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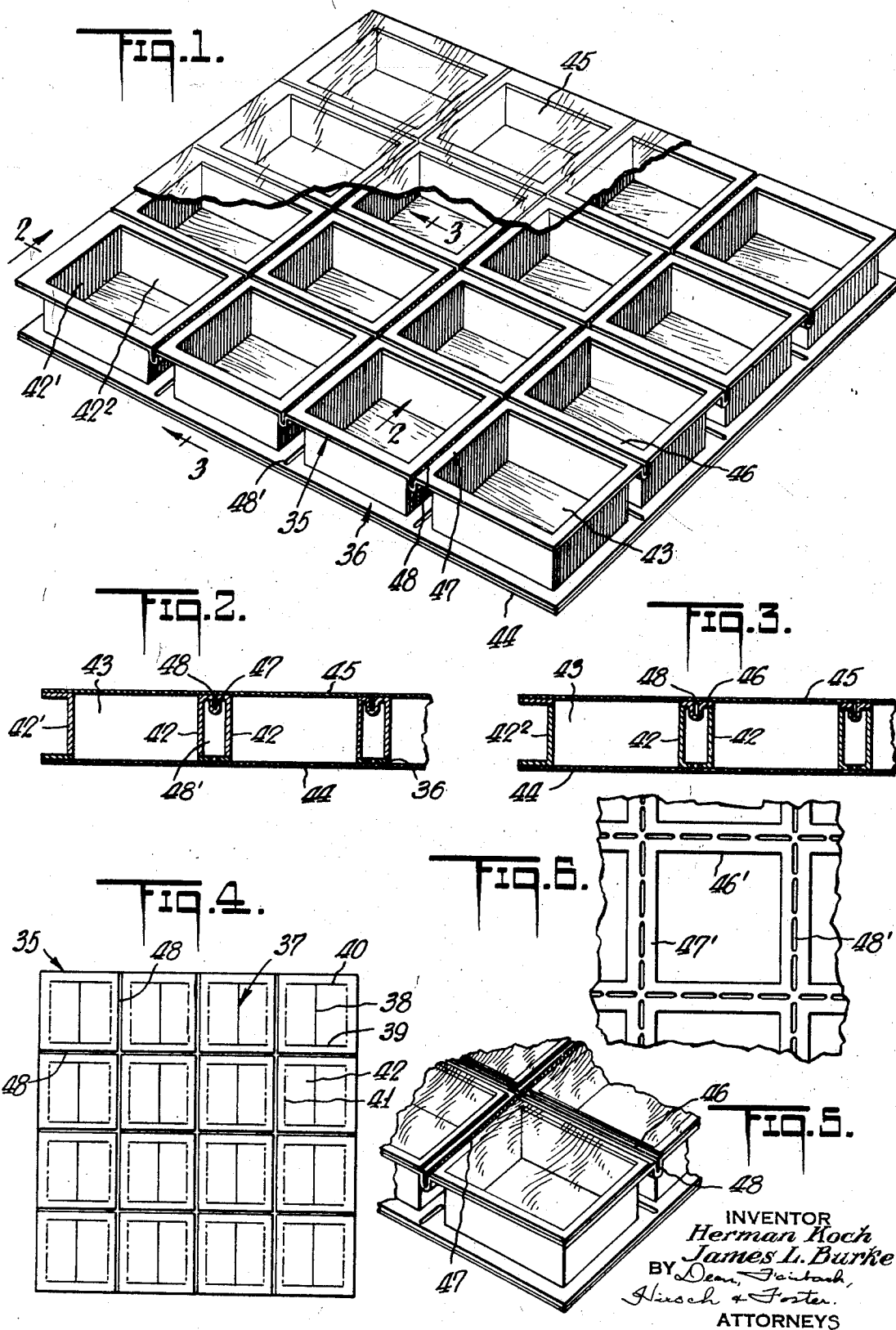
H. KOCH ET AL

2,138,241

SEALED PACKAGE

Filed Aug. 9, 1935

4 Sheets-Sheet 1



Nov. 29, 1938.

