Feb. 9, 1965 C. E. PALMER 3,168,952

CONTAINER ASSEMBLY

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FIG. 1

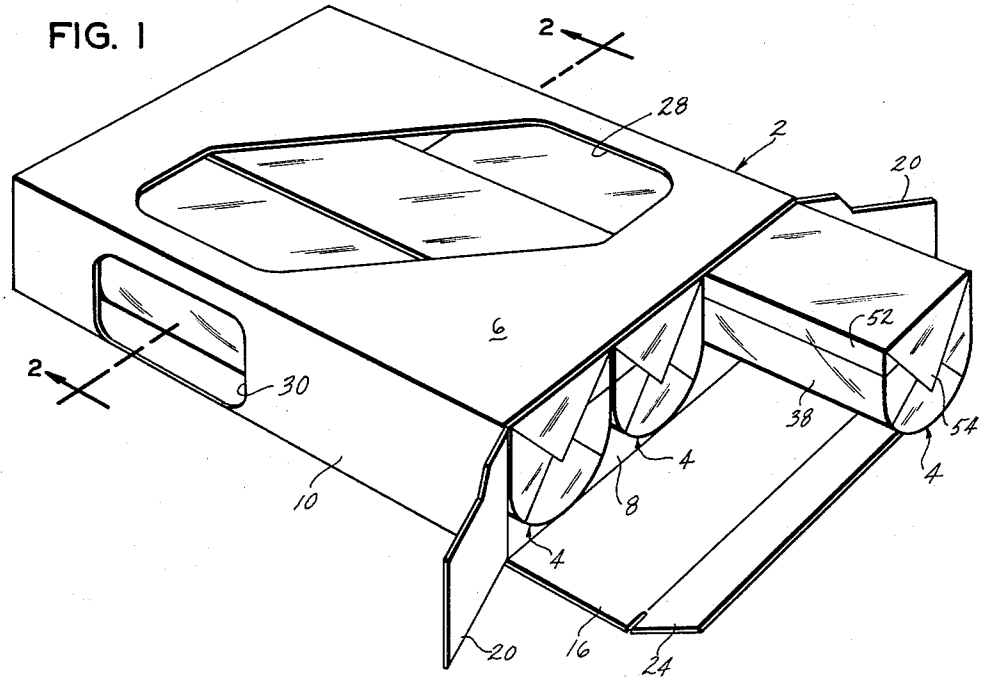


FIG. 2

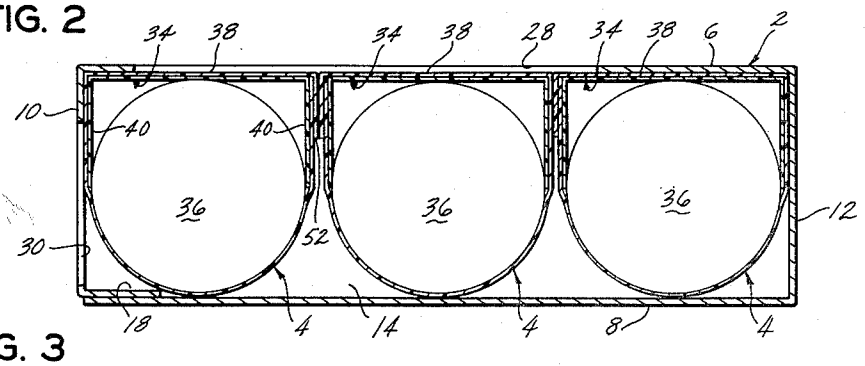
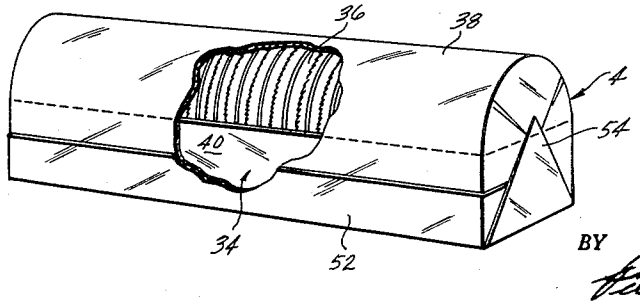


