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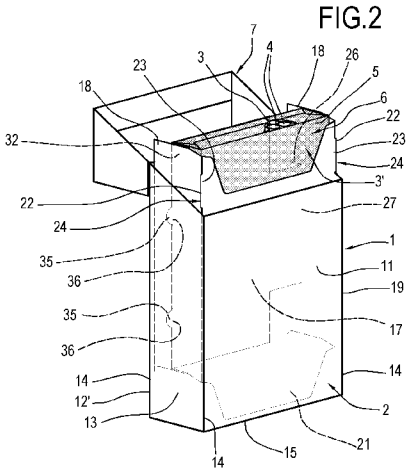
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(54) Title: CIGARETTE PACKET AND METHOD FOR ITS PRODUCTION

FIG.2



(57) Abstract: Described is a cigarette packet (1; 1') comprising a container (2; 2') for housing at least one group (3) of cigarettes (4), having a lid (7; 7'), a bottom wall (10; 10'), two large side walls (11, 12; 11', 12', two small side walls (13; 13'), and an inner frame (16; 37; 73; 79) having at least one front wall (17; 40, 40') and at least two side walls (18; 41, 41') integral with respective lateral edges of each front wall (17; 40, 40'); the at least one group (3) of cigarettes (4) has a thickness, measured perpendicularly to the two large side walls (11, 12; 11', 12') of the container (2; 2'), which is less than the thickness of the container (2; 2') in the same direction and the inner frame (16; 37; 73; 79) has, relative to each front wall (17; 40, 40'), a rear wall (28; 52, 52') which is connected by a first lateral edge of it to an edge of a first side wall (18; 41, 41') of the inner frame (16; 37; 73; 79); each rear wall (28; 52, 52') is spaced from the respective front wall (17; 40, 40') by a length approximately equal to the thickness of the respective group (3) of cigarettes (4), and locking means (35; 57, 57'; 36; 58, 58'; 72; 78) being provided for locking the rear wall (28; 52, 52') to a respective side wall (18; 41, 41') of the inner frame (16; 37; 73; 79).

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DESCRIPTION

CIGARETTE PACKET AND METHOD FOR ITS PRODUCTION

Technical field

This invention relates to a cigarette packet and to a method for its production.

In this specification, for brevity and without the invention thereby losing in generality, reference is made to a rigid packet of cigarettes with hinged lid.

Background art

Rigid, hinged-lid packets for cigarettes are currently the cigarette packets of the most widespread type on the market because they are simple to make, easy and practical to use and provide good mechanical protection for the cigarettes they contain.

A rigid, hinged-lid packet for cigarettes comprises a group of cigarettes wrapped in a sheet of metallized paper and a rigid outer receptacle which houses the group of cigarettes. The outer receptacle comprises a concave container, which houses the group of cigarettes and has an open top end, and a cup-shaped lid, also concave, joined to the container along a hinge line allowing it to rotate relative to the container itself between an open position and a closed position where the open top end is closed. Usually, there is an inner frame, which is folded into a U shape and connected to the inside of the container body in such a way as to protrude partly from the open end of the container body and to engage a corresponding inside surface of the lid when the lid is in the closed position.

Normally, the outer receptacle is substantially the same size as the group

of cigarettes so that the group of cigarettes fits snugly inside it. In some situations, however, the outer receptacle might be appreciably larger than the group of cigarettes it contains. This is the case, for example, when the outer receptacle is required to give the packet an impression of "grandness", made using a blank of standard size although it contains a reduced number of cigarettes or cigarettes of reduced diameter. Another reason why such a situation might be true is the need to have packets which are relatively large, even if they contain relatively small groups of cigarettes, so that health warnings can be printed on the outside of the packets to warn consumers of the possible dangers of smoking, as provided by current legislation in numerous countries.

