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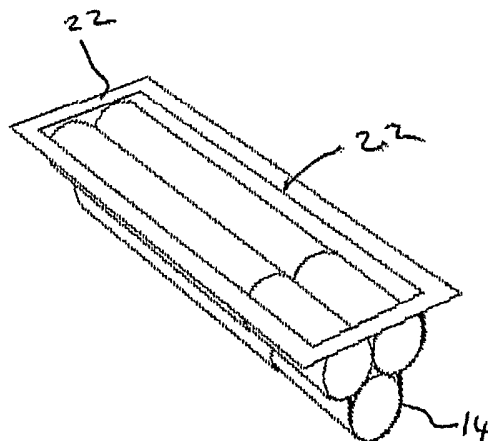
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(54) Title: PACKAGING OF ELONGATE ARTICLES



(57) Abstract: The invention relates to blister pack comprising a first blister tray formed with a plurality of trough formations in parallel, side-by-side relationship, each trough formation accommodate an array of two to ten smoking articles, with adjacent trough formations being spaced apart from one another by planar lands to which a peelable or rupturable backing film is laminated. The trough formations and backing sheet define a plurality of individually sealed compartments, each containing an array of smoking articles, with each array of smoking articles being individually accessible by rupturing or peeling away that portion of the backing film covering the array. The invention extends to different configurations of blister packs, and blister packs folded into cylindrical configurations to a closely packed array in which the trough formations are mutually nested together.

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Packaging of elongate articles

Field of the invention

This invention relates to the packaging of smoking articles, typically cigarettes, in sealed blister-pack type packages, the invention is more particularly concerned with
5 sealing an array of smoking articles within a single blister-pack compartment.

Background of the invention

Blister tray type packaging is known for many articles, including medical products, foodstuff and the like. However, such packaging is not used in some industries because of difficulty in packaging particular articles, or because the articles are not
10 considered suitable for this type of packaging.

Cigarettes are typically sold in packs of twenty or thirty cigarettes, typically within a crush-proof hinge-lid pack, or a crushable soft pack.

A light smoker or a smoker who is trying to give up smoking might not wish to purchase a full pack of cigarettes. However, cigarettes are not typically sold in small
15 numbers, other than in informal sale arrangements. Opening of packets and supplying cigarettes in small numbers is both unhygienic and can lead to the supply of inferior product.

Also, traditional cigarette products tend to be expensive to manufacture. This is because the machinery to assemble the packages and insert the cigarettes into each
20 package is extremely complex and costly. Such machines are also costly to maintain and require skilled operating staff to supervise manufacture. Since these costs are borne ultimately by consumers of the cigarettes, the complexity of the packaging process adds significantly to the cost of cigarettes to the consumer. It is also important that wasted space is minimised for bulk packaging of smoking articles since any wasted space will
25 decrease the bulk density of the packaged articles leading to an increase in transport and storage costs.

A further problem associated with the supply of cigarettes commercially to purchasers from an already opened cigarette pack is that the cigarettes thus supplied do not carry the type of health warning as is a legislated requirement in many countries.
30 Thus, such supply is technically illegal. Furthermore, a purchaser who wishes to purchase

only a few cigarettes at a time cannot do so from a vendor who uses a bar code or other electronic check out system because individual cigarettes supplied from an open packet do not carry the required bar code.

Summary of the invention

5 According to a first aspect of the invention there is provided a blister pack comprising a first blister tray formed with a plurality of trough formations in parallel, side-by-side relationship, each trough formation being shaped to accommodate an array of two to ten smoking articles, with adjacent trough formations being spaced apart from one another by planar lands to which a peelable or rupturable backing film is laminated
10 so as to define a plurality of individually sealed compartments, with each array of smoking articles being individually accessible by rupturing or peeling away that portion of the backing film covering the array.

 Preferably, trough-receiving recesses are defined between adjacent trough formations, the trough-receiving recesses being sized to receive second trough formations
15 of a second overlying blister tray in a snug complementary fit.

 In one form of the invention, the second blister tray forms part of a second separate blister pack.

 Alternatively, the first blister tray is hinged to the second blister tray.

 Lines of weakness may extend through adjacent planar lands and/or the backing
20 film for allowing the selective severing or opening of individual sealed compartments.

 Typically, the backing film is provided with film access means.

 The film access means may comprise a non-attached corner tag for allowing the film to be manually gripped prior to peeling.

 Alternatively, the film access means may comprise a blister tray having a peeling
25 recess spaced away from the planar level and defining an airgap for allowing the film to be manually gripped prior to peeling.

 The backing film may be laminated to the tray by means of a resealable adhesive adapted to allow access to be obtained to the smoking articles within the trough formation by peeling the backing film away from the tray, and resealing the backing film
30 to the tray.

Preferably the backing film of each sealed compartment has identification indicia printed thereon relating to the contents of the compartment. The indicia may be a bar code.

5 Preferably, each of the elongate trough formations terminate in minor planar end walls which are spaced apart from one another by a distance corresponding to the lengths of the smoking articles, so that the inner surfaces of the end walls serve to retain tobacco particles within the smoking articles.

10 The invention extends to a blister pack comprising a first blister tray defining a first trough and a first trough-receiving recess adjacent the first trough, a second blister tray hinged to the first blister tray along a fold line and defining a second trough directly opposite the first recess and a second trough-receiving recess directly opposite the first trough.

15 Conveniently, the blister pack is foldable between an open position and a closed position in which the first trough locates complementally within the second recess and the second trough locates complementally within the first recess.

20 Typically, the first blister tray defines a row of first troughs alternating with a row of first recesses, and the second blister tray defines a row of second troughs alternating with a row of second recesses, the rows of first and second troughs being arranged to interdigitate with one another when folded together. Preferably the troughs and recesses are substantially mirror images of each other such that when the first and second troughs are interdigitated with each other, a minimum of space exists between the first and second blister trays.

Conveniently, the first and second blister trays have planar substrates or lands and a peelable or rupturable backing film laminated to the planar substrates.

25 The troughs are preferably elongate troughs extending in a direction perpendicular to the fold line, the troughs being sized to accommodate an array of smoking articles.

30 Advantageously, a pair of parallel fold lines are provided, with the fold lines being spaced apart from one another by a distance corresponding to the depths of the compartments, such that the planar substrates are in opposed parallel relationship when the blister trays are folded together.

Preferably each of the trough formations are shaped so as to have a fluted configuration such that the inner surface of each trough defines a plurality of parallel elongate concave recesses adapted to receive and support said array of smoking articles in the trough formation in a closely stacked configuration.

5 Preferably the radius of curvature of each elongate concave recess is half the diameter of the smoking articles to be located in the trough formation.

Each trough formation may be of generally triangular, truncated triangular, trapezoidal or rectangular configuration so as to accommodate said array of smoking articles in a space efficient configuration.

10 According to a second aspect of the invention there is provided a package comprising a tray formed with a plurality of sub-trays, each sub-tray having a trough formation shaped to accommodate at least one elongate rod-like article, with adjacent trough formations being surrounded and spaced apart from one another by planar lands to which a peelable or rupturable backing film is laminated so as to define a plurality of
15 individually sealed compartments, with a fold line being defined in the land between each trough formation for allowing the sub-trays to be inwardly folded into a mutually nested position to define a cylindrical package, with the outer walls of the package being constituted by the backing film.