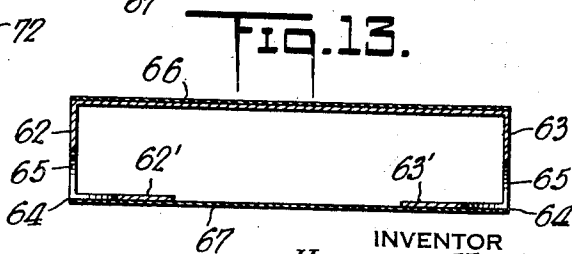
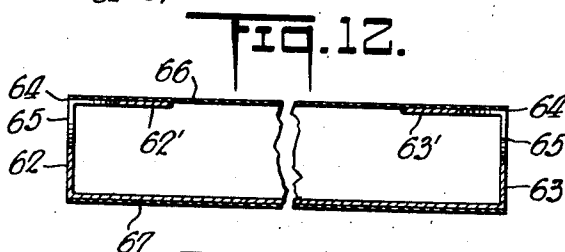
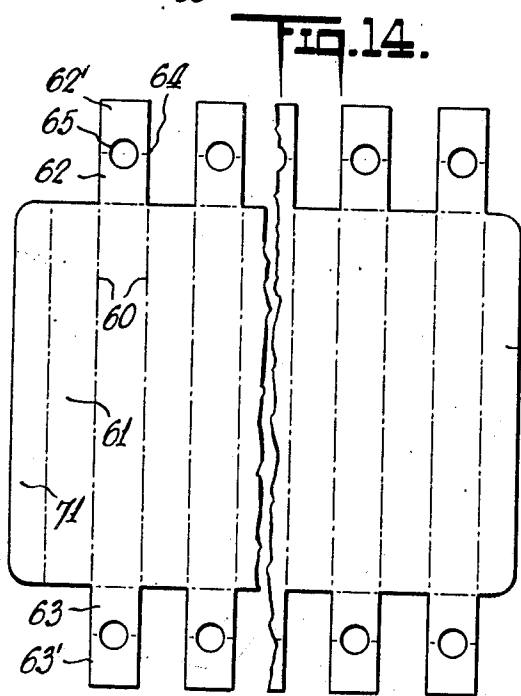
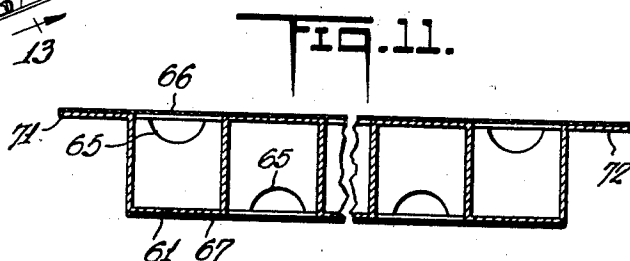
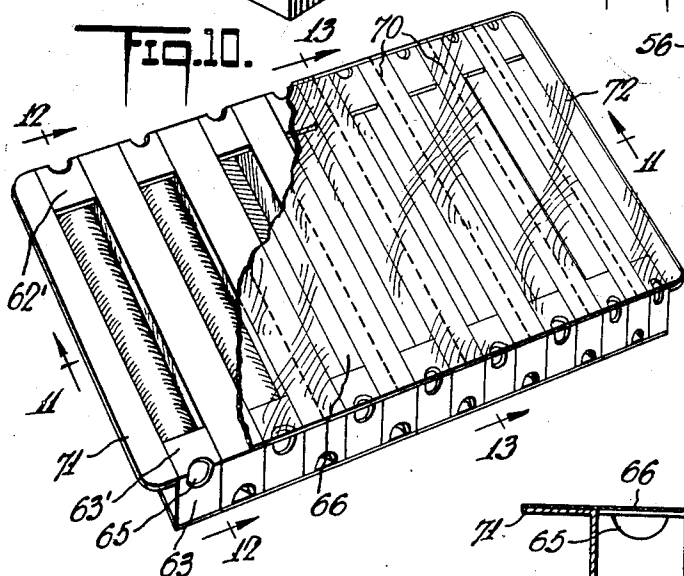
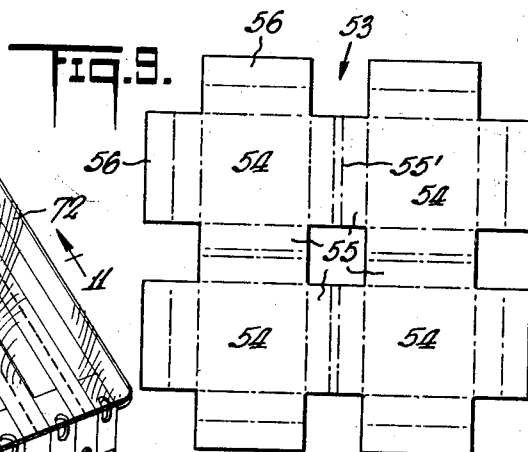
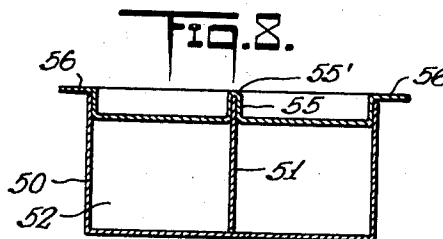
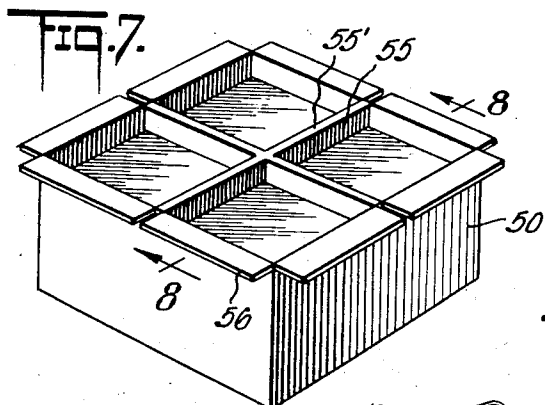
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4 Sheets-Sheet 2



