April 19, 1966 D. HOLLEY 3,246,746

PACKAGING STRUCTURE

Filed March 9, 1964

FIG.1.

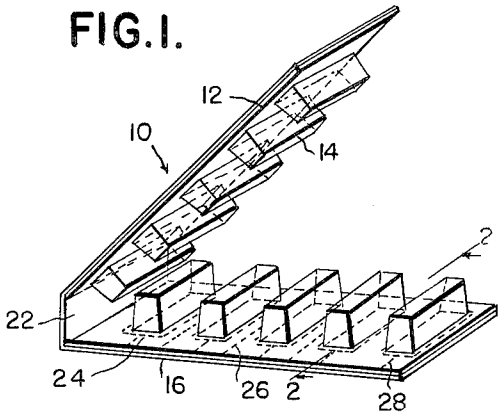


FIG.2.

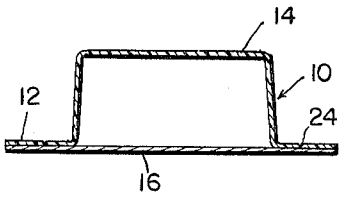


FIG.3.

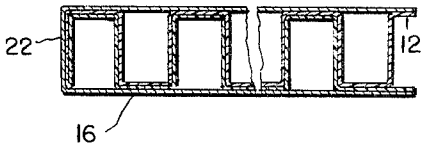


FIG.4.

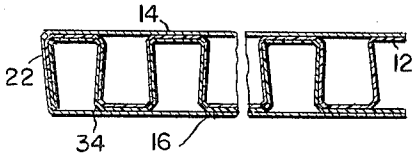


FIG.5.

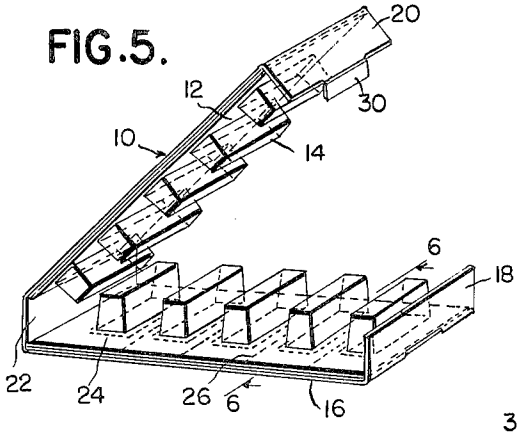
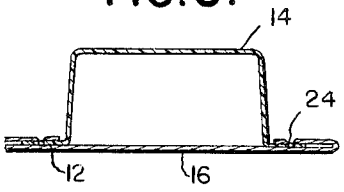


FIG.6.



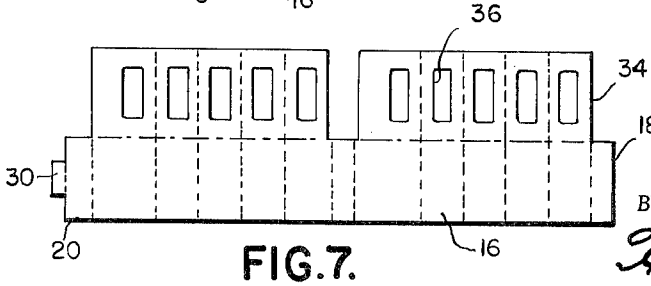


FIG.7.

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United States Patent Office 3,246,746 Patented Apr. 19, 1966

3,246,746

PACKAGING STRUCTURE

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Filed Mar. 9, 1964, Ser. No. 350,155
3 Claims. (Cl. 206—65)

This application is a continuation in part of co-pending application Serial Number 16,506, filed March 21, 1960, now Patent Number 3,124,421, dated March 10, 1964.

The invention relates generally to packaging structure and refers more specifically to composite paper board and deformable plastic multi-capsule packaging structure including nesting and locking features and requiring no external packaging.

Multi-capsule plastic packages have been known in the past. Further, it has been known to place multi-capsule plastic packages back to back with the individual capsules thereof nested for economy in storing and shipping.