The package may be three-, four- or six-sided.

20 Preferably, the package is four-sided so as to define a rectangular cylindrical package.

Conveniently, the outermost sub-trays are provided with a retaining arrangement for allowing them to be joined together, the retaining arrangement typically being in the form of an adhesive marginal flap.

25 Optionally the package may itself be at least partially wrapped by an outer wrapping or sleeve.

Preferably, the trough formations are shaped to accommodate at least two rod-like articles. More preferably, in the case of a four-sided package, first and third trough formations are shaped to accommodate two articles in a side-by-side configuration, and

second and fourth trough formations are shaped to accommodate three articles in a triangular stacked configuration.

Mutual nesting is typically provided by convex radiused portions of the first and third trough formations nesting within concave radiused portions of the second and fourth through formations nesting recesses defined between the double and single layer of rod-like articles.

As a further alternative, in the case of a four sided package, first and third trough formations may be shaped to accommodate five articles in a 3:2 stacked configuration, and second and fourth trough formations may be shaped to accommodate six articles in a 3:2:1 stacked configuration.

Alternatively, a six-sided package may be provided with each of the six trough formations being shaped to accommodate three articles in a stacked configuration.

The fold lines may constitute lines of weakness by being scored or perforated for allowing the selective removal of individual sub-strays.

The invention extends to a smoking article pack comprising a blister pack with two to ten smoking articles such as a cigar or cigarette being accommodated in each trough.

The invention extends to a smoking article package comprising a self supporting tray formed of a thermo-plastic material defining an elongate trough formation containing an array of between two and ten smoking articles, said trough formation being contiguous with and surrounded by a planar land, and a peelable or rupturable backing film laminated to said planar land so as to encapsulate said array of smoking articles in said trough formation, said array of smoking articles being accessible by rupturing or peeling away the backing film from the tray.

The smoking articles are typically in a nested configuration within each trough formation and, in the case of a multi-layer array, the articles preferably progressively decrease by one from a base layer upwards.

The backing film may be laminated to the lands by any bonding method, such as gluing or heat sealing, as well as by a co-extrusion process. A resealable adhesive may be

used for bonding to enable individual smoking articles to be removed from a sub-tray, and the backing film resealed to the blister tray.

Brief description of the drawings

5 Figure 1 shows a top plan view of a first embodiment of a blister pack of the invention;

Figure 2 shows a cross-section of the line 2-2 of Figure 1;

Figures 3 and 3A show perspective views of details of variations of film access means forming part of the blister pack of the invention;

10 Figure 4 shows a perspective view of a single package holding three cigarettes with the backing film removed from the tray.

Figure 5 shows an opened out plan view of a second embodiment of a blister pack of the invention;

Figure 6 shows a side view of the blister pack of Figure 5 in the partly open position;

15 Figure 7 shows a perspective view of the blister pack of Figure 5 in a closed position;

Figure 8 shows a cross-section on the line 8-8 of Figure 7;

Figures 9 to 13 show detailed cross-sectional views of different embodiments of the invention;

20 Figure 14 shows a top perspective view of another embodiment of a blister package of the invention in a partly opened out position;

Figure 15 shows a sectional top plan view of the package of Figure 14 when filled with smoking articles;

25 Figure 16 shows a sectional top plan view of the package of Figure 15 in the closed position, and

Figure 17 shows a partly schematic top perspective view of the package of Figure 16.

Detailed description of the embodiments

Referring now to figures 1 and 2, a blister pack 10 comprises a transparent blister tray 12 which is vacuum formed from a sheet of clear PVC having a thickness of between about 180 and 250 microns. The blister tray 12 defines a plurality of trough formations 14.1 to 14.5 which are dimensioned to accommodate an array of three conventional cigarettes 16 each having a length of 85 mm and a diameter of 8 mm, with opposed ends of the cigarette abutting opposed planar end faces 18 and 20 of each trough formation so as to prevent particles of tobacco from being dislodged from the tip of each cigarette.

Extending between each trough formation 14.1 to 14.5 are planar land zones 22. The planar land zones 22 extend between adjacent troughs, as well as beyond the opposed end faces 18 and 20 of the trough. Each trough formation 14 comprises radiused portions 15a, 15b, 15c, which have a radius of curvature of about 4 mm, corresponding to the cigarette radii to provide a snug complementary fit. A peelable backing film 24 is co-extruded with the planar land end, in conjunction with the trough formations 14.1 to 14.10, defines a plurality of sealed compartments 26, providing an air-and water-tight housings for the cigarettes 16. The backing film or web is typically formed from a coated polyethylene having thickness of approximately 60 microns. The film is a multi-layer very high moisture barrier film which is peelable across the full seal range. It is manufactured by LMG Smith Brothers under film designation Y 577/2, and has the following data sheet:

Film Designation Y 577/2

Description

A blown, co-extrudable, polyethylene multi-layer very high moisture barrier film which is peelable across the full seal range, and which provides a peelable seal to a PVC base.

Sealing Details:

Seal type: constant heat

Sealing range: 80° - 100°C

Physical appearance:

Appearance: Matt

Colour: full white

Opacity 60 = 5%

Gauge Range:

Film is available in the range of 37- 100 microns.

5

Technical Data:

	Tolerance:	Method:	Nominal
Gauge	$\pm 12\%$	Micrometer	60 Microns
Yield	$\pm 5\%$	Analytical	17.6M ² /Kg
O ₂ Permeability		Oxtrans	>1500ccM ² /Day
WVTR		EPS Dynamic WVTR(38°C and 90% RH)	<3,5gms/M ² /Day

In an alternative embodiment, the top web may include a physically stable, non-stretch multilayered printed film or rollstock material, such as a 12 micron Polyester layer laminated to a 40 micron Bynel sealant layer that provides a peelable seal to the base web. The clear Bynel layer allows for printing of further health warnings on the reverse side of the polyester. This construction may be further enhanced with a metallised layer of polyester that improves the moisture barrier and further allows for high quality print of health warning on both sides of the lidding. An adhesive may be further applied to facilitate the reclosure of the pack after peeling.

In a further embodiment, a lower cost construction includes a base web of a low cost thermoformable film or roll stock material using a non-stretch multilayered construction of nylon and polyethylene, such as a 50 micron material supplied by Astrapak Barrier Films Division in Benoni, South Africa.

The top or cover web may include a non-stretch film or roll stock material using a 12 micron polyester laminated to a 40 micron Bynet® sealant layer for a peelable lidding to the base web.

5 A series of parallel perforations 28 are formed through both the planar land zones 22 of the blister tray and the film 24. The perforations 28 are exactly midway between and parallel to the adjacent troughs, and are perpendicular to the side edges 30 and 32 of the blister pack. This allows one or more blister pack strips to be selectively torn from the remaining strips.

10 In order to enable the film 24 to be peeled off more easily from the undersurface of the planar land, a corner-piece 36 of the film is not attached, so as to provide a lifting tab for peeling off the film. Each strip is provided with a similar non-attached lifting tab 36.