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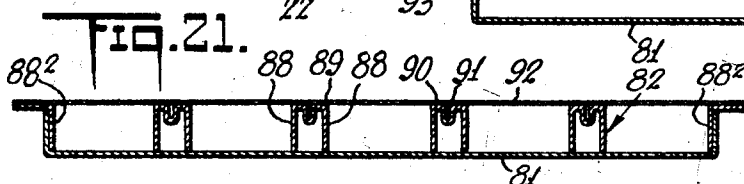
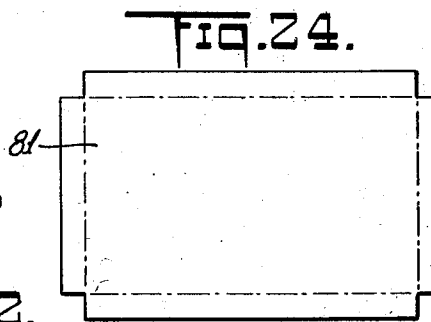
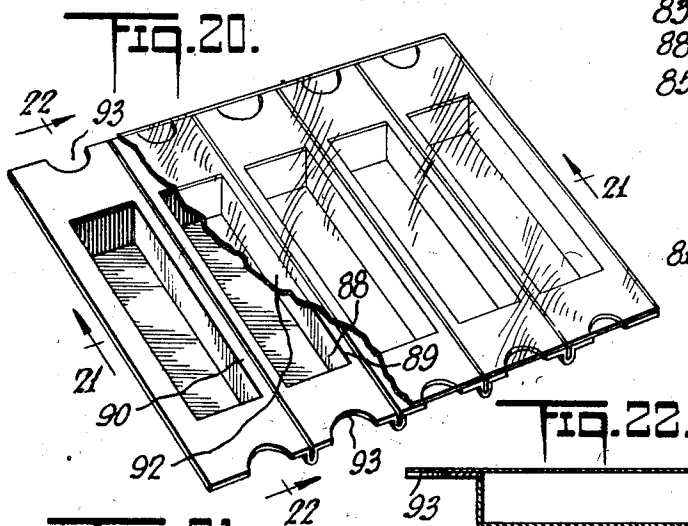
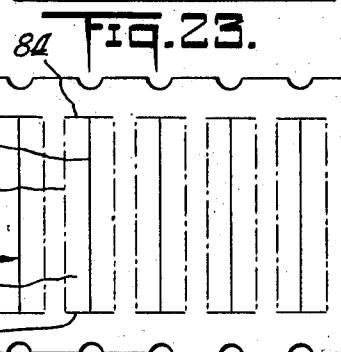
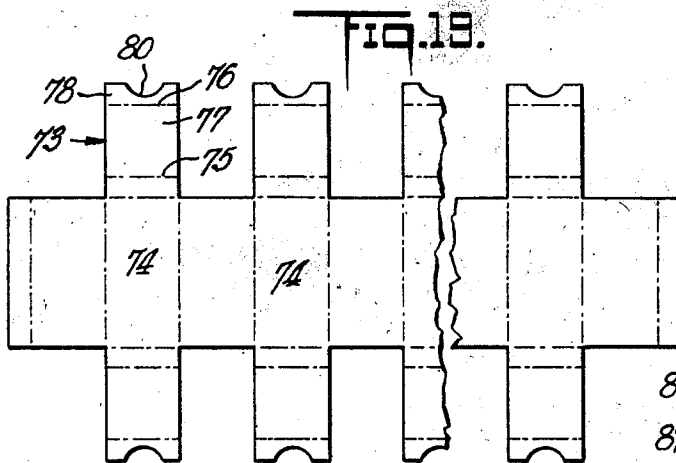
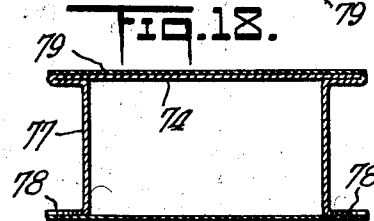
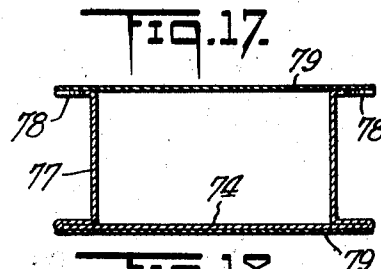
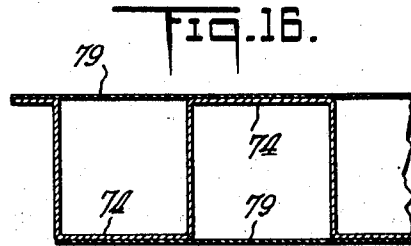
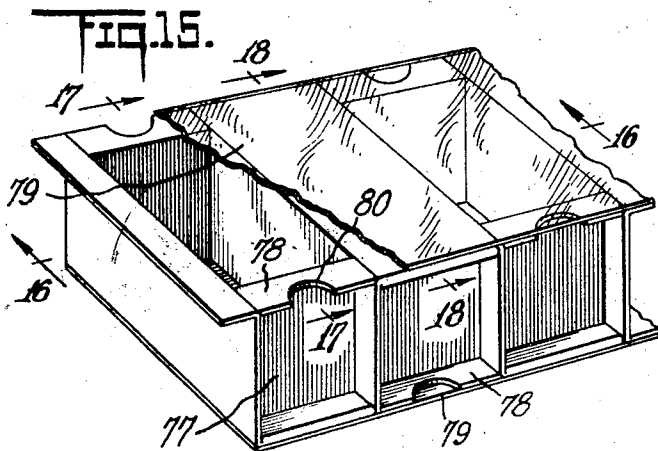
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4 Sheets-Sheet 3