Such package structure in the past, however, has been deficient in that lateral movement of the separate packages nested together has been possible so that external packaging of the nested packages has been required.

Also, prior multi-capsule packages where they have been connected together along one side in nested relation, have been easily separable on relative angular movement therebetween about the connected side as a pivot. Tab structures have therefore been required to maintain the prior multi-capsule plastic packages secured together in nested relation.

It is therefore one of the objects of the invention to provide an improved multi-capsule packaging structure.

Another object is to provide packaging structure including a pair of elongated multi-capsule packages in which the capsules extend transversely and are spaced apart longitudinally for nesting, which packages are positioned back to back and are connected together at one end thereof to provide locking together of the packages with the capsules in nested relation.

Another object is to provide packaging structure as set forth above wherein the individual capsules are substantially rectangular in cross section longitudinally of the separate multi-capsule packages.

Another object is to provide packaging structure as set forth above wherein each separate package includes a cover sheet and the capsules in each separate package have transversely longitudinally spaced apart sides converging toward the cover sheet.

Another object is to provide packaging structure as set forth above wherein the edge portion of the transversely extending sides of the separate capsules converge outwardly of the cover sheet.

Another object is to provide packaging structure as set forth above wherein each of the individual multi-capsule plastic packages comprises an elongated cover sheet and a base member having a plurality of transversely extending pockets spaced apart longitudinally thereof sealed to the cover sheet around the periphery of the pockets.

Another object is to provide packaging structure as set forth above wherein the cover sheet is folded longitudinally and one side thereof is providing with openings therethrough through which the separate pockets of the base members extend with the base members sandwiched between the folded halves of the cover sheet.

Another object is to provide packaging structure as set forth above wherein the cover sheet is paper board coated with plastic.

Another object is to provide packaging structure as set forth above wherein the cover sheet is paper board uncoated with plastic.

Another object is to provide packaging structure as set forth above wherein both the base member and cover sheet are plastic.

Another object is to provide a simple multi-capsule packaging structure which is economical to manufacture and efficient in use.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawings illustrating a preferred embodiment of the invention wherein:

FIGURE 1 is a perspective view of a multi-capsule packaging structure constructed in accordance with the invention.

FIGURE 2 is an enlarged cross section view of the packaging structure illustrated in FIGURE 1 taken substantially on line **2**—**2** in FIGURE 1.

FIGURE 3 is an enlarged longitudinal section view of a modification of the packaging structure illustrated in FIGURE 1 in a closed position.

FIGURE 4 is an enlarged longitudinal view of another modification of the packaging structure illustrated in FIGURE 1 in a closed position.

FIGURE 5 is a perspective view of still another modification of the packaging structure illustrated in FIGURE 1.

FIGURE 6 is an enlarged section view of the packaging structure illustrated in FIGURE 5 taken substantially on line **6**—**6** in FIGURE 5.

FIGURE 7 is a plan view of the cover sheet of the packaging structure illustrated in FIGURE 5 before it is folded and assembled with a pair of base members.

With particular reference to the figures of the drawing, one embodiment of the invention will now be considered in detail.

As illustrated in FIGURE 1, the multi-capsule combination paper board and plastic packaging structure **10** includes a pair of base members **12** having a plurality of pockets **14** therein and an elongated cover sheet **16**. As illustrated in FIGURE 1, the multi-capsule packaging structure **10** is constructed by securing the base members **12** to the cover sheet **16** about the periphery of the pockets **14** with the base members positioned so that the pockets **14** nest with the packaging structure closed.

More specifically, the base members **12** are elongated sheets of transparent deformable but form sustaining plastic having the property of returning to an original form after slight deformation thereof on removal of a deforming force such as cellulose acetate, cellulose acetate butyrate or vinyl. The pockets **14** formed in the base members **12** are shown, substantially rectangular in cross section longitudinally of base members **12** but in FIGURE 1 are provided with a slight draft angle so that the sides thereof converge slightly toward the bottom of the pockets **14**. The pockets **14** are spaced apart longitudinally of the base members **12** a distance to snugly receive the pockets **14** of similar base members **12** positioned in back to back nesting relation.