15 Referring now to Figure 3A, an underside perspective detail of an alternative embodiment is shown in which the planar land 24 is formed with a recessed rib 38 adjacent the edge of the blister pack and defining a space 40 providing access to the film for allowing it to be peeled away from the blister tray. As the perforations 28 extend both through the blister tray and through the film, instead of tearing off a strip 34, it is possible to leave the strip in place and gain access to one of the cigarettes 16 merely by tearing off a strip 42 of the film. As a further alternative, each of the planar land zones surrounding
20 each trough may be formed with a frangible corner piece 43 which can be broken away to enable the overlying corner piece of the film 36 to be gripped.

In Figure 4, a standalone blister tray defines a single trough formation 14.1, housing an array of three cigarettes in a snug complementary fit.

25 Referring now to Figure 5 to 7, a still further preferred embodiment 44 of a blister pack is shown comprising first and second blister trays 46 and 48 which are hinged to one another on spaced parallel and perforated hinge lines 50 and 52 defining between them an end wall 54. Marginal perforated lines 56 and 58 parallel to the perforated lines 50 and 52 and are formed towards the free ends of the blister pack, which terminate in sealing flaps 60 and 62. The planar web of the first blister tray 46 is cut short at 64, thereby exposing
30 the film 60, which may have a tacky surface. The blister pack 44 is foldable between an open position indicated in Figure 5 to a closed position indicated in Figure 7, in which it

forms a complete closed pack with the tacky surface of the sealing flap adhering to the sealing flap 62 so as to define a closed pack.

The first blister tray is formed with five troughs 66.1 to 66.5, which alternate and are spaced apart by first rough-receiving recesses 68.1 to 68.5. The second blister tray 48
5 is similarly formed with five troughs 70.1 to 70.5 which are often offset relative to the troughs 66.1 to 66.5 and which alternate with second trough-receiving recesses 72.1 to 72.5. It is clear from the drawing how the first troughs 66.1 to 66.5 are directly opposite and are symmetrical with the respective second trough-receiving recesses 72.1 to 72.5 about an axis of symmetry 74. Similarly, the second troughs 70.1 to 70.5 are symmetrical
10 with the corresponding first trough-receiving recesses 68.1 to 68.5. As a result of this structure, and as is clear from Figure 8, the first row of troughs 66.1 to 66.5 nest snugly within the second row of trough-receiving recesses 72.1 to 72.5 and the second row of troughs 70.1 to 70.5 form a snug complementary fit within the row of recesses 68.1 to 68.5, with the first and second rows of troughs being interdigitated.

The resultant structure of the closed blister pack 44 is relatively compact and rigid. Further, it provides a number of different options for accessing cigarettes. As a first option, the overall integrity of the blister pack 44 may be retained, and laminated strips of film 76 may be selectively removed so as to gain access to the cigarettes within the trough. As a second option, the entire pack may be opened and disassembled either by
20 separating the marginal flaps from one another, by tearing the pack along the perforated lines 56 and 58, or along the perforated hinge lines 50 and 52. If the pack is torn along both the marginal perforated lines 56 and 58 and the perforated hinge lines 50 and 52, then the two blister trays 46 and 48 are completely separated into separate rows, as per the Figure 1 embodiment. Cigarettes can then be distributed either singly or in groups by
25 selectively tearing along the perforated lines 28. The blister pack 44 may be enclosed by means of a sleeve having the form of an open-ended rectangular cylinder.

In a further embodiment of the invention, two blister trays 10 may be stacked on top of one another with the trough formations of the overlying blister tray nesting within the trough-receiving recesses defined between the adjacent trough formations 14.1 to
30 14.6 as is shown in Figure 8. The two overlying blister packs may then be packaged in an overwrap film or a box or a sleeve. The overwrap film, or box or sleeve preferably has

identification indicia in the form of a bar code or the like printed thereon to enable the entire contents of the package to be identified in a bar code check out system.

In a still further embodiment, a hinged blister pack 44 of the type illustrated in Figure 5 may be provided with a single hinge line corresponding to the axis of symmetry 74, as a result of which the first and second blister trays 46 and 48 can be folded back-to-back with their planar undersurfaces in direct contact with one another. For the purposes of double-layer compact packaging, blister packs 10 of the type illustrated in Figure 1 may then be laid over the exposed troughed surfaces so as to achieve a double layer.

In place of a peelable film, a rupturable film may also be used as a backing film. This may be in the form of a 12 to 30 micron hard aluminium foil film of the type manufactured by Alusuisse. The film is lacquer coated on its operatively inner side to enable it to be laminated to the lands of the blister tray. The opposite exposed face of the metallic film or foil is able to receive printing for advertising purposes. A rupturable film of this type is sufficiently strong and flexible to ensure that the cigarettes are maintained within the blister pack, while at the same time being able to rupture relatively easily by pressure of the cigarette caused by finger pressure on the opposite side of the deformable trough, without deforming the cigarette unduly. The blister pack of the invention is ideally suited to an economical and high speed and typically continuous manufacturing process.

Turning now to figures 9 to 13 of the drawings, the manner in which different configurations of packages are interleaved together is shown in more detail. It will be noted that the trough receiving recesses 80, 82, 84, 86, 88 and 90 in each case are shaped so as to receive the respective troughs 92, 94, 96, 98 and 100 of the underlying pack therein, and visa versa. The result is that when the troughs of the overlying pack are pressed fully into the trough receiving recesses in the tray below a snug fit between the two layers is achieved thereby ensuring that there is a minimum of waste of space in the finished pack. It is important that wasted space is minimised for bulk packaging of smoking articles since any wasted space will decrease the bulk density of the packaged articles leading to an increase in transport and storage costs.

Figures 9 to 13 show a series of different configurations of arrays, but it will be understood that other arrangements are also possible. It is considered important that the

trays are relatively robust to allow for the shearing of the individual packages from the tray, so the preferred configurations are an optimisation of space efficiency, manufacturing simplicity, packaging simplicity, and structural integrity.

Figure 9 depicts the manner in which six unit packages will be interleaved, figure
5 10 depicts the manner in which 5 unit packages will be interleaved, figure 11 depicts the manner in which 2 unit packages will be interleaved, figure 12 depicts an alternative manner in which 3 unit packages will be interleaved, and figure 13 depicts the manner in which 10 unit packages will be interleaved.

Clearly certain of the arrangements shown in figures 8 to 13 have a greater
10 efficiency in bulk density and/or efficient use of packaging materials than other arrangements. Some arrangements are preferable from a manufacturing and/or cigarette handling point of view. It is envisaged that the package of three articles and six articles will be most efficient in terms of use of materials and space, but the other configuration will operate in practice.

15 It is preferred that the internal surface of the trough formations are contoured to receive the smoking articles. As will be clear from the drawings, each of the trough formations is of a generally fluted configuration defining a series of concave shaped elongate recesses 102 which support the smoking articles along their full length and assist in holding the smoking articles in their optimal array configurations. The concave
20 recesses 102 will have radius of curvature which is half the diameter of the smoking articles to be located therein. For conventional cigarettes, having a diameter of 8mm, the radius of curvature of the recesses will thus be approximately 4mm. The internal contour configuration of the trough formation will ensure that when the smoking articles are located in the trough formations during packaging the smoking articles will align
25 naturally in the most space efficient configuration within the trough formation. The fluted configuration of the troughs will also serve to rigidify the troughs ensuring that the smoking articles are protected against damage during transportation.

