantageously, though not necessarily, of thermoplastic character.

Excellent results are achieved through the use of paraffin as a sealing substance with paraffined cartons. The sealing substance forms a solid block seal across the end of the carton. It is not necessary, however, that the tray be entirely filled with the sealing substance. The sealing substance not only creeps up the side edges of the tray as shown in Figure 7, but it enters any fissures at the corners of the tray, insuring an hermetic seal. In a carton, say, four by four inches in cross-sectional dimensions, best results are attained by pouring in a tablespoonful of paraffin, permitting it to set, and then pouring in another tablespoonful.

When the carton has been closed and sealed on one end, it may be inverted, filled with its contents, and closed and sealed on the other end by a repetition of the steps above outlined. The sealing of both ends of the cartons may be deferred until after the filling operation and the closure of both ends; but this is not advantageous if the contents include liquid substances. It will be noted that both the closure and the sealing of my cartons are accomplished without special equipment, and in a simple manner, and by operations which the housewife will find natural and easy.

Modifications may be made in my invention without departing from the spirit of it. Having thus described my invention in an exemplary embodiment, what I claim as new and desire to secure by Letters Patent is:

1. A knock-down one-piece carton capable of being sealed at an end by a cast body of initially liquid sealing substance, said carton comprising four enclosing body walls in articulation and a glue flap articulated to one of said body walls, said glue flap being adhesively secured to the body wall at the opposite side of the blank from said glue flap to form a tubular body open at both ends, and integral closure flaps at an end of each of said body walls, said closure flaps being articulated to the ends of the respective body walls by spacing portions adapted to parallel the respective body walls within the tubular portion when the flaps are in closure position, whereby to inset the flaps from the ends of the body walls, two at least of said closure flaps being shaped and dimensioned to extend entirely across the transverse section of said tubular body and to require to be forced into position to engage the inturned

spacing portions tightly, said spacing portions being rectangular in shape and of full length, so that by the combined action of the said flaps and the abutment of the ends of the spacing portions against each other an inset closure of tray-like shape may be formed from said closure flaps and spacing portions, said closure being characterized by a fold at the end of said body walls and capable of holding a setable liquid sealing substance poured therein to form a cast seal, covering said flaps and sealing by capillarity the meeting lines at the ends of said spacing portions.

2. A sealed package comprising the structure of claim 1 in erected and closed condition with a cast filling of a sealing substance within said tray-like closure.

3. The structure claimed in claim 1, wherein the body walls are provided with a score line substantially at the inset position of the closure.

4. The structure claimed in claim 1, wherein an opposite pair of flaps are provided with interlocking means whereby they may be interlocked and then depressed to inset position.

5. The structure claimed in claim 1, wherein an opposite pair of flaps are provided with interlocking means whereby they may be interlocked and then depressed to inset position, and in which another flap arranged to overlie the interlocking flaps is provided with an extension on its outer end arranged to parallel a wall opposite to the wall to which it is articulated.

6. The structure claimed in claim 1, wherein an opposite pair of flaps are provided with interlocking means whereby they may be interlocked and then depressed to inset position, and in which another flap arranged to overlie the interlocking flaps is provided with an extension on its outer end arranged to parallel a wall opposite to the wall to which it is articulated, the paperboard walls of said structure being coated with a proofing substance.

7. The structure claimed in claim 2, wherein the carton is formed of paraffined board and the sealing substance is paraffin.

8. The structure claimed in claim 2, wherein the carton is formed of paraffined board and the sealing substance is paraffin, wherein a pair of the closure flaps are interlocked to form a supporting platform and wherein the remaining closure flaps are each shaped to engage tightly within the carton body.

9. A carton according to claim 1 in which both ends of said tubular body are provided with said closure.

10. A sealed package comprising the structure of claim 9 in erected and closed condition with a cast filling of a sealing substance within each of said tray-like closures.

WILLIAM A. RINGLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
616,037	Thomson	Dec. 13, 1898
1,039,026	Carter	Sept. 17, 1912
1,069,021	Miller	July 29, 1913
1,852,527	King	Apr. 5, 1932
1,941,514	Sutherland	Jan. 2, 1934