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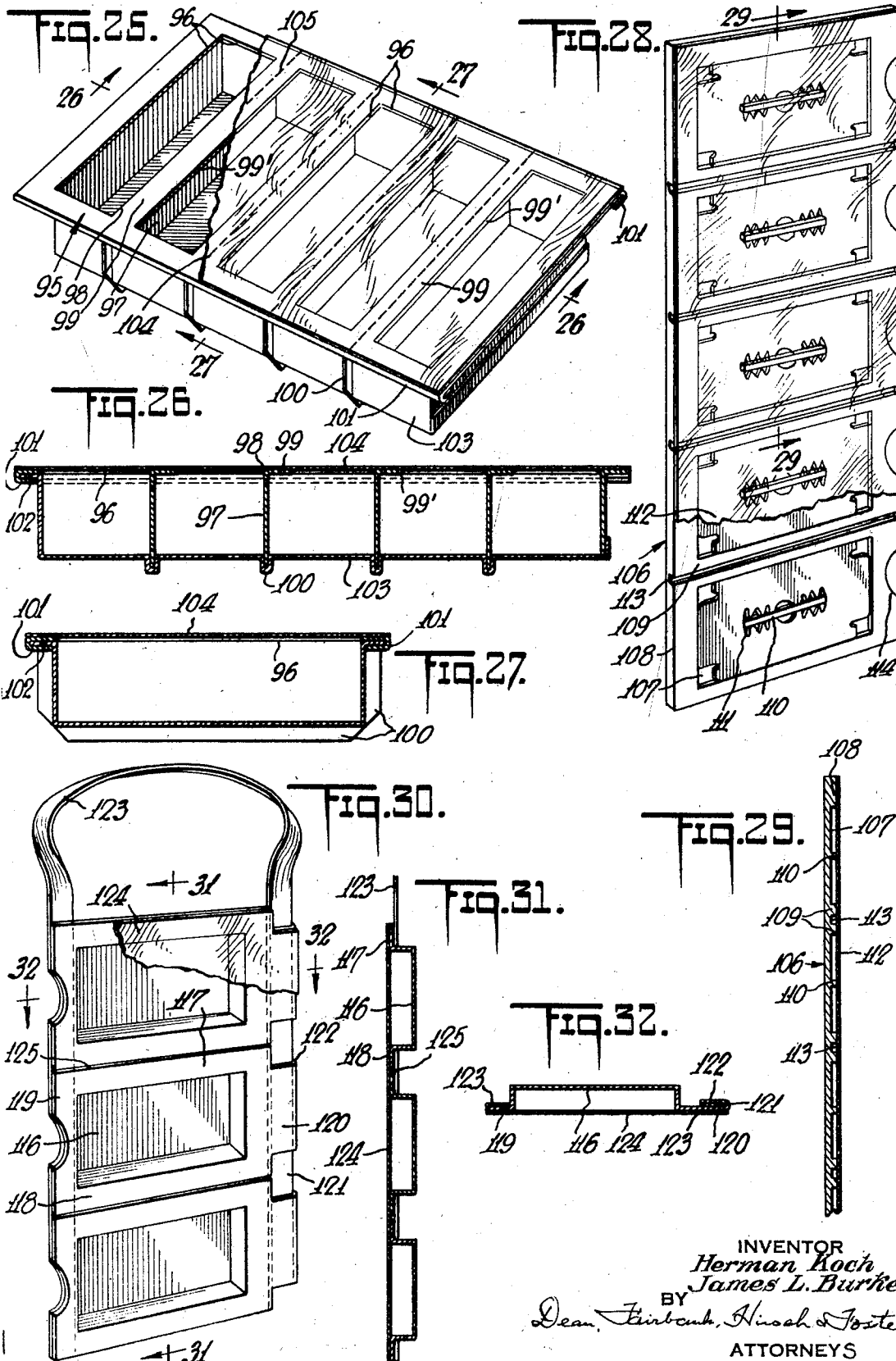
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

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Weehawken, N. J.

Application August 9, 1935, Serial No. 35,471

9 Claims. (Cl. 206—56)

Our present invention relates to multi-cellular packages for separately housing in individual cells, articles such as cigarettes, sticks of chewing gum, safety razor blades or individual charges of material in powdered or granulated form, such as coffee, sugar, medicine and the like.

A particular object of the invention is to provide a multi-cell package, which protects the individual units or portions against loss of flavor, soggyiness, dryness, or other deleterious effect and in which the protection of the remaining units is in nowise impaired by removal of one or more of the units for consumption.

Another object is to provide a package of the above type, which inherently affords facility for visual inspection, but prevents handling or access of external air to the contained commodity, so that injury thereto or spoilage thereof is precluded.

Another object is to provide a multi-cellular package of the above type which can readily be produced at cost comparable with that of conventional packages lacking the foregoing utilities, and which packages are convenient in size, easy to open and attractive in appearance.

Another object is to provide a package of the above type which lends itself readily for construction in various sizes for containing any desired number of units, in accordance with requirements.

A feature of the invention is a multi-cellular structure made of sheet metal, cardboard or other suitable material, the open tops of the several compartments being sealed by a sheet preferably of "Cellophane", hermetically to enclose the contents, and so arranged with respect to the dividing walls or the ledges between neighboring cells as to facilitate removal of the contents from one or more cells to be opened, without impairing the seal of the remaining cells.

In one embodiment, several cells, all opening at one face of the package, are sealed by a common "Cellophane" sheet, adhesively connected to the dividing walls between the cells and arranged for convenient severance at said walls.

In another embodiment the cellular unit is open both top and bottom, and sheets are sealed to the respective dividing walls both top and bottom, at least one of said sheets being preferably of "Cellophane".