Referring now to Figures 14 and 17 a blister package comprises a transparent
blister tray 110 which is vacuum formed from a sheet of clear PVC having a thickness of
30 between about 180 and 250 microns. The blister tray 110 is folded into an adjoining array of four sub-trays 112, 114, 116 and 118 formed with corresponding trough formations

112.1, 114.1, 116.1 and 118.1. The trough formations 112.1 and 116.1 are dimensioned to accommodate an array of three conventional cigarettes 120 in a triangular formation, and the trough formations 114.1 and 118.1 are arranged to accommodate an array of two conventional cigarettes 121 alongside one another. Each cigarette typically has a length of 85 mm and a diameter of 8 mm, with opposed ends of the cigarette abutting opposed planar end faces 122 and 124 so as to prevent particles of tobacco from being dislodged from the tip of each cigarette.

Extending between and surrounding each trough formation 112.1 to 118.1 are planar land zones 112.2 to 118.2. Adjacent land zones are joined along parallel scored fold lines 126, 128 and 130. An adhesive flap 132 extends along the free edge of the land zone 112.2. As is clear from Figure 15, a peelable backing film 34 extends across and is peelably bonded to the outer surface of the land zones to define a series of sealed pockets providing air-and water-tight housings for the cigarettes. The backing film or web is typically formed from a coated polyethylene having thickness of approximately 60 microns. The film is a multi-layer very high moisture barrier film which is peelable across the full seal range.

In Figure 16, it can be see how the sub-trays are folded inwardly along the fold lines 126, 128 and 130 to form a rectangular four sided cylindrical package 136 with the trough formations nesting snugly together in a compact self-supporting arrangement. In particular, it can be seen how the concavely radiused portion of the troughs 112.1 and 116.1 nest within the complementally convexly radiused portions of the troughs 114.1 and 118.1. The package is held together by virtue of the adhesive flap 132 adhering to the opposite outer or inner face alongside the edge of the land zone 118.2. The planar land zones 122 extend between adjacent troughs, as well as beyond the opposed end faces 18 and 20 of the trough.

The backing film may be of the type previously described.

A series of parallel perforations may be used to define the fold lines 126, 128 and 130. This has the advantage of allowing individual sub-trays to be selectively torn away from the remaining sub-trays. The perforations are formed through both the planar land zones of the blister tray and the peelable film. It will be appreciated in particular from Figure 16 how the planar lands adjacent the three cluster troughs are broader than the

two- cluster troughs. This allows for the snugly nested configuration shown most clearly in Figure 16.

In order to enable the film to be peeled off more easily from the surface of the planar land, a corner-piece 138 of the film is not attached, so as to provide a lifting tab
5 for peeling off the film. Each strip may be provided with a similar non-attached lifting tab 138. As a further alternative, each of the planar land zones surrounding each trough may be formed with a frangible corner piece 140 which can be broken away to enable the overlying corner piece of the film 136 to be gripped.

In place of a peelable film, a rupturable film may also be used as a backing film.
10 This may be in the form of a 12 to 30 micron hard aluminium foil film of the type manufactured by Alusuisse. The film is lacquer coated on its operatively inner side to enable it to be laminated to the lands of the blister tray. The opposite exposed face of the metallic film or foil is able to receive printing for advertising purposes. A rupturable film of this type is sufficiently strong and flexible to ensure that the cigarettes are maintained
15 within the blister pack, while at the same time being able to rupture relatively easily by pressure of the cigarette caused by finger pressure on the opposite side of the deformable trough, without deforming the cigarette unduly.

It will be appreciated that the blister pack of the invention provides a convenient means of supplying smoking articles in small numbers whilst fulfilling requirements for
20 health warnings as may be required in many jurisdictions. Each individual sub-tray or compartment may carry a health warning. Thus, where a vendor sells individual sub-trays to a purchaser, that purchaser will still have the health warning message in view at the time the backing film is removed from the tray. Indeed, the underside of the backing film may have additional health information printed thereon, such as a more detailed health
25 message, so as to ensure even the most stringent health warning requirements are met. In addition, where the smoking articles are provided in a pack with a wrapping or sleeve surrounding the pack, that wrapping or sleeve may have whatever health warning message as might be required printed thereon. The wrapping or sleeve will have sufficient surface area for a comprehensive message.

30 The backing sheet will also have sufficient space to enable the manufacturer to print product information and brand and logo indicia thereon.

A further advantage of the invention is that each individual compartment or sub-tray will be able to carry bar coding or other identification indicia thereon (such as for example an electronic tag or the like), to enable the individual compartments or sub-trays to be identified in an electronic check out system, or tracked for audit purposes. This is advantageous for a number of reasons. One reason, for example, is that proper identification ensures that all product is accounted for. Also, for revenue collection purposes, a proper identification system enables revenue authorities to cross check sales and receipts against anticipated revenue to ensure all sales have the appropriate tax levied. Where cigarettes and the like are sold individually or in small numbers out of an opened packet the possibilities for tax fraud, and theft, increase significantly. The present invention allows both a full wrapped package, and individual sub-trays to be properly labelled, thereby reducing the opportunities for the aforementioned theft and tax evasion.

As shown in Figure 17, bar coding 142 is provided on the adhesive flap 136, not the individual sub-trays 112, 114, 116, and 118. Those sub-trays each have their own identifying bar codings 144, 146 which typically could be printed on the underside or obverse side of the backing sheet. The bar codings 144, 146 would be easily read through the transparent plastics material of the blister tray 110.

In a similar fashion, health warning may be printed on the outside face 148 of the package 136, on each, or certain of the rectangular faces of the package since the outer face is of relatively large area, and has four separate rectangular panels at least one of which could be used for a comprehensive message. The underside of obverse side of the backing sheet can carry a health warning for each one of the sub-trays, so that each sub-tray, even when separated from its adjacent trays, carries a health warning, fully readable when the backing film is peeled away from the blister tray 110, and readable through the transparent blister tray, from side 150, even when bonded to the tray.

It will be understood that the invention disclosed and defined herein extends to all alternative combinations of two or more of the individual features mentioned or evident from the text or drawings. All of these different combinations constitute various alternative aspects of the invention.

The foregoing describes embodiments of the present invention and modifications, obvious to those skilled in the art can be made thereto, without departing from the scope of the present invention.

CLAIMS:

1. A blister pack comprising a first blister tray formed with a plurality of trough formations in parallel, side-by-side relationship, each trough formation being shaped to accommodate an array of two to ten smoking articles, with adjacent trough
5 formations being spaced apart from one another by planar lands to which a peelable or rupturable backing film is laminated so as to define a plurality of individually sealed compartments, with each array of smoking articles being individually accessible by rupturing or peeling away that portion of the backing film covering the array.

2. A blister pack according to claim 1 wherein trough-receiving recesses are
10 defined between adjacent trough formations, the trough-receiving recesses being sized to receive adjacent or overlying trough formations in a complementary fit.

3. A blister pack according to either one of the preceding claims in which lines of weakness extend through adjacent planar lands and/or the backing film for allowing the selective severing or opening of individual sealed components.

4. A blister pack according to any one of the preceding claims in which the
15 backing film is provided with film access means.

5. A blister pack according to claim 4 in which the film access means comprises a non-attached corner tag for allowing the film to be manually gripped prior to peeling.