The cover sheet **16**, as previously indicated, is an elongated paper board member which is folded transversely to provide tabs **18** and **20** and to provide the connecting portion **22** which is substantially the same height as the individual pockets **14** of base members **12**. The cover sheet **16** illustrated in FIGURES 1 and 2 is a relatively stiff porous virgin fiber board such as kraft board, bleached sulfate paper or white patent coated news print.

In production the cover sheet **16** is prepared in blank form and is creased to provide fold lines for tabs **18** and **20** and to provide the connecting portion **22**. A pair of base members **12** are then positioned on the cover sheet **16** with articles to be packaged within the pockets **14** and with the individual pockets positioned in nesting relation

with the packaging structure illustrated in FIGURE 1, closed. A plastic to paper board seal **24** is then produced around the periphery of each of the pockets **14** to provide individual sealed capsules.

Deep seal tear lines **26** may be simultaneously produced between the individual capsules if desired. Also deep seal tear lines **28** permitting ready entry into the individual capsules may be produced at this time. It is contemplated that the sealing of the base sheets to the cover sheets and the producing of the deep seal tear lines will be by heat and pressure and that the plastic base sheets will be thermo plastic. The heat may of course be produced by high frequency electronic heating devices.

The cover sheet is subsequently folded as shown in FIGURE 1 to close the packaging structure **10** with the individual pockets of one base member **12** snugly nested between individual pockets of the other base member. On closing of the packaging structure **10** illustrated in FIGURE 1 the edge portions of the individual capsules will deform to permit the capsules to nest tightly within one another and will assume their substantially rectangular longitudinal cross section shape after the packaging structure is completely closed.

In accordance with the invention, there will thereafter be no tendency for the two halves of the multi-capsule packaging structure **10** to open in the manner of FIGURE 1 since the individual capsules must again be deformed to permit opening as shown in FIGURE 1. The two halves of the multi-capsule package are thus locked in a closed position so that no additional outer packaging or time is required.

If desired, in the case of weak capsule base members or heavy parts packaged in the individual capsules, the tabs **18** and **20** are provided in conjunction with the extension **30** on tab **20** and the slot in tab **18** for receiving the extension **30** to aid in the locking of the two halves of the packaging structure **10** illustrated in FIGURE 1 in the closed position.

In the modified form of multi-capsule packaging structure illustrated in FIGURE 3, elements similar to elements of packaging structure **10** have been given similar reference characters. The packaging structure illustrated in FIGURE 3 differs from that illustrated in FIGURE 1 only in that the pockets **14** of base members **12** have been produced with substantially no draft angle so that a greater force will be required to close the package of FIGURE 3. The locking action of the nested individual capsules of the package of FIGURE 3 is thereby increased as is the necessity for deforming the individual capsules in closing the modified packaging structure. No locking tabs **18** and **20** are therefore required with the package of FIGURE 3. This is particularly true since the connecting portion **22** of the packaging structure of FIGURE 3 is in surface to surface engagement with one end pocket **14** of one of the base members **12** in the closed packaging structure as shown to enhance the locking characteristics of the rectangular cross-sections.

In the further modification of the packaging structure **10** illustrated in FIGURE 4, similar reference characters have again been placed on similar elements. The pockets **14** have, however, again been altered so that the longitudinally spaced apart transversely extending sides thereof converge outwardly of the cover sheet as shown in FIGURE 4 to again increase the locking action between the individual nested capsules with the packaging structure closed.

Further the transversely extending longitudinally spaced apart edge portions **34** of the pockets in the package of FIGURE 4 have been constructed to converge outwardly of the cover sheet to insure proper deformation of the capsules on closing of the package illustrated in FIGURE 4. Again no closing tabs are needed and the connecting portion **22** of the cover sheet **16** is formed to closely receive the end pocket **14**.