In another embodiment the device is formed with cells opening alternately at the top and bottom of the unit, separate sheets of "Cellophane" covering said top and bottom and adhesively secured to the ledges formed by the inter-

vening cell between consecutive cells opening on the same face of the package.

The cellular structure in one type of construction is of two blanks inter-related to determine a unitary multi-cellular structure, to be sealed by "Cellophane".

In one embodiment two identical square blanks are provided with I-slots therein arranged in rows and tiers, said slots defining tongues turned inward at right angles, the tongues of the two blanks cooperating to determine the four walls of individual cells, open top and bottom and sealed by appropriate sheets.

In another embodiment a tray structure is closed by a cover frame having tongues cut thereinto, bent downwardly to determine the individual cells and dividing walls therebetween.

In another embodiment particularly adapted for flat units, such as safety razor blades, chewing gum, and the like, the tray is an embossed flat stamping affording shallow depressions for the units to be retained and the "Cellophane" sheet is adhesively attached to the rim of said blank and to the ledges intervening between the depressions.

In another embodiment particularly useful for articles of greater depth, individual trays are formed of appropriate stampings and provided with flanges, attached together by a common carrier strip or wire which may serve as a carrying loop.

In the accompanying drawings, in which are shown one or more of various possible embodiments of the several features of the invention,

Fig. 1 is a perspective view of one embodiment of the invention.

Fig. 2 is a fragmentary transverse sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a similar view on line 3—3 of Fig. 1.

Fig. 4 is a plan view of one of the two identical blanks making up the cellular unit of Fig. 1.

Fig. 5 is a fragmentary perspective view showing the cover sheet severing feature, slightly modified.

Fig. 6 is a fragmentary plan view showing a modification of the cover sheet severing feature.

Fig. 7 is a perspective view of another embodiment.

Fig. 8 is a view in longitudinal cross-section taken on line 8—8 of Fig. 7.

Fig. 9 is a plan view of the cover blank of the embodiment of Figs. 7 and 8.

Fig. 10 is a perspective view of a further embodiment of the invention.

Fig. 11 is a view in transverse cross-section taken on line 11—11 of Fig. 10,

Fig. 12 is a sectional view taken on line 12—12 of Fig. 10,

Fig. 13 is a view similar to 12 taken on line 13—13 of Fig. 10,

Fig. 14 is a fragmentary plan view of the blank shown in the embodiment of Fig. 10,

Fig. 15 is a perspective view of another embodiment of the invention,

Fig. 16 is a fragmentary transverse sectional view taken on line 16—16 of Fig. 15,

Figs. 17 and 18 are longitudinal sectional views taken respectively on line 17—17 and 18—18 of Fig. 15,

Fig. 19 is a fragmentary plan view of the blank for making the structure of Fig. 15,

Fig. 20 is a perspective view of another embodiment,

Fig. 21 is a transverse sectional view taken on line 21—21 of Fig. 20,

Fig. 22 is a longitudinal sectional view taken on line 22—22 of Fig. 20.

Fig. 23 is a plan view of the cover frame blank of the embodiment of Fig. 20,

Fig. 24 is a plan view of the blank from which the tray structure is made in the embodiment of Fig. 20,

Fig. 25 is a perspective view of a still further embodiment of the invention,

Fig. 26 is a longitudinal sectional view taken on line 26—26 of Fig. 25,

Fig. 27 is a transverse sectional view on line 27—27 of Fig. 25,

Fig. 28 is a perspective view of a still further embodiment of the invention,

Fig. 29 is a view in longitudinal cross-section taken on line 29—29 of Fig. 28,

Fig. 30 is a perspective view of a still further embodiment of the invention,

Fig. 31 is a view in longitudinal cross-section taken on line 31—31 of Fig. 28,

Fig. 32 is a view in transverse cross-section, taken on line 32—32 of Fig. 30.

Referring now to Figs. 1 to 4 of the drawings, there is shown a multi-cell unit, preferably made up of two identical blanks 35 and 36 of sheet metal, one of which is shown in plan view in Fig. 4. The blank is of square contour and has I-slots 37, slit therethrough, arranged illustratively in four equidistant rows of four equidistant elements. Each I-slot has a vertical beam 38 bisecting two horizontal bars 39 and 40, each bar of length equal to the beam. Lines 41 are fold lines connecting the corresponding ends of each I slot, along which the corresponding tongues 42 are bent at right angles to the plane of the blank, to form square openings 43 in the resultant perforated frame plate cover, with corresponding opposite walls depending therefrom.

Two identical blanks of the description set forth are placed in parallel relation with the tongues 42 of one at right angles to the corresponding tongues of the other, and engaging each other edgewise to form the structure shown in perspective view in Fig. 1. The assembly is subjected to an electro-plating bath, effecting a secure bond between the engaging edges of the wall tongues of the two blanks. Thereby there is formed a rigid multi-cell structure, each cell open both top and bottom, each cell square in cross-section with side walls 42' formed from one of the blanks 35 and end walls 42² formed from the identical companion blank 36.

The bottom of the multi-cell unit is a sheet 44

of appropriate material, which may be metal, preferably soldered or otherwise adhesively connected to the open bottom frame 36. The top of the unit is preferably sealed by a sheet 45 of tearable material, preferably translucent or transparent, ordinarily "Cellophane". This sheet is adhesively connected about the border of the open frame 35 and along the intersecting sets of ledges 46 and 47 between the rows and tiers of cells.