6. A blister pack according to claim 4 in which the film access means
20 comprises a blister tray having a peeling recess spaced away from the planar level and defining an airgap for allowing the film to be manually gripped prior to peeling.

7. A blister pack according to any one of the preceding claims wherein the backing film is laminated to the tray by means of a resealable adhesive adapted to allow
25 repeated access to be obtained to the smoking articles within the trough formation by peeling the backing film away from the tray, and resealing the backing film to the tray to provide a resealed compartment for the remaining smoking article.

8. A blister pack according to any one of the preceding claims which each of the elongate trough formations terminate in a minor planar end walls which are spaced
30 apart from one another by a distance corresponding to the lengths of the smoking articles,

so that the inner surfaces of the end walls serve to retain tobacco particles within the smoking articles.

9. A blister pack according to any one of the preceding claims wherein a first blister tray includes a first trough-receiving recess adjacent the first trough, a second blister tray hinged to the first blister tray along a fold line and defining a second trough directly opposite the first recess and a second trough-receiving recess directly opposite the first trough.

10. A blister pack according to claim 9 which is foldable between an open position and a closed position in which the first trough locates complementally within the second recess and the second trough locates complementally within the first recess.

11. A blister pack according to claim 10 in which the first blister tray defines a row of first troughs alternating with a row of first recesses, and the second blister tray defines a row of second troughs alternating with a row of second recesses, the rows of first and second troughs being arranged to interdigitate with one another when folded together.

12. A blister pack according to any one of claims 9 to 11 which includes at least one pair of parallel fold lines, with the fold lines being spaced apart from one another by a distance corresponding to the depths of the compartments, such that the planar substrates are in opposed parallel relationship when the blister trays are folded together.

13. A blister pack according to any one of the preceding claims wherein each of the trough formations are shaped so as to have a fluted configuration such that the inner surface of each trough defines a plurality of parallel elongate concave recesses adapted to receive and support said array of smoking articles in the trough formations in a closely stacked configuration.

14. A blister pack according to any one of the preceding claims wherein the radius of curvature of each elongate concave recess is half the diameter of the smoking articles to be located in the trough formation.

15. A blister pack according to any one of the preceding claims wherein each trough formation is of generally triangular, truncated triangular, trapezoidal or rectangular

configuration so as to accommodate said array of smoking articles in a space efficient stacked configuration.

16. A blister pack according to any one of the preceding claims, wherein at least one trough formation is shaped to accommodate at least three smoking articles in a multi-layer array, with the number of articles in each stacked layer progressively increasing by one from an innermost layer at the base of the trough formation.

17. A blister pack comprising a blister tray formed with a trough formation shaped to accommodate an array of at least three smoking articles, with said trough formation being surrounded by a planar land to which a peelable or rupturable backing film is laminated so as to define an individually sealed compartment with said array of smoking articles being individually accessible by rupturing or peeling away that portion of the backing film covering the array, the array of smoking articles being arranged in at least two layers, with the number of smoking articles in each layer progressively decreasing by one, with the walls of the trough being fluted to accommodate the smoking articles in a snug complementary fit.

18. A blister pack according to claim 17 wherein three cigarettes are accommodated in the trough in a 2:1 stacked configuration.

19. A package comprising a tray formed with a plurality of sub-trays, each sub-tray having a trough formation shaped to accommodate at least one smoking article, with adjacent trough formations being surrounded and spaced apart from one another by planar lands to which a peelable or rupturable backing film is laminated so as to define a plurality of individually sealed compartments, with a fold line being defined in the land between each trough formation for allowing the sub-trays to be inwardly folded into a mutually nested position to define a cylindrical package, with the outer walls of the package being constituted by the backing film.

20. A package according to claim 19 which is four-sided so as to define a rectangular cylindrical package.

21. A package according to claim 19 which is three- or six-sided.

22. A package according to any one of claims 19 to 21 wherein the outermost sub-trays are provided with a retaining arrangement for allowing them to be joined

together, the retaining arrangement preferably being in the form of an adhesive marginal flap.

23. A package according to any one of claims 19 to 22 which is at least partially covered by an outer wrapping or sleeve.

5 24. A package according to any one of the preceding claims 19 to 23 wherein adjacent trough formations are shaped to accommodate different numbers of smoking articles.

25. A package according to claim 20 in which first and third trough formations are shaped to accommodate two articles in a side-by-side configuration, and second and
10 fourth trough formations are shaped to accommodate three articles in a triangular stacked configuration.

26. A package according to claim 25 wherein mutual nesting is provided by convex radiused portions of the first and third trough formations nesting within concave radiused portions of the second and fourth trough formations, the nesting recesses being
15 defined between the double and single layers of rod-like articles.

27. A package according to claim 20 in which first and third trough formations may be shaped to accommodate five articles in a 3:2 stacked configuration, and second and fourth trough formations may be shaped to accommodate six articles in a 3:2:1 stacked configuration.

20 28. A package according to claim 21 in which the six-sided package is provided with six depending trough formations, with each of the six trough formations being shaped to accommodate three articles in a stacked configuration.

29. A smoking article package comprising a self supporting tray formed of a thermo-plastic material defining an elongate trough formation containing an array of
25 between two and ten smoking articles, said trough formation being contiguous with and surrounded by a planar land, and a peelable or rupturable backing film laminated to said planar land so as to encapsulate said array of smoking articles in said trough formation, said array of smoking articles being accessible by rupturing or peeling away the backing film from the tray.

30. A smoking article package according to claim 29 wherein the smoking articles are in a nested configuration within each trough formation, and, in the case of a multi-layer array, the articles progressively decrease by one from an innermost base layer at the base of the trough upwards.

5 31. A smoking article package according to any one of the preceding claims 19 to 28 which includes a global price code for the entire package which is accessible by a reader when the package is intact, and a series of subsidiary price codes on each of the side trays which is only accessible by a reader when the package is opened.

10 32. A smoking article package according to claim 31 wherein the global price code is rendered unusable on opening of the package.