Prior art rigid hinged-lid packets, for example of the type described above, for containing a group cigarettes of reduced size usually use inner frames having special and relatively complex shapes to be able to hold the groups of cigarettes in place and prevent them from moving loosely inside the packet. The problem with such packets is, therefore, that they cannot be made in a standard packing machine for rigid, hinged-lid packets and must be made in packing machines which are specially designed and made and hence very expensive.

Disclosure of the invention

The aim of this invention is to provide a cigarette packet of the above type but free of the problems described and a method for its production which allows using standard packing machines with only a few, very minor modifications made to the packaging line.

The above mentioned aim is achieved by this invention in that the invention related to a cigarette packet comprising a container for housing at least one group of cigarettes and having an open upper end ; the container having a lid closing the open upper end, a bottom wall, two

large side walls opposite and parallel to each other, and two small side walls opposite and parallel to each other; there being a rigid inner frame having at least one front wall and at least two side walls integral with respective lateral edges of each front wall, the inner frame being connected in a folded position inside the container in such a way as to protrude partly outside the open upper end and to engage an inside surface of the lid when the lid is in the closed position; and the at least one group of cigarettes having a thickness, measured perpendicularly to the two large side walls of the container which is less than the thickness of the container in the same direction, characterized in that the inner frame has, relative to each front wall, at least one rear wall which is connected by a first lateral edge of it to one of the two side walls of the inner frame integral with the front wall itself; the at least one rear wall being spaced from the respective front wall by a length approximately equal to the thickness of the respective group of cigarettes, there being associated with the at least one rear wall at least one tab positioned close to a second lateral edge of the rear wall opposite the first lateral edge, and the other side wall integral with the front wall being provided with at least one indentation which can be engaged by the tab.

Advantageously, the inner frame has a front wall, two side walls integral with respective lateral edges of the front wall and a rear wall connected to a side wall of the inner frame adjacent to a small side wall of the container; the rear wall of the inner frame being associated with two tabs and the other side wall of the inner frame having two indentations, where each of the indentations can be engaged by one of the tabs.

In a preferred embodiment of the invention, the inner frame has two front walls, four side walls, each of which is integral with a lateral edge of one of the front walls, and two rear walls, each of which is connected to a side wall of the inner frame adjacent to a small side wall of the container; each of the two rear walls of the inner frame which are connected respectively

to one of the side walls being associated with two tabs and each of the other side walls of the inner frame having two indentations, wherein each of the indentations can be engaged by one of the tabs.

This invention also relates to a method for making a cigarette, the cigarette packet comprising a container for housing at least one group of cigarettes and provided with an open upper end and the container having a lid closing the open upper end, a bottom wall, two large side walls opposite and parallel to each other, and two small side walls opposite and parallel to each other; and there being a rigid inner frame having at least one front wall and at least two side walls integral with respective lateral edges of each front wall, the inner frame being connected in a folded position inside the container in such a way as to protrude partly outside the open upper end and to engage an inside surface of the lid when the lid is in the closed position; and the at least one group of cigarettes having a thickness, measured perpendicularly to the two large side walls of the container, which is less than the thickness of the container in the same direction; the method comprising the steps of placing the inner frame inside a receiving seat, placing at least one group of cigarettes in contact, using a large front wall, with a respective front wall of the inner frame, and folding the side walls of the inner frame so as to bring them close to respective small side walls of the group of cigarettes; and being characterized in that it comprises the further steps of folding against a large rear wall of each group of cigarettes a respective further wall of the inner frame, placing it so it is spaced from the front wall already in contact with the group of cigarettes by a length approximately equal to the thickness of the respective group of cigarettes, and inserting at least one tab, associated with each further wall of the inner frame into a corresponding indentation associated with a further side wall, of the inner frame.

Advantageously, with regard to each group of cigarettes, the step of

folding the side walls of the inner frame initially places the side walls slightly apart from each other, with the tabs associated with each further wall of the inner frame facing corresponding indentations associated with further side walls of the inner frame and then causes the further side walls to move towards respective small side walls of the group of cigarettes.