FIG. 3



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CONTAINER ASSEMBLY

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FIG. 4

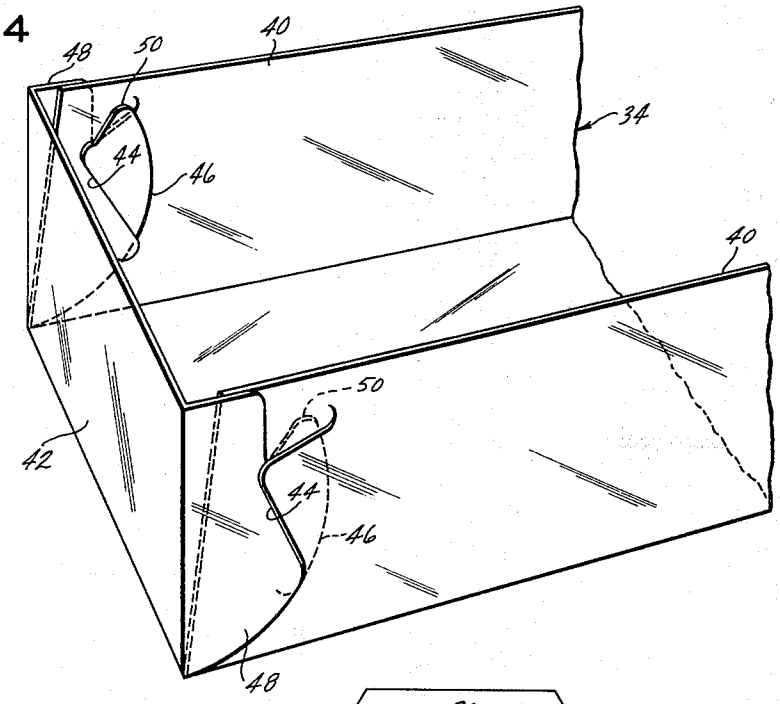
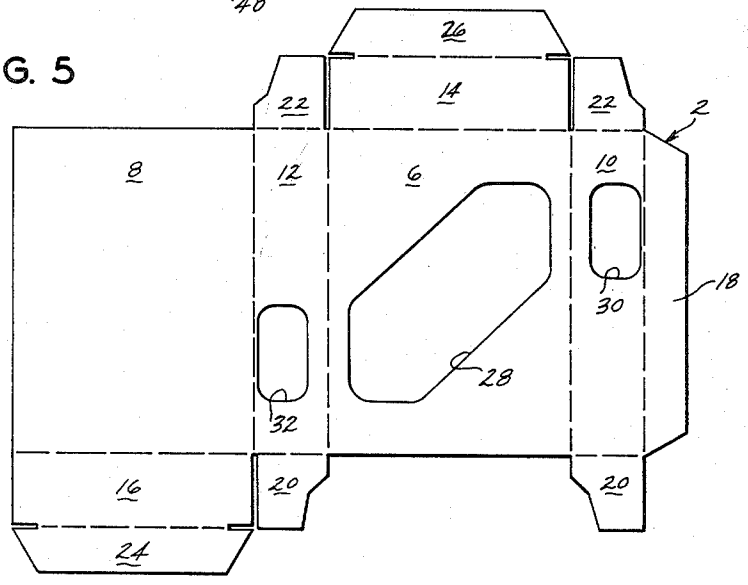


FIG. 5



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CONTAINER ASSEMBLY

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FIG. 6

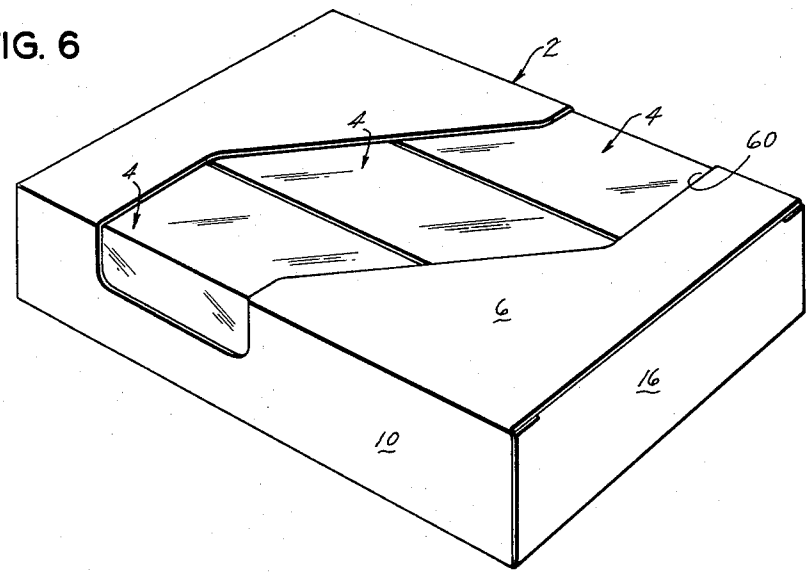
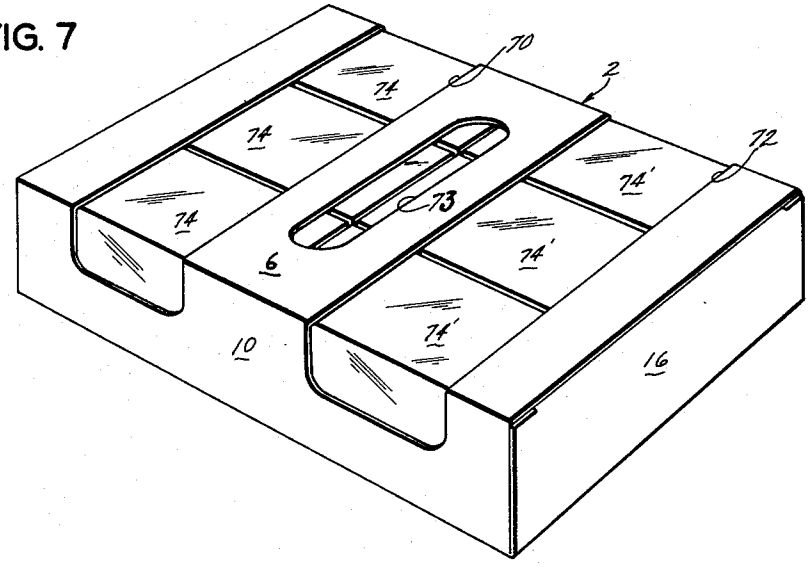