For facility in removing the seal from any cell, as access to the contents is desired, the cover frame blank 35 is preferably formed with longitudinal grooves 48 extending the lengths of and preferably bisecting each of the ledges 46 and 47 of the cover frame 35. These grooves are preferably formed at the same time that the sheet is stamped with the I-slots 37 shown in Fig. 4.

By running a pencil or pen-knife or the fingernail along the "Cellophane" cover along the corresponding groove 48, the cover sheet over any cell is severed with respect to the rest of the cells and can readily be stripped off, for access to the contents, without in any way disturbing the hermetic seal of the remaining cells.

By the arrangement disclosed there is formed a convenient, attractive, yet inexpensive unit, especially suitable for such substances as powdered coffee, flavoring extract, and the like, which it is advantageous to keep hermetically sealed until use. It is apparent that the coffee or other substance could be filled into the individual compartments in an atmosphere of dry hot air and the "Cellophane" cover then applied by appropriate "Cellophane" cement, so that a vacuum seal would result, due to the contraction in the cooling of the hot air in the individual cells.

It is, of course, understood that "Cellophane" sheets could be used for the bottom as well as for the top of the unit and that the grooves 48 could be used both in the top and bottom cover frames, so that the unit would be symmetrical and could be opened from either face.

While the unit is shown made of sixteen cells, the principle lends itself to the making of units of any desired number of cells. If desired, the bottoms of grooves 48 between successive cells might be weakened so that the package unit itself, could be severed into two or more smaller units to suit the convenience of the user, as for instance, in packing a lunch basket, in which it might be desired to take along five or six cells of the standard sixteen cell unit.

In Fig. 5 separate "Cellophane" sheets are illustratively shown, closing the individual cells. These may be separately applied, or preferably cut from a single sheet after the latter is applied and sealed.

The embodiment of Fig. 6 shows a slight modification, in which the various ledges 46' and 47' between the individual cells have interrupted, longitudinal slots 48' to aid in severing the section of "Cellophane" sheet covering the cell to be opened. This arrangement is illustratively shown at the bottom plate 36 in Fig. 2.

While in the embodiment of Figs. 1 to 6 there are substantial widths of ledges 46 and 47 between successive cells, which serve as anchorage for the sealing connection of the "Cellophane" cover, the embodiment of Figs. 7 to 9 shows a construction in which these ledges are eliminated. In this embodiment is shown a multi-cell box 50, with dividing walls 51 and 52, the upper edges of which are flush with the rim of the box. The cover of this compartment is made of the blank 53, best shown in Fig. 9, having a plurality of

rectangular panels 54 corresponding to the respective cells, webs 55 connecting the neighboring cells and flaps 56 at the exposed edges of the several panels. As is apparent from Figs. 7 and 8, the cover when placed over the box with the panels 54 extending into the cells, forms individual trays, the flanges of which are determined by the respective webs 55 (two fold lines 55' in the middle of said webs serving to straddle the edges of the dividing walls 51 and 52) and the flaps 56. This cover is preferably made of tinfoil or the like and may serve as a hermetic seal and may also be adhesively connected in place. Preferably, the material of the foil cover is weakened along the ridges 55 for facility in removing any one of said cover trays for access to the contents, without disturbing the hermetic seal of the other cells. The outer extremities of flaps 56 serve as finger tabs to facilitate opening a cell.

In the embodiment of Figs. 10 to 14, is shown a multi-cell package, particularly useful for such articles as cigarettes. This unit is formed from the single blank shown in Fig. 14, which may be of cardboard, sheet metal or the like. The blank is generally rectangular and has parallel, equidistant fold lines 60. Alternate resultant panels 61 have extensions 62 and 63 protruding from opposite ends thereof, each extension preferably being of length greater than the width of the panel and having a median fold line 64 and a median opening 65. The blank is folded in serpentine fashion along the fold lines 60 as best shown in Fig. 11, to form a series of elongated cavities, or cells, opening alternately at opposite faces of the unit. The extensions 62 and 63 are folded inward and form the respective end walls of the successive cells, while the extremities 62' and 63' of said extensions are folded over to extend parallel to the bottom. Thus the respective end flaps form a continuous end wall for the unit, built up as set forth. The unit, folded as described, is subjected to an electro-plating bath as previously set forth to cause the various end flaps to become bonded to the contiguous edges of the main structure.

Preferably sheets of "Cellophane" 66 and 67 are secured by "Cellaphane" cement to the respective faces of the container described, thereby completing the package in which, in the illustrative embodiment shown, eight cigarettes are exposed to view in the cells opening at the top face and seven are exposed to view in the intervening cells exposed at the bottom face. Preferably the "Cellophane" sheet is weakened at 70 along lines between consecutive cells, so that access to any cigarette may conveniently be had by stripping off the "Cellophane" sheet. The extremity of said "Cellophane" sheet may readily be grasped through the corresponding aperture 65 over which the "Cellophane" sheet is normally sealed.

As shown, the blank affords ledges 71 and 72 at opposite ends of the unit beyond the outermost cells to afford a satisfactory seal for the "Cellophane" sheet 66 at the side exposing to view the greater number of units.