In a further embodiment of the invention, the step of inserting the tabs associated with each further wall into corresponding indentations associated with further side walls of the inner frame is performed by moving at least a portion of the receiving seat.

Further, in a preferred embodiment of the invention, with regard to each group of cigarettes, the folding of the side walls of the inner frame is performed by placing the side walls so they are parallel to each other, folding against a large rear wall of each group of cigarettes a respective rear wall of the inner frame, and making the tabs go into respective indentations by a pushing action which forces a temporary and reversible elastic deformation of the tabs and the indentations.

Brief description of the drawings

The invention is described below with reference to the accompanying drawings, which illustrate a non-limiting embodiment of it and in which:

- Figure 1 is a perspective view of the cigarette packet according to the invention in the closed condition;
- Figure 2 is a perspective view of the packet of Figure 1 containing a group of cigarettes wrapped in a sheet of wrapping material and an interposed inner frame made according to a first method;
- Figure 3 is a plan view of a blank which can be used to make the inner frame of Figure 2;
- Figure 4 is a perspective view of an assembled inner frame made using the blank of Figure 3;

- Figure 5 is a transverse cross section of the cigarette packet of Figures 1 and 2;
- Figure 5a is a transverse cross section of a variant embodiment of the cigarette packet of Figures 1, 2 and 5;
- Figure 6 is a perspective view of a cigarette packet in the open condition, containing two groups of cigarettes wrapped in respective sheets of wrapping material and an interposed inner frame made according to a second method;
- Figure 7 is a plan view of a blank which can be used to make the inner frame of Figure 6;
- Figure 8 is a perspective view of an assembled inner frame made using the blank of Figure 7;
- Figure 9 is a transverse cross section of the cigarette packet of Figure 6;
- Figure 9a is a transverse cross section of a variant embodiment of the cigarette packet of Figures 6 and 9;
- Figure 10 is a cross section of the inner frame of Figures 2-4 in a first step of its assembly;
- Figure 11 is a cross section of the inner frame of Figures 2-4 in a second step of its assembly;
- Figure 11a is a cross section of the inner frame of Figures 2-4 during its assembly according to a method alternative to that of Figures 10 and 11;
- Figure 12 is a cross section of the inner frame of Figures 6-8 in a first step of its assembly;
- Figure 13 is a cross section of the inner frame of Figures 6-8 in a second step of its assembly;
- Figure 13a is a cross section of the inner frame of Figures 6-8 during its assembly according to a method alternative to that of Figures 12 and 13;

- Figure 14 is a plan view of a blank which can be used to make the inner frame of the preceding figures;
- Figure 14a is a plan view of a blank which can be used to make an inner frame constituting a variant embodiment of the inner frame of Figure 14;
- Figure 15 is a plan view of a blank which can be used to make a second variant embodiment of the inner frame of the preceding figures;
- Figure 16 is a perspective view of an assembled inner frame made using the blank of Figure 14;
- Figure 16a is a perspective view of an assembled inner frame made using the blank of Figure 14a; and
- Figure 17 is a perspective view of an assembled inner frame made using the blank of Figure 15.

Detailed description of preferred embodiments of the invention

With reference to Figures 1 and 2, the numeral 1 denotes in its entirety a rigid cigarette packet comprising a concave container 2 and a group 3 of cigarettes 4 housed in the container 2. The group 3 of cigarettes 4 is in the shape of a parallelepiped, is wrapped in a sheet of wrapping foil 5 (and in such condition is called “wrapped group”, denoted by the numeral 3') and is housed in the container 2. The container 2 has an open top end 6 and is provided with a concave lid 7 joined to the container 2 along a hinge 8 allowing it to rotate relative to the container 2 itself between an open position and a closed position where the open top end 6 is closed.