FIG. 7



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FIG. 8

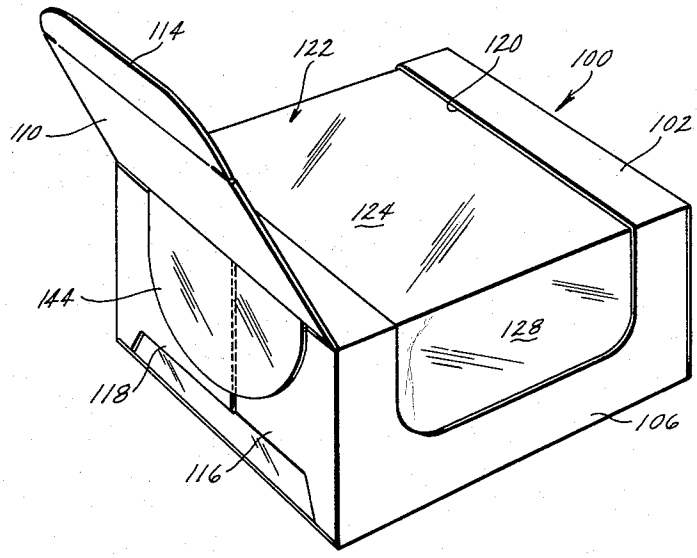


FIG. 9

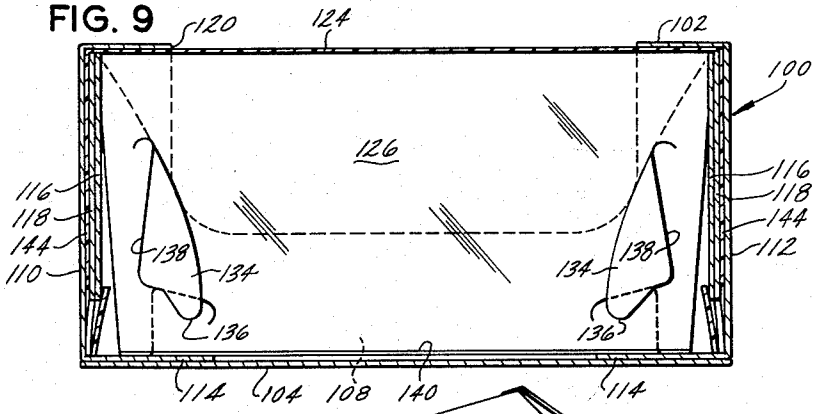
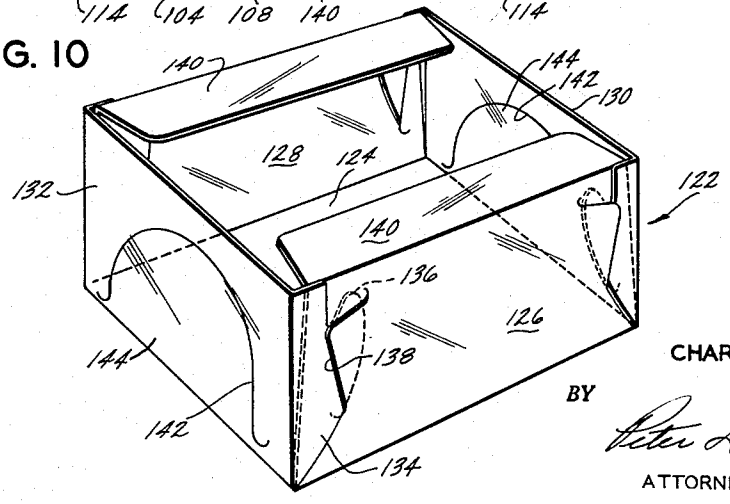