It is seen that the cigarette pack described has a number of important advantages as compared to conventional packs. The pack is rigid, not subject to destruction by pressure, individual cigarettes are at all times exposed to view, access to each cigarette is readily attained without any possibility of mechanical injury thereto and the remaining cigarettes are completely protected from mechanical injury, loss of tobacco, soggi-

ness, or drying out after one or more of the cigarettes have been removed. Moreover, the pack is relatively inexpensive as compared with multiple-seal containers conventionally employed.

The embodiments of Figs. 15 to 19 is generally similar to that of Figs. 10 to 14, except that the cells are shown of different size, and that the end walls are somewhat differently conformed. For that purpose each extension 73 of panels 74 has one fold line 75 near its base and another fold line 76 near its outer end, said fold lines to dispose the intervening panel 77 as a depressed end wall, as shown in Fig. 15. Flap 78 beyond fold line 76 serves as a ledge for supporting the lateral extremity of the "Cellophane" cover 79, and is preferably notched at 80, to permit grasping the "Cellophane" sheet for opening a cell.

In the embodiment of Figs. 20 to 24, the unit is made of two blanks shown in Figs. 23 and 24. Blank 81 forms a flat tray structure, and the blank 82 a cover frame and partition unit. The cover frame 82 as shown is a rectangular blank with a succession of I-slots 83 having their top bars 84 aligned near the upper edge and their bottom bars 85 aligned near the lower edge thereof. The beams 86 of the I-slots extend parallel to each other and bisect the corresponding bars 84 and 85. The blank is longitudinally creased along lines 87, adjoining the corresponding ends of upper and lower bars, thereby to form partitions 88 bent downward as at 89 and preferably of the height and width of the tray 81. In assembly, as appears best from Figs. 20 and 21, the end partitions 88' of the cover frame are formed, snugly to engage the lateral walls of the tray 81 and the partitions 88 extend downward from opposite sides of the intervening ledges 90, to engage the bottom of the tray.

Preferably, the ledges 90 are formed with longitudinal grooves 91, similar to those in Fig. 1 and a single "Cellophane" sheet 92 adhesively connected to the sides and ends of the cover frame and to the connecting ledge 90, hermetically seals the contents. Preferably the cover frame is notched as at 93, in alignment with the various cells, to facilitate grasping the "Cellophane" sheet for any cell to which access is desired. As in the embodiment of Fig. 1 a pencil, pen-knife or the fingernail would be run along the corresponding groove 91 to sever the segment of cover sheet desired to be removed, so that the hermetic seal of the other cells by the remaining cover sheet would in no way be impaired.

The embodiment of Figs. 25 to 27 is generally similar to that just described, of Figs. 20 to 24, except that in this instance the cover frame 95 has U-slots 96 instead of I-slots, so that a single partition 97 is folded downward at 98 from only one edge of each ledge 99. In this embodiment the tray member 103 is illustratively formed with grooves 100 to lodge the edges of the respective partitions 97 which may be bonded thereto in any desired manner, as for instance, by electro-plating in the manner above described. In this instance the edges of the cover frame 95 are crimped at 101 over the corresponding rims 102 of the tray 103. Here also a single "Cellophane" sheet 104 would be adhesively secured over the cover frame 95, and the "Cellophane" may either be initially weakened along the dividing lines 105 for facility in removal, or the same grooved arrangement of ledge shown at 48 in Figs. 1 to 5 may here also be employed.

The embodiment of Figs. 25 to 27 lends itself

well for use as a cigarette package and the emptied cells thereof could conveniently be used as ash trays, the sharp edge 99' of each ledge serving for convenience in dropping off the ash from the tip of the cigarette.

In the embodiment of Figs. 28 and 29 is shown a multi-cell unit particularly useful for packaging safety razor blades, although also applicable for other flat thin articles such as sticks of chewing gum and the like.

In this particular embodiment the casing 106 is made of a flat sheet of metal, wood pulp, cardboard or the like, appropriately stamped or embossed to afford flat depressions 107 conformed to the blade or other article, the blank presenting a peripheral flange 108 and ledges 109 between successive depressions. For application to razor blades it is preferable to have embossments 110 rising from the bottoms of the several depressions to enter the usual apertures 111 in the blades.

After the blades have been introduced, a single "Cellophane" or equivalent sheet 112 is adhesively attached to the face of the sheet at the flange 108, the dividing ledges 109 and the embossments 110. Preferably the material of the multiple tray sheet is grooved or notched at 113, midway of the various ledges 109, for facility in severing the "Cellophane" sheet with a pencil, pen knife or finger nail preparatory to ripping off the segment of "Cellophane" covering that blade to which access is desired. In this embodiment one of the edges of the container plate 106 is preferably notched as at 114 at each depression for ready gripping of the "Cellophane" cover sheet 112.

In the embodiment described, it is seen that the blades are not only hermetically sealed originally, but there is no impairment of this seal as to the remaining blades, sticks of gum or the like, after the seal for one or more of the blades has been broken. The number of blades originally in or remaining in the pack can be immediately seen and the blades themselves, being exposed in the closed pack to the view of the purchaser, opportunity for "palming off" of substitutes is reduced. Moreover, the pack is more convenient to carry than conventional packs, and lends itself very readily for insertion where space is at a premium and yet is not as easily lost as are conventional packs.