The lid 7, when it is in the closed position, gives the outer container 2 the shape of a rectangular parallelepiped having a top wall 9 and a bottom wall 10 which are parallel and opposite to each other, two large side walls 11 and 12 which are parallel and opposite to each other and two small side walls 13 which are parallel and opposite to each other. More

specifically, the large side wall 11 constitutes a front wall of the container 2, whilst the other large side wall 12, defines a rear wall of the container 2. The side walls 13 and the front and rear walls 11 and 12 define between them four longitudinal edges 14, while the top and bottom walls 10 and 11 and the front and rear walls 11 and 12 and the side walls 13 define between them eight transverse edges 15.

The above mentioned group 3 of cigarettes 4 has a thickness, measured perpendicularly to the two large side walls 11, 12 of the container 2 which is less than the thickness of the container 2 in the same direction.

As illustrated, in particular in Figure 2, the packet 1 also comprises an inner frame, denoted by the reference numeral 16 and shown also in Figures 4 and 5, which is fixed by gluing to the inside of the container 2 to protrude partly outside the open top end 6 and to engage a corresponding inside surface of the lid 7 when the lid 7 is in the aforementioned closed position.

As shown in Figures 2-5, the inner frame 16 is made from a blank 16' comprising a front wall 17 which, when the inner frame 16 is inside the container 2, is parallel to the front wall 11 of the container 2, and two side walls or strips 18, each of which is connected to the front wall 17 along a respective longitudinal lateral edge defined by a line of weakness 19 parallel to the longitudinal directions of extension of the side strips 18 themselves. A central zone of the upper edge of the front wall 17 of the inner frame 16 is delimited by a recess 20 whose purpose, in known manner, is to make it easier for a smoker to take the cigarettes 4 out of the container 2, and a central zone of the bottom edge of the front wall 17 is delimited in known manner by a protrusion 21 which is the same in shape and size as the recess 20.

Along an upper portion of each line of weakness 19 there is an indentation 22 substantially in the shape of a C and comprising a straight central portion parallel to the respective line of weakness 19 and two end

portions extending across the line of weakness 19. The two indentations 22 are positioned with their concavities facing and opposite to each other and define respective tabs 23, which are co-planar with the front wall 17 and which protrude with their free edges 24, defined by the straight central portions of the respective indentations 22, laterally with respect to the front wall 11 of the container 2 to define, in known manner, a brake to the movements of the lid 7 relative to the container 2 about the hinge line 8.

One of the side strips 18, and more specifically, by way of example and with reference to Figure 4, the one on the right of the front wall 17, has at a median zone of its lateral edge 25 spaced from the front wall 17, two indentations 26 running perpendicularly towards the line of weakness 19 which defines the other lateral edge of the side strip 18 itself. The ends of the indentations 26 spaced from the lateral edge 25 are joined to each other by a line of weakness 27 parallel to the lines of weakness 19, which connects the aforementioned side strip 18 to a first lateral edge of a substantially rectangular wall 28. The wall 28 is delimited by the aforementioned lateral edge 25, by one side 29 opposite and parallel to the edge 25 and by two sides 30 perpendicular to the lines of weakness 19 and aligned with respective upper and lower sides of the side strip 18.

Made in the wall 28, in proximity to the side 29 of it, there is a line of weakness 31 running parallel to the side 29 itself, connecting the sides 30 to each other and delimiting in the wall 28, together with the side 29 and part of the sides 30, a rectangular surface defining a wall 32.

The line of weakness 31 has two breaks 33, spaced from each other by a stretch of predetermined length and situated on opposite sides of the central zone of the line 31 itself.

At each of the breaks 33, the wall 28 has formed in it an indentation 34 which is substantially in the shape of a C and whose concavity faces towards the line of weakness 27. Each indentation 34 defines a tab 35

lying in the same plane as the wall 28 and extending towards the aforementioned side 29.

The side strip 18 located, with reference to the front wall 17, on the opposite side with respect to the side strip 18 connected to the wall 28, has two elongate indentations 36 which run parallel to the lines of weakness 19. The indentations 36 are slightly greater in length than the breaks 33 in the line of weakness 31 and are aligned with respective tabs 35 along a direction co-planar with the blank 16' and perpendicular to the lines of weakness 19.