FIG. 10



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3,168,952

CONTAINER ASSEMBLY

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Filed Oct. 26, 1962, Ser. No. 233,359
12 Claims. (Cl. 206—45.31)

The present invention relates to window cartons and more particularly to a novel window container assembly for displaying and protecting goods.

Window cartons generally are reduced in strength and rigidity by the removal of the paperboard or other material of the carton for the window and most usually employ a sheet of transparent synthetic plastic to seal the window aperture. Although such plastic sheet may be of sufficient rigidity and strength to reinforce the carton and integral or separately formed stiffening ribs may be employed, generally the decrease in strength and rigidity of the carton is uncompensated.

It is an object of the present invention to provide a novel window container assembly having a window carton in which is received one or a plurality of packages and which assembly is relatively rigid and strong while providing good visual display of the goods received therein.

Another object is to provide a highly attractive and relatively economical window container assembly having one or a plurality of individual packages of goods, which packages are relatively strong and provide significant protection for the goods therein and cooperate with the carton to provide a relatively rigid and strong assembly.

It is also an object to provide a novel window container assembly having a window carton in which is received one or a plurality of packages wherein the packages interlock with the ends of the carton for increased strength in the assembly.

Other objects and advantages will be apparent from the following detailed description and claims and the attached drawings wherein:

FIGURE 1 is a perspective view of a container assembly embodying the present invention with an end thereof opened and one of the individual packages partially drawn out therefrom to reveal internal construction.

FIGURE 2 is a cross-sectional view along the line 2—2 of FIGURE 1;

FIGURE 3 is a perspective view of one of the individual packages of FIGURES 1 and 2 with a portion of the overwrap broken away to reveal internal construction;

FIGURE 4 is a fragmentary perspective view of one end of a tray used in the individual packages of FIGURES 1–3;

FIGURE 5 is a plan view of the blank for forming the carton of FIGURES 1 and 2;

FIGURE 6 is a perspective view of another embodiment of the container assembly using a different window design;

FIGURE 7 is a perspective view of still another embodiment of the container assembly using a different window design and package arrangement;

FIGURE 8 is a perspective view of a further embodiment of the container assembly of the present invention with one end thereof opened;

FIGURE 9 is a longitudinal cross-sectional view of the container assembly in FIGURE 8 with the end thereof closed; and

FIGURE 10 is a perspective view of the tray component of FIGURES 8 and 9.

It has now been found that the foregoing and related objects can be readily attained by a container assembly which employs a carton of semi-rigid sheet material such as paperboard having front, rear, side and end wall panels and at least one package snugly received therein which essentially includes a tray of semi-rigid plastic sheet material to receive and protect the goods and to provide a relatively rigid assembly in combination with the carton. The carton has one or more window apertures formed in one of the front and rear wall panels and spaced inwardly from the end wall panels. The window apertures or aperture may also include apertures in the side wall panels formed either separately or as extensions of the aperture or apertures in the front or rear wall panels. The package essentially includes a tray of semi-rigid transparent synthetic plastic sheet in which the goods are received and desirably includes a cover of transparent synthetic plastic sheet material. The bottom or center wall panel of the tray, or of each of the several trays when a plurality of packages are employed, is disposed adjacent the carton panel having the window aperture. The packages are dimensioned so their side walls are in tight-fitting relationship with the side wall panels of the carton and with each other when a plurality of packages are employed. The package or packages are also dimensioned lengthwise so that the end walls thereof will be in tight-fitting relationship with the end wall panels of the carton and the height of the package and side wall panels of the carton are dimensioned to provide a tight-fitting relationship in this direction.

In one embodiment of the invention, the end wall panels of the tray component each are provided with a non-linear incision pointing towards the free end of the panel and defining an interlocking flap hingedly connected adjacent the center wall panel of the tray, and the side wall panels of the carton are provided with overlapping dust flaps hingedly connected thereto which are overlain by the end wall panel thereof and held in closed position by the tuck flap on the end wall panel. The interlocking flaps of the tray extend between the dust flaps and the end wall panel, thus interlocking the ends of the tray with the end wall closures of the carton to provide an assembly of enhanced rigidity which is also advantageous in that removal of the package requires opening of both end wall closures of the carton so as to evidence more clearly any possible pilfering. In the preferred aspect, the non-linear incision in the end wall panel is curvilinear with an arcuate center portion of large dimension and reversely curved end portions adjacent the bottom or center panel of the tray, thus providing an incision and interlocking flap which will readily distribute stresses to minimize the likelihood of injury to the plastic sheet material during normal use.