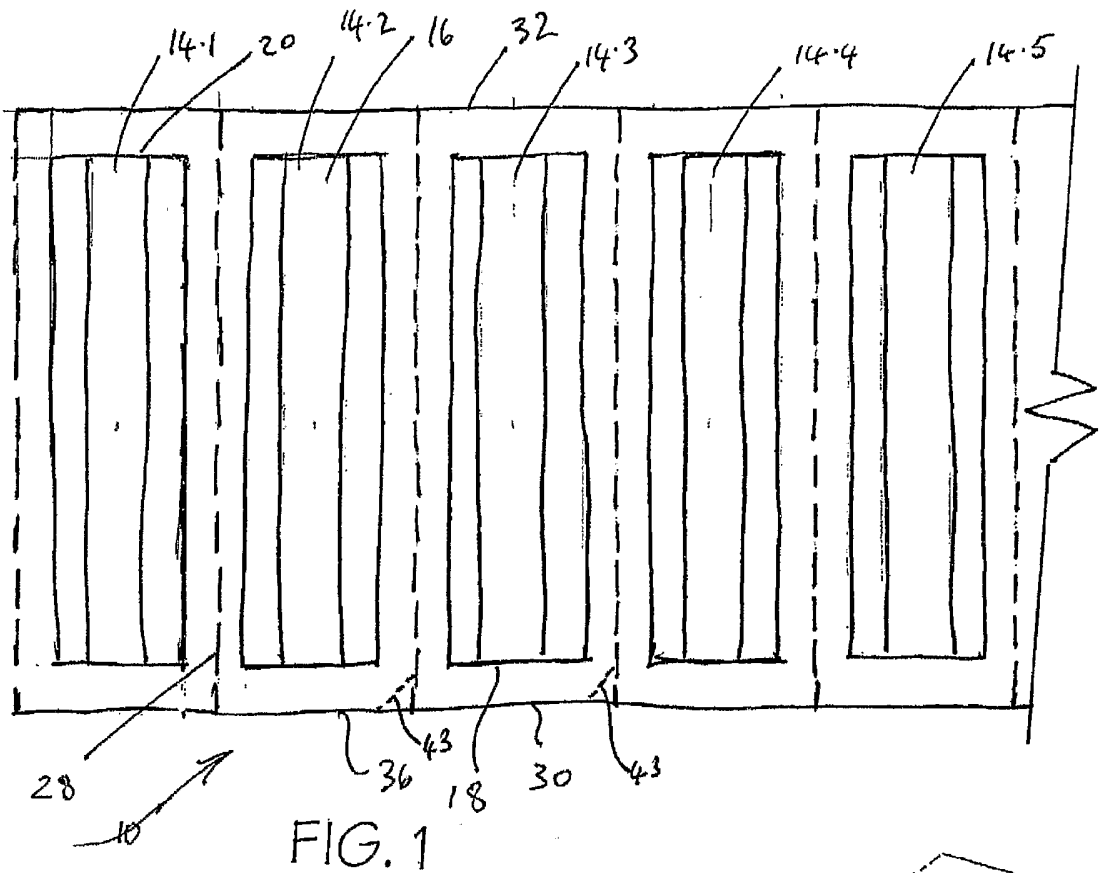


FIG. 1

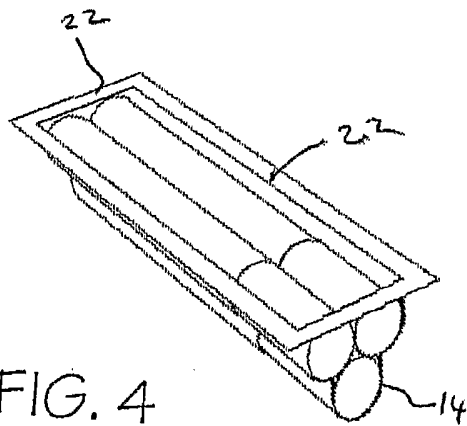


FIG. 4

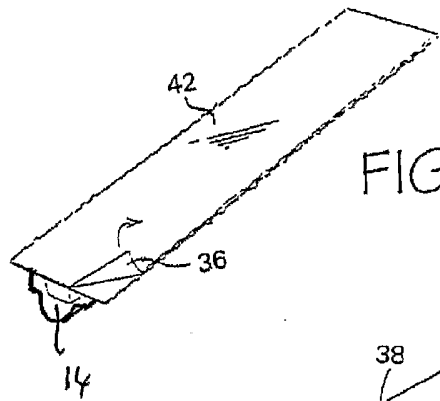


FIG. 3

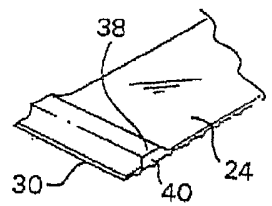


FIG. 3A

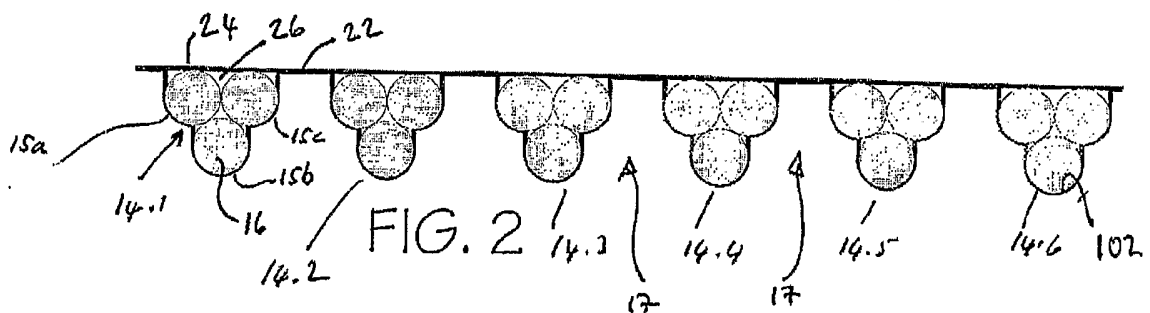