In Figs. 30 to 32, is shown another embodiment of multiple-tray unit, in which the individual trays are considerably deeper than in the embodiment of Figs. 28 and 29 and which lends itself for packaging of tablets, such as yeast cakes and the like. Since deeper compartments do not lend themselves so readily for being stamped from a single blank unless appropriate more costly stock is used, this embodiment shows the trays stamped of separate blanks which can readily be done. Each tray 116 is equipped with lateral flanges, 117 and 118 and end flanges 119 and 120. A series of the trays 116, illustratively three in number, as shown, are associated together in a composite unit, preferably by connecting the opposite ends 121 of an appropriate band or wire to and along the end flanges 119 and 120 of the trays, which are arranged in side by side relation. For this purpose, the wire or band may be soldered directly along the lengths of the end flanges 119 of the trays at one end thereof and if desired, may be gripped by inturned tongues 122 of elongated end flanges 120 at the opposite ends of the trays. If desired, the intermediate length of wire or band may be formed as a loop 123

for convenient hanging or suspension of the multi-cell unit. In this embodiment, each compartment may be sealed by "Cellophane" which may be done after the compartment is filled and, if desired, before the connecting strip or wire is applied. It is preferable, however, first to assemble the multi-tray unit completely before charging the same.

Either separate "Cellophane" covers for the several trays or a single "Cellophane" cover 124, to extend over the entire series of compartments may be used, such cover to be sealed to the lateral and end flanges 117, 118, 119 and 120. If desired, the adjacent lateral edges 117, 118 of the successive trays 116 may be slightly spaced as indicated at 125 for convenience in severing the segment of "Cellophane" sheet 124 in the manner previously described, prior to removal thereof.

It will thus be seen that there is herein described an article in which the several features of this invention are embodied, and which article in service attains the various objects of the invention and is well suited to meet the requirements of practical use.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. A multi-cell package including a frame presenting ledges between consecutive open cells and a cover sheet of "Cellophane" sealed to said frame and the several ledges thereof, an edge of said sheet being exposed adjacent each cell as a finger tab, each of said ledges having one or more depressions into which the contiguous portion of the "Cellophane" sheet may be depressed for severing the same thereat for opening any cell without disturbing the seal of any of the remaining cells.

2. The combination set forth in claim 1 in which the frame has longitudinal grooves therein midway between the edges of the respective ledges, to serve as the lines of severance for the cover sheets.

3. The combination set forth in claim 1 in which the frame has interrupted longitudinal slots aligned along the middle thereof and serving as guides for severance of the cover sheet of any cell to be opened.

4. A multi-cell package comprising a tray having elongated narrow cells extending the width and height thereof, a cover frame presenting a rim about said tray and presenting ledges between consecutive cells, a "Cellophane" cover adhesively secured to the rim and the respective ledges and having lines of weakening along said respective ledges, the rim presenting notches at ends of the respective cells for ready removal of the "Cellophane" cover, for any cell.

5. A multi-cell package comprising longitudinal and transverse partitions determining the lateral walls of the cells, a bottom structure, a top structure, the latter including longitudinal and transverse ledges between the respective open cells, and a sheet of "Cellophane" adhesively connected to said ledges and sealing the several cells, each of said longitudinal and trans-

verse ledges having grooves lengthwise thereof to facilitate severance of the cover sheet for opening any cell.

- 5 6. A multi-cell package, comprising longitudinal and transverse walls defining a plurality of rows of cells, a pair of frame structures respectively at the top and bottom of said wall structure, defining longitudinal and transverse ledges between said cell walls and rigid therewith, and
 10 "Cellophane" closure sheets adhesively connected to said respective frame structures for sealing the bottoms and tops of the various cells, one of said frame structures having grooves lengthwise of the respective ledges thereof to facilitate severance of the closure sheet, for access to any of
 15 the cells to be opened, without disturbance of the remaining cells.

7. A multi-cell container comprising a pair of identical square blanks of sheet material, each
 20 blank having a multiplicity of I-slots arranged in parallel rows and columns, each I-slot having a base of length equal to its height, the two tongues defined by each I-slot being bent at right angles to the plane of the blank, the two
 25 square blanks being correlated with the tongues of one at right angles to those of the other, thereby to form a cellular structure open top and bottom, means connecting said blanks into a unitary construction, and separate means
 30 forming bottoms for the several cells.

8. A multi-cell package comprising a pair of identical square blanks of sheet metal, each blank having a multiplicity of I-slots arranged

in parallel rows and columns, each I-slot having a base of length equal to its height, the two tongues defined by each of said I-slots being bent at right angles to the plane of the blank, the two square blanks being correlated with the
 5 tongues of one at right angles to those of the other, thereby to form a cellular structure, open top and bottom, an electroplated seal connecting said walls into a unitary structure, separate means forming bottoms for the several cells, and
 10 a sheet of "Cellophane" sealing the open tops of the cells by adhesive connection thereabout.

9. A multi-cell container comprising a pair of identical rectangular blanks of sheet metal, each blank having a multiplicity of I-slots arranged
 15 in parallel rows and columns, each I-slot having a base of length equal to its height, the tongues defined by said I-slots being bent at right angles to the plane of the blank, the two square plates being correlated with the tongues of one at right
 20 angles to those of the other, thereby to form a cellular structure open top and bottom, means bonding said walls into a unitary construction, separate means forming bottoms for the several cells, and a sheet of "Cellophane" sealing the
 25 open tops of the cells by adhesive connection thereabout, the blanks forming said top having longitudinal and transverse grooves, to define lines of severance for facility of opening any cell, without disturbing the seal of the other cells. 30

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