Although the side and end walls of the trays are desirably substantially equal to the height of the side walls of the carton or equal to or greater in height than the height of the goods received therein for maximum strength and protection, generally satisfactory and more economical packages may be obtained with trays having side walls of a height sufficient to encompass the goods at their point of maximum width if variable in cross-section and sufficient also to provide relatively firm contact with the side walls of the carton and adjacent trays when a plurality of packages are employed, preferably about one-half to two-thirds the total height of the package.

When employed, the synthetic plastic cover for the package may be sealed to the side walls of the tray by heat-sealing or adhesives, or more conveniently the tray is completely overwrapped by the sheet material of the cover which is sealed to itself or a tubular cover may be heat shrunk thereonto. If the tray is completely overwrapped and uses an overwrapping portion for a heat-seal or adhesive joint, the overlapping portion of the cover should be disposed along a side wall of the tray so as to provide a clean planar surface on the bottom or center wall of the tray and package which is exposed through the window, and similarly, the overlapping portion, or the

side with the overlapping portion when a plurality of packages are employed, should be disposed away from any windows formed in the side wall panels. The window aperture(s) is of sufficiently large area to display the goods clearly and, accordingly, to reduce the rigidity of the carton, particularly when the aperture extends into one or both side wall panels.

If so desired, a plurality of rows of packages may be received within the carton. In both single or multiple row arrangements of packages, the window or windows should be disposed so that unapertured portions of the carton overlie the packages at or adjacent their ends.

Referring first in detail to the embodiment of FIGURES 1–5 of the drawings, there is illustrated a container assembly which is generally comprised of the carton 2 and three elongated packages 4 which are snugly received therein. The carton 2 is formed of a semi-rigid sheet material such as paperboard and has a number of hingedly connected wall panels forming the closed, six-sided structure of FIGURES 1 and 2 and conveniently provided by the blank illustrated in FIGURE 5. More particularly, the six sides of the carton 2 are provided by the front wall panel 6, rear wall panel 8, side wall panels 10, 12 and end wall panels 14, 16. As seen in FIGURE 5, the carton 2 also has a locking flap 18 along the side wall panel 10 which is secured to the rear wall panel 8, conveniently by gluing, to form the body of the carton. Hingedly connected to the side wall panels 10, 12 are dust flaps 20, 22 which cooperate with the end wall panels 14, 16 and the tuck flaps 24, 26 to provide secure closures for the ends of the carton.

As best seen in FIGURES 1 and 5, the front wall panel 6 has a window aperture 28 of substantial dimension and a pair of smaller window apertures 30, 32 are also provided in the side wall panels 10, 12 of the carton 2. The several window apertures cooperate to provide good visibility as to the several packages 4 received within the carton 2 and thereby as to the goods within the several packages.

Referring now to the construction of the several packages 4, each includes a tray generally designated by the numeral 34 in which are disposed the goods designated by the numeral 36 (and illustrated as cookies in FIGURE 3), and a cover of transparent synthetic plastic sheet-material. The tray 34 is formed from transparent synthetic plastic sheet material which is semi-rigid and the side walls of the tray 34 extend about one-half the height of the package 4 to include therebetween the goods 36 at their point of greatest width; i.e., at their diameter. Although the trays 34 may be heat-formed or folded and locked in erected position by heat-sealing or adhesives, trays which may be cold-folded and mechanically locked readily and speedily on high-speed packaging lines are most desirable from the standpoint of most advantageous and economical processing.

The tray of my United States Patent No. 2,967,654, issued January 10, 1961, has been found particularly advantageous in highspeed packaging lines and is fragmentarily illustrated in FIGURE 4. Briefly, this tray design accommodates and utilizes the characteristics of semi-rigid plastic sheet material to provide a rugged unit which may be readily folded and mechanically locked. The side wall panels 40 of the tray have tapered ends to permit overfolding of the end wall panels 42 in accordance with the method of my United States Patent No. 2,954,725, issued October 4, 1960. Adjacent each end, the side wall panels 40 are provided with non-linear slits 44 which point towards the end and receive the tabs 46 on the locking flaps 48. The leading edges of the tabs 46 bottom in the slits 44 and the nose portions 50 thereon engage behind the shoulders formed by the upper portions of the slits 44 to firmly lock the end wall panels 42 in the upright position against undesired movement relative to the side walls panels 40.