FIG. 2

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FIG. 5

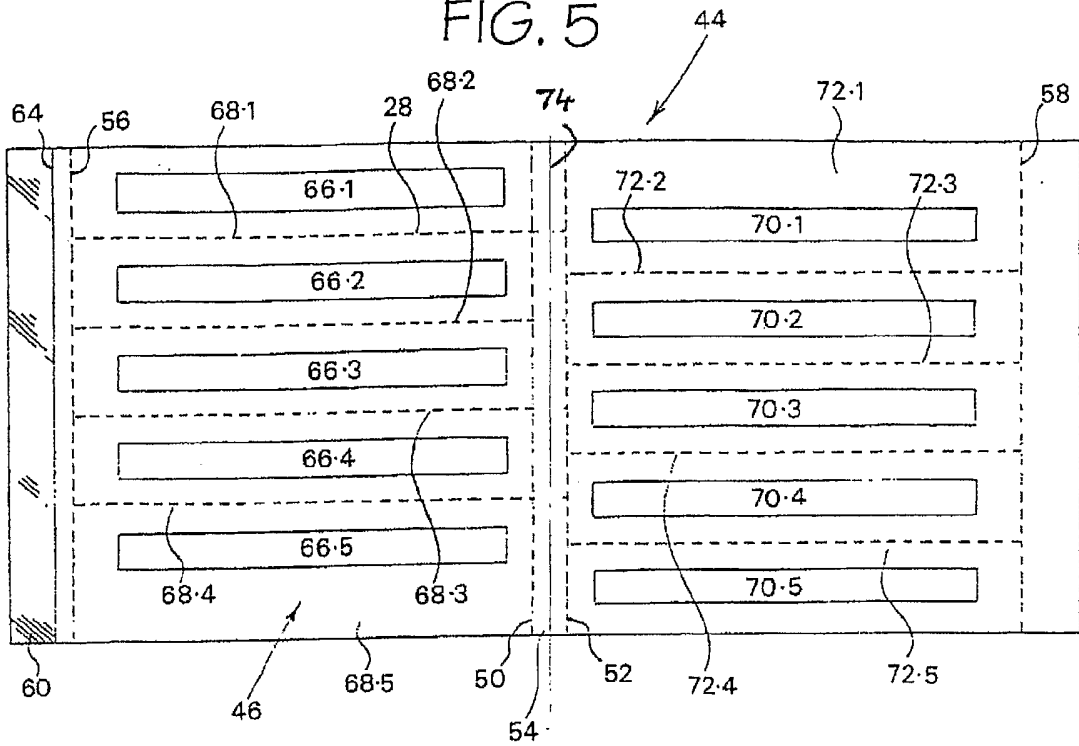


FIG. 6

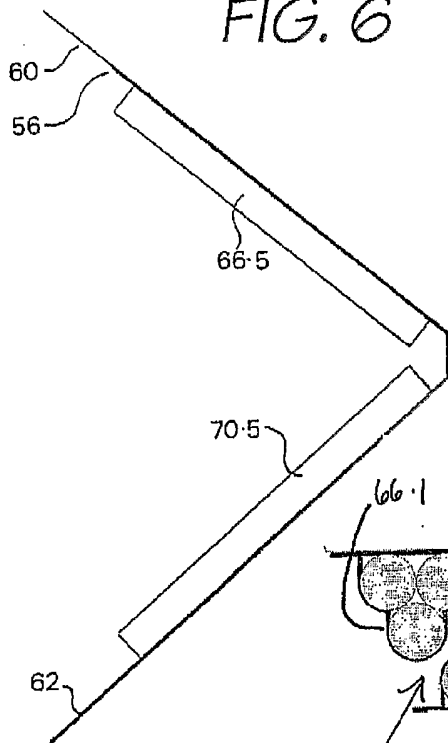
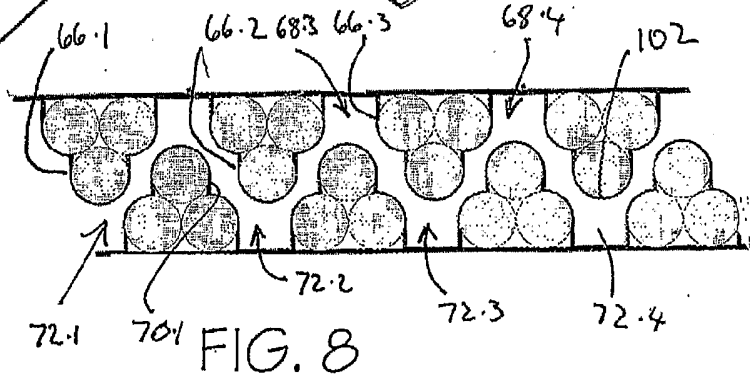
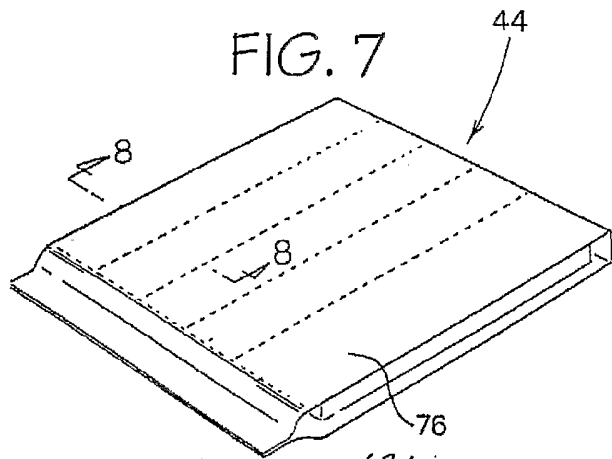