The separate elements of the further modified packaging structure illustrated in FIGURES 5 through 7 have also been given reference characters similar to the reference characters used for the same elements in the packaging structure of FIGURE 1. In the modification of the invention illustrated in FIGURES 5 through 7 the cover sheet **16** is, however, provided with separate portions **34** at each end on one side thereof having openings **36** therethrough. The portions **34** may be folded over the base members **12** positioned as illustrated in FIGURE 1 on the cover sheet with the pockets **14** extending through the openings **36** before the base members **12** are sealed to the cover sheet so that a sandwich construction illustrated best in FIGURE 6 is produced. Such construction provides additional rigidity for the cover sheet which is desirable to maintain the locking relation of the nested capsules.

While one embodiment of the present invention and modifications thereof have been disclosed, other modifications and embodiments are contemplated. Thus the cover sheet may be secured to the base members by means other than bonding with heat and pressure, the cover sheet may be plastic or plastic coated paper board and the base sheet may be other than clear plastic. It is the intention to include all embodiments and modifications of the invention as are defined by the appended claims within the scope of the invention.

What I claim as my invention is:

1. Packaging structure comprising a pair of elongated rectangular transparent plastic base members having a plurality of transversely extending pockets substantially rectangular in cross section therein spaced apart longitudinally thereof a distance substantially equal to the dimension of the pockets longitudinally of the base members whereby the pockets of two base members positioned back-to-back nest snugly with the sides thereof in surface-to-surface engagement, said pockets having parallel sides extending transversely of the base members converging toward the plane of the base member over the greater portion of the depth thereof and having portions at the edge thereof remote from the base member converging outwardly of the base member, the pockets between said portions thereof being of greater dimension longitudinally of the base member than the pockets adjacent the base member, said pockets being interlocked when the pockets are nested with two base members positioned back-to-back an elongated cover sheet having longitudinally spaced apart transversely extending openings in one side thereof, said base members extending longitudinally, longitudinally of said cover sheet and being secured in longitudinal alignment to said cover sheet about the periphery of each of said pockets on the other side of said cover sheet, said one side of said cover sheet being folded over the base members with the pockets therein extending through the openings in the one side of the cover sheet, said base members being spaced apart longitudinally of the cover sheet to provide a cover sheet connecting portion between adjacent ends of the base members with the cover sheet folded transversely centrally thereof and the pockets nested with the base members in back-to-back relation, the end one of the pockets in one of said base members snugly engaging the connecting portion of the cover sheet and tabs and means for securing the tabs together on the cover sheet on the opposite ends thereof.

2. Package structure comprising a pair of elongated rectangular base members having a plurality of transversely extending pockets therein with transversely extending sides extending perpendicularly from the base members, said pockets being spaced apart longitudinally of the base members a distance equal to the dimension of the pockets longitudinally of the base members, the pockets of said two base members positioned back-to-back nesting snugly with the sides thereof in surface-to-surface engagement and interlocking the base members, an elongated cover sheet, said base members extending longitudinally, longitudinally of said cover sheet and

being secured in longitudinal alignment to said cover sheet about the periphery of each of said pockets and spaced apart longitudinally of the cover sheet to provide a cover sheet connecting portion between adjacent ends of the base members with the cover sheet folded transversely centrally thereof and the pockets nested with the base members in back-to-back relation and with the side of one of the pockets in one of said base members snugly engaging the connecting portion of the cover sheet.

3. Package structure comprising a pair of elongated rectangular base members having a plurality of transversely extending pockets therein with transversely extending sides diverging away from the base members over most of their height, said pockets being spaced apart longitudinally of the base members a distance equal to the dimension of the pockets longitudinally of the base members centrally of the pockets, the pockets of said two base members positioned back-to-back nesting snugly with the sides thereof in surface-to-surface engagement and interlocking the base members, an elongated cover sheet, said base members extending longitudinally, longitudinally of said cover sheet and being secured in longitudinal alignment to said cover sheet about the periphery of each of said pockets and spaced apart longitudinally of the cover sheet to provide a cover sheet connecting portion between

adjacent ends of the base members with the cover sheet folded transversely centrally thereof and the pockets nested with the base members in back-to-back relation and with the transverse side of one of the pockets in one of said base members, snugly engaging the connecting portion of the cover sheet.

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