As best seen in FIGURES 2 and 3, the cover 38 is a thin, flexible transparent synthetic plastic film which is wrapped about the tray 34 and goods 36 with the overlapping side portions 52 located along the side wall panel 40 of the tray 34. The ends of the cover 38 are folded tightly into overlapping relationship against the end wall panels 42 of the tray as indicated by the numeral 54 and the overlapping side and end portions are then sealed by any convenient means such as heat-sealing or adhesive.

As best seen in FIGURES 1 and 2, the carton 2 and several packages 4 are dimensioned so that the several packages snugly fit within the carton with the sides thereof in firm contact with each other and with the side wall panels 10, 12 of the carton 2 and with the ends thereof in firm contact with the end wall panels 14, 16 so as to prevent lateral displacement. Similarly, the bottom of the tray portion thereof is in form contact against the front wall panel 6 and the top of the package defined by the height of the goods 36 is in firm contact against the rear wall panel 8 of the carton 2. The outside packages 4 are disposed with their overlapping side portions 52 of the cover 38 disposed toward the inside of the carton so as to present a clear uniform surface through the windows 30, 32 in the side wall panels 10, 12 of the carton 2.

Referring now to the embodiment of FIGURE 6, the carton 2 has been modified by providing a single window aperture 60 which extends across the front wall panel 6 and into the side wall panels 10, 12.

Referring now to the embodiment of FIGURE 7, the carton 2 has been modified by providing a pair of spaced parallel elongated window apertures 70, 72 which extend transversely across the front wall panel 6 and into the side wall panels 10, 12. Spaced intermediate the window apertures 70, 72 and at the center portion of the front wall panel 6 is a small window aperture 73 which extends parallel to the apertures 70, 72 but terminates inwardly from the side edges of the front wall panel 6. In this embodiment, two rows of individual packages 74, 74' are disposed snugly within the carton 2. The outer end portions of packages 74, 74' are firmly retained by the unapertured end portions of the front wall panel 6, and the opposed inner end portions are firmly retained by the center strap portion of the front end wall between the two elongated window apertures 70, 72.

Referring now to the embodiment illustrated in FIGURES 8–10, the window carton 100 is similarly constructed with front wall panel 102, rear wall panel 104, side wall panels 106, 108, each having overlapping dust flaps 116, 118 hingedly connected at the sides thereof, and end wall panels 110, 112 each having tuck flaps 114 hingedly connected thereto to provide end wall closures for the carton 100. A large window aperture 120 extends transversely of the front wall panel 102 and into both side wall panels 106, 108 so as to provide excellent visibility of the goods in the package received in the carton 100.

In this container, a single package is received which includes a tray 122 of transparent, semi-rigid synthetic plastic material having a center wall panel 124, side wall panels 126, 128 and end wall panels 130, 132. The side wall panels 126, 128 and end wall panels 130, 132 are locked in erect position by interlocking portions provided by the locking flaps 134 on the sides of the end wall panels 130, 132 and the non-linear incisions 138 in the side wall panels 126, 128 in which the locking tabs 136 engage. The side wall panels 126, 128 and end wall panels 130, 132 are substantially equal in height to the side wall panels 106, 108 and end wall panels 110, 112 of the carton as well as the lateral dimension so as to provide a snug fit of the tray 122 within the carton 100.

In the end wall panels 130, 132 of the tray 122 are provided non-linear incisions 142 pointing towards the free end of the panels and defining interlocking flaps 144 which are hingedly connected adjacent the center wall panel 124. These incisions 142 are preferably curvilinear to distribute stresses upon the plastic sheet and most de-

sirably utilize arcuate center portion pointing towards the free end of the panel and reversely curved end portions as shown in the illustrated embodiment. In assembly, the interlocking flaps 144 extend between the dust flaps 116, 118 and the end wall panels 110, 112 of the carton 100 to interlock the tray with the end wall closures of the carton. This interlocking of the ends of the tray with the ends of the carton greatly enhances the rigidity of the container assembly in the longitudinal direction when the window aperture(s) is of large dimension and further requires opening of both end wall closures of the carton to remove the package, thus evidencing more clearly any possible pilfering.