FIG. 7



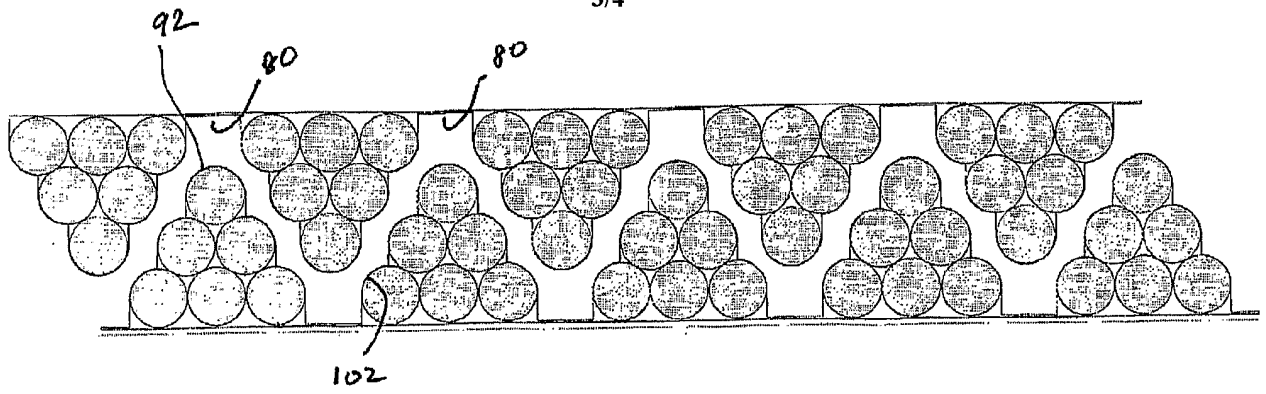


FIG. 9

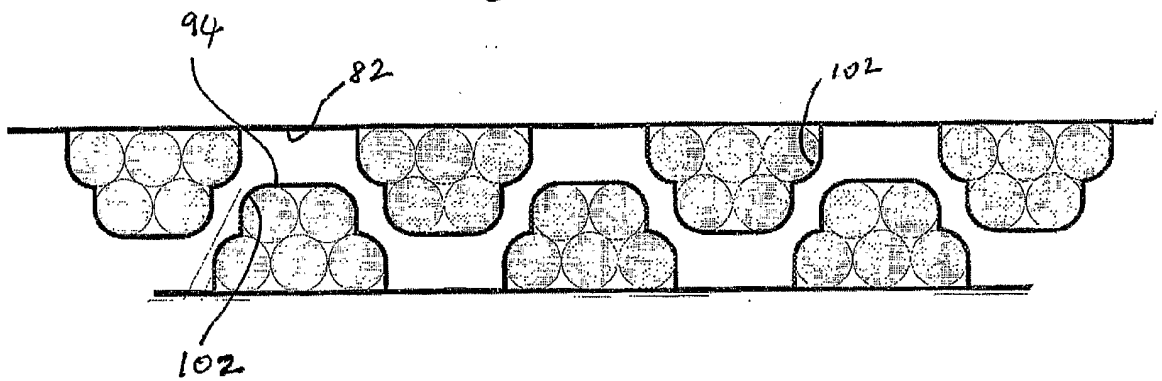


FIG. 10

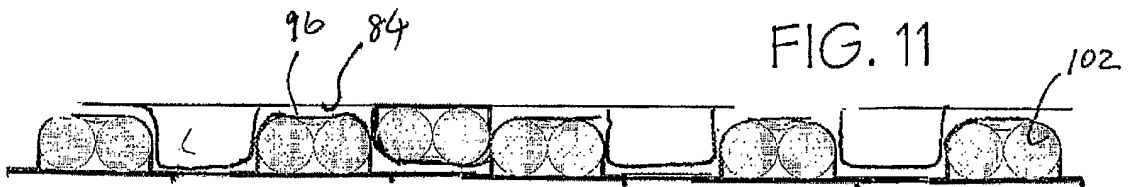


FIG. 11

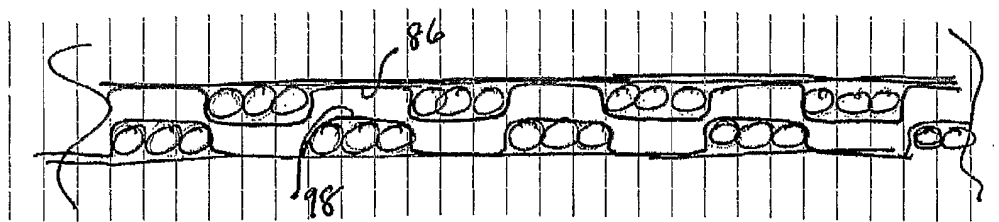


FIG. 12

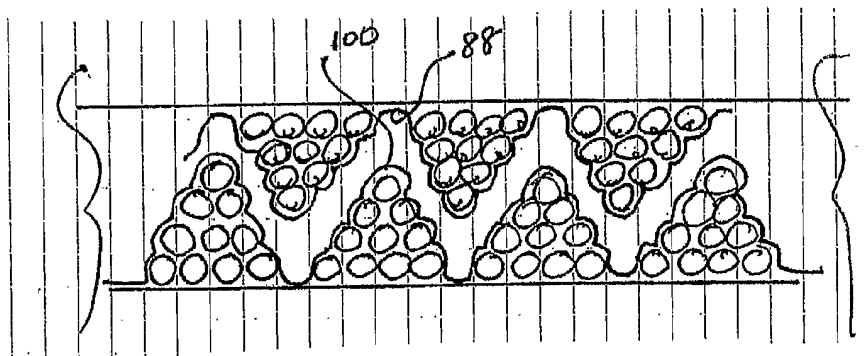


FIG. 13

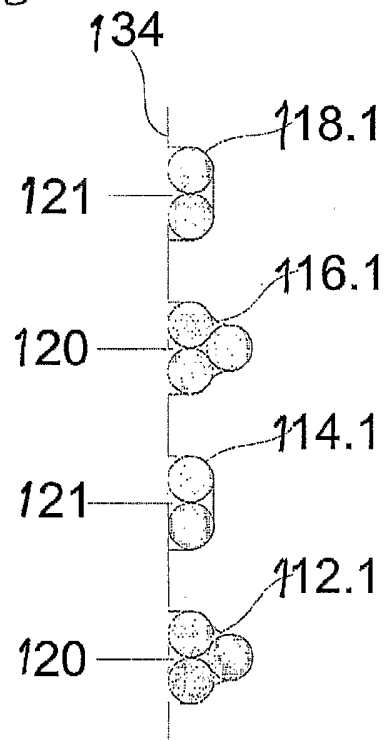
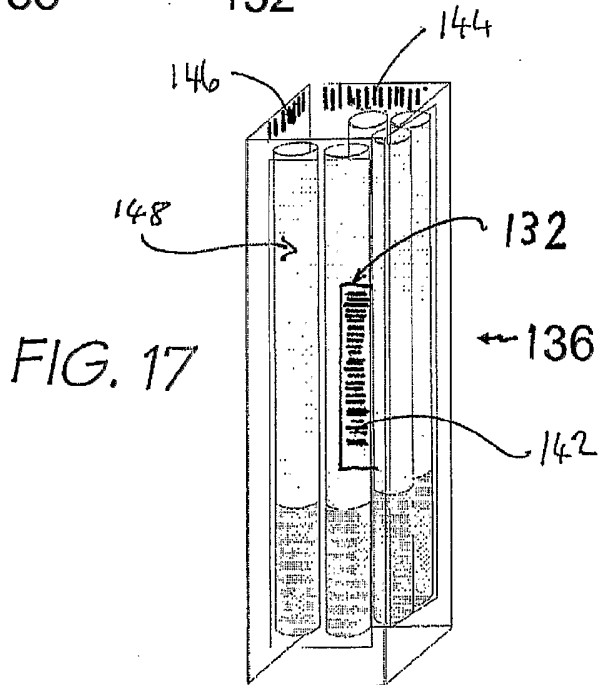
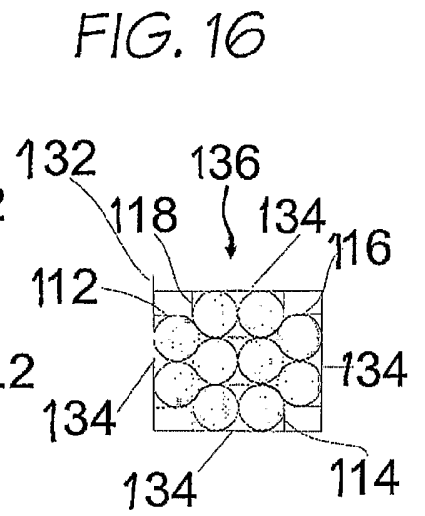
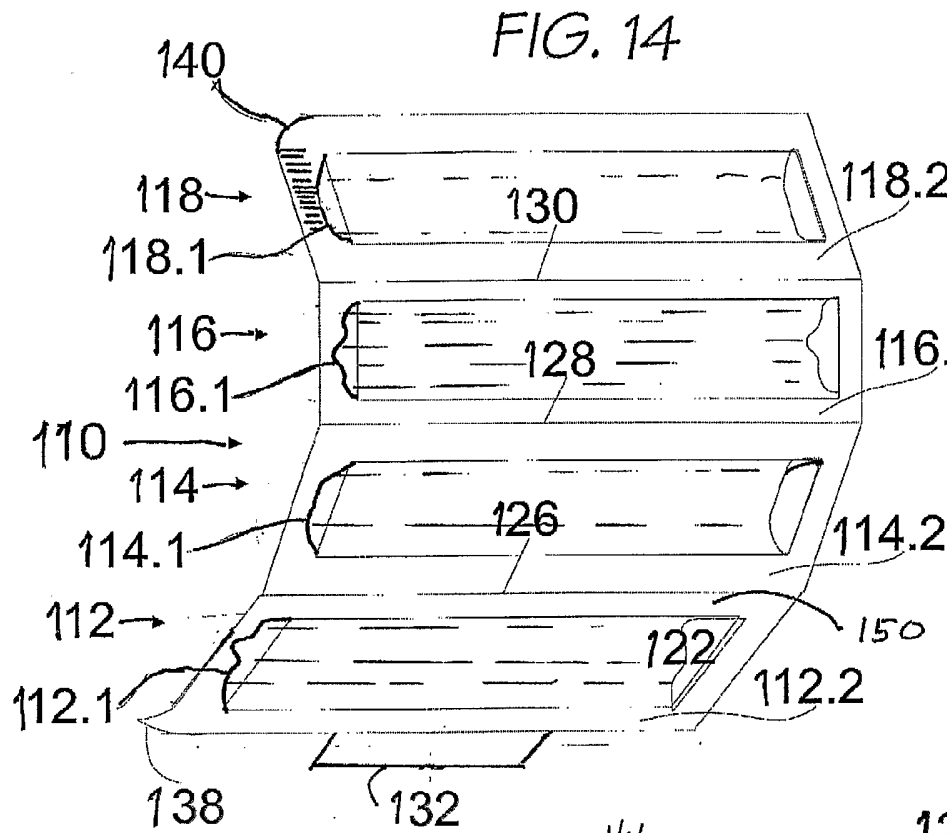


FIG. 15