In this embodiment, a further modification of the tray design is shown for increasing the strength of the assembly when the goods in the package are not of sufficient dimension or rigidity to fill in the spacing in the tray or the vertical height of the carton walls. As previously stated, the tray side and end wall panels are dimensioned substantially equal to the panels of the carton and hingedly connected along the free ends of the side wall panels 126, 128 of the tray are dust flaps 140 which extend normally thereto in opposed relationship along the rear wall panel 104. In this manner, the dust flaps 140 serve to protect the goods and increase the dimensional and structural rigidity of the tray 122 within the carton 100 both by providing longitudinal ribs and by decreasing any tendency for the side wall panels to collapse inwardly. Although a cover (not shown) may also be utilized for this embodiment of tray by securing it to the side and end wall panels in a non-interfering position, generally it is omitted.

In each of the several embodiments, the carton and package are cooperatively dimensioned to ensure firm, close-fitting assembly of the package or plurality of packages within the carton so that the assembly is relatively rigid. In this manner, a single window of varying shape or a plurality of windows of varying shape may be employed so long as the package is firmly retained by an unapertured portion of the carton at or adjacent its end portions, which requirement is best met by use of transversely extending apertures spaced inwardly from the ends of the carton. The substantially planar center panel of the transparent semi-rigid tray not only seals and protects the goods from injury through the window(s) in the carton since it extends between the apetured panel and the goods but also combines in the close-fitting assembly to provide a firm and relatively rigid frame within the carton. Thus, the longitudinal rigidity of the tray, or of a plurality of trays provided by their tight-fitting side-by-side relationship, and resultant packages not only protects the goods but also compensates for the loss in longitudinal rigidity of the carton resulting from the window aperture. The cover may also add to the dimensional stability of the package as well as seal the goods received therein from contact with the atmosphere to maintain freshness or freedom from discoloration.

Various semi-rigid materials may be used for the carton including paperboard, synthetic plastics, metal foils or laminates thereof. From the standpoints of cost and versatility, paperboard is generally preferable in thickness of about 12–40 mils, although heavier stock may be employed for some applications.

Various semi-rigid transparent synthetic plastics may be employed for the trays including biaxially oriented polystyrene, polyethylene, polypropylene, cellulose acetate, cellulose acetatebutyrate and polyvinyl chloride-acetate copolymers. As previously stated, the trays are most advantageously cold-folded and mechanically locked for high-speed operation and thus the material for such trays should have the characteristics of being foldable and substantially retaining a fold made therein in accordance with the teachings of my United States Patent No. 2,954,25, issued October 4, 1960, and entitled Method and Apparatus for Folding Plastic Sheet Stock. As a specific example

of a highly advantageous material, biaxially oriented polystyrene of 5–15 mils thickness has been particularly effective because of its clarity, high strength and semi-rigidity coupled with sufficient resiliency and flexibility to provide durable folds and resistance to normal impacts.

The synthetic plastic sheet material used to provide a cover for the package may be any transparent flexible film but is preferably heat sealable for optimum economy, although heat-shrinkable films and adhesives may also be employed. Exemplary of such films are cellulose acetate, polyethylene, rubber hydrochloride, polyvinylidene chloride, and polyvinyl chloride-acetate copolymer.

Thus, it can be seen that the container assembly of the present invention provides a novel window carton unit in which there is excellent visual display of goods received therein and which is relatively rigid and strong. The container assembly may utilize a plurality of individual transparent packages which are sealed and relatively strong to afford good protection to the goods and which cooperate with each other and with the window carton to provide longitudinal rigidity and a relatively rigid and strong container assembly which is neat in appearance and relatively economical. In accordance with one aspect of the invention, the ends of the packages may be interlocked with the ends of the carton for increased longitudinal rigidity and to provide an assembly which will limit pilfering.

Having thus described the invention, I claim:

1. A container assembly comprising a carton of semi-rigid sheet material with front, rear, side and end wall panels, said carton having a window aperture in one of said front and rear wall panels; and a package in said carton including a tray of semi-rigid, transparent synthetic plastic sheet material having center, side and end wall panels and goods received within said tray, the center panel of said tray being substantially planar and disposed adjacent said one wall panel of said carton and with the window aperture therein and extending between said one wall panel and said goods providing protection therefor said package being snugly received between the several wall panels of said carton providing a tight-fitting and relatively rigid assembly.

2. The container assembly of claim 1 wherein said package includes a cover of flexible transparent synthetic plastic sheet material.

3. The container assembly of claim 1 wherein the end and side wall panels of said tray are substantially equal in height to the side and end wall panels of said carton and wherein the side wall panels of said tray have dust flaps hingedly connected along their free ends extending normally thereto in opposed relationship along the other of said front and rear wall panels.

4. The container assembly of claim 1 wherein the end and side wall panels of said tray are of lesser height than the end and side wall panels of said carton and wherein said package includes goods of relative rigidity received in said tray and substantially equal in height to the side wall panels of said carton and abuts relatively tightly against the other of said front and rear wall panels.

5. A container assembly comprising a carton of semi-rigid sheet material with front, rear, side and end wall panels, said carton having a window aperture in one of said front and rear wall panels, said side wall panels having dust flaps hingedly connected thereto and overlain by said end wall panels; and a package in said carton including a tray of semi-rigid, transparent synthetic plastic sheet material having center, side and end wall panels and goods received within said tray, the center panel of said tray being substantially planar and disposed adjacent said one wall panel of said carton with the window aperture therein and extending between said one wall panel and said goods providing protection therefor, said package being snugly received between the several wall panels of said carton providing a tight-fitting and relatively rigid assembly, said end wall panels

of the tray each having a non-linear incision therein pointing towards the free end of the panel and providing an interlocking flap hingedly connected adjacent the center wall panel of said tray, said interlocking flaps extending between the dust flaps and end wall panels of said carton and interlocking the tray with the end wall closures of said carton.

6. The container assembly of claim 5 wherein said window extends transversely of said one of the front and rear wall panels and into one of said side wall panels.

7. The container assembly of claim 5 wherein said non-linear incision has an arcuate center portion pointing towards the free end of the panel and reversely curved end portions.

8. The container assembly of claim 5 wherein the end and side wall panels are substantially equal in height to the side and end wall panels of said carton and wherein the side wall panels of said tray have dust flaps hingedly connected along their longitudinal free ends extending normally thereto in opposed relationship along the other of said front and rear wall panels.

9. A container assembly comprising a carton of semi-rigid sheet material with front, rear, side and end wall panels, said carton having a window aperture in one of said front and rear wall panels; and a plurality of packages in said carton, each one of said packages including a tray of semi-rigid transparent synthetic plastic sheet material having center, side and end wall panels and goods received within said tray, the center panel of said tray being substantially planar and disposed adjacent said one wall panel of said carton with the window aperture therein and extending between said one wall panel and said goods providing protection therefor, said packages being snugly received in side-by-side relationship between the several wall panels of said carton providing a tight-fitting and relatively rigid assembly.

10. A container assembly comprising a carton of semi-rigid sheet material with front, rear, side and end wall panels, said carton having a window aperture in one of said front and rear wall panels, said side wall panels having dust flaps hingedly connected thereto and overlain by said end wall panels; and a plurality of packages in said carton, each of said packages including a tray of semi-rigid, transparent synthetic plastic sheet material having center, side and end wall panels and goods received within said tray, the center panel of said tray being substantially planar and disposed adjacent said one wall panel of said carton with the window aperture therein and extending between said one wall panel and said goods providing protection therefor, said packages being snugly received in side-by-side relationship between the several wall panels of said carton providing a tight-fitting and relatively rigid assembly, each of said end wall panels of each tray having a non-linear incision therein pointing toward the free end of the panel and providing an interlocking flap hingedly connected adjacent the center wall panel of the tray, said interlocking flaps extending between the dust flaps and end wall panels of said carton and interlocking the trays with the end wall closures of said carton.

11. A container assembly comprising a carton of semi-rigid sheet material with front, rear, side and end wall panels, said carton having a plurality of spaced parallel window apertures in one of said front and rear wall panels, said window apertures being spaced inwardly from the ends of said one wall panel and extending generally transversely thereof; and a plurality of transversely extending rows of packages in said carton, each of said rows being comprised of a plurality of packages in side-by-side relationship, the unapertured portions of said one wall panel adjacent the ends of said panel and in the spacing between said window apertures overlying said rows of packages adjacent the ends thereof, each of said packages including a tray of semi-rigid, transparent synthetic plastic material having a substantially planar center panel and side and end wall panels and goods received in said tray, said packages having their tray portions disposed with the center panels thereof adjacent said one wall panel and extending between said one wall panel and goods providing protection therefor, said packages being dimensioned cooperatively and fitting snugly between the several wall panels of the carton providing a tight-fitting and relatively rigid assembly.

12. A container assembly comprising a carton of semi-rigid sheet material with front, rear, side and end wall panels, said carton having a window aperture in one of said front and rear wall panels; and a plurality of packages in said carton each comprising a tray of semi-rigid, transparent synthetic plastic sheet material having a substantially planar center panel, goods received in said tray and a cover of flexible transparent synthetic plastic sheet material, said packages having the center panel of their tray portions disposed adjacent said one wall panel of said carton with the window aperture therein and extending between said one wall panel and said goods providing protection therefor, said packages being snugly received between the several wall panels of said carton providing a tight-fitting and relatively rigid assembly.

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