It should be noted that the indentations 36 and the line of weakness 27 are spaced from the respective lines of weakness 19 closest to them by a stretch whose length is approximately the same as the thickness of the group 3 of cigarettes 4.

Assembly of the packet 1, with regard to the container 2 and the lid 7, may be carried out in any known manner and is therefore not described here.

The assembly of the inner frame 16, as illustrated in particular in Figures 2, 4, 10 and 11, is carried out using a receiving seat 60 for receiving the inner frame 16 and the wrapped group 3'.

The wall 32 is first folded about the line of weakness 31 through an angle of 90° which brings it under the plane of the sheet of Figure 3.

In a variant embodiment shown in Figure 5a, on the other hand, the wall 32 is folded about the line of weakness 31 through an angle of 90° which brings it above the plane of the sheet of Figure 3.

The inner frame 16 is then placed inside the seat 60 and a large front wall of a wrapped group 3' of cigarettes 4 (or of a non-wrapped 3) is brought to rest against the wall 17 of the inner frame 16 itself.

As the inner frame 16 and the wrapped group 3' enter the seat 60, the side strip 18 of the inner frame 16 connected to the wall 28 is folded, as shown in Figure 10, by 90° about the respective line of weakness 19 in such a way as to be positioned near a small side wall of the wrapped

group 3' of cigarettes 4, and more precisely, face to face and in contact with that small side wall. The other side strip 18 is in turn folded by an angle just less than 90° about the respective line of weakness 19, in such a way as to bring it near the other small side wall of the wrapped group 3' of cigarettes 4. Lastly, the wall 28 is folded by an angle of 90° about the line of weakness 27 in such a way as to position it to face the large rear wall of the wrapped group 3'. It should be noted that the wall 28 is spaced from the front wall 17 of the inner frame 16 by a stretch whose length is approximately equal to the thickness of the group 3 of cigarettes 4.

As a result of these folding operations, the side walls 18 of the inner frame 16 are initially positioned slightly apart from each other, with the tabs 35 facing respective indentations 36 and the side 29 of the wall 32 positioned in proximity to the surface of the wall 17 inside the inner frame 16. The tabs 35 are then made to enter the indentations 36 by imparting to the side strip 18 spaced from the wall 28, by means of a folding element 59 consisting of a movable wall represented schematically in Figures 10 and 11 and associated with the seat 60, a further minor rotation about the respective line of weakness 19, which brings it to adhere to the adjacent small side wall of the wrapped group 3' of cigarettes 4.

As a result of what is described above, the inner frame 16 is securely held in the configuration just adopted and securely encloses the wrapped group 3' of cigarettes 4. The tabs 35 and the indentations 36 thus constitute locking means for locking the rear wall 28 of the inner frame 16 to the side wall 18.

In an alternative method of assembling the inner frame 16, as represented in Figure 11a, the wall of the seat 60 constituting the folding element 59 might be fixed. In that case, the seat 60 is defined by a bottom wall 61 which, at the ends of it, respectively supports the wall 59 and a wall 59a, perpendicular to the bottom wall 61 itself.

In a seat 60 made in this way, the wall 32 is not initially folded about the

line of weakness 31 and remains in the same plane as the wall 28. Then, when the wall 28 is folded by 90° about the line of weakness 27, the wall 32 meets the portion of the side strip 18 not facing the small side wall of the wrapped group 3' of cigarettes 4, that is, the portion of the side strip 18 exceeding the thickness of the group 3 of cigarettes 4, and the wall 32 is forced to rotate through 90° about the line of weakness 31 and to come to rest against the side strip 18, with its side 29 positioned in such a way that, when the packet 1 is completed, it is located in the proximity of the large rear wall 12 of the container 2. The tabs 35 are then made to enter the indentations 36 by a pushing action which forces a temporary and reversible elastic deformation of the tabs 35 and of the indentations 36 and which secures the inner frame 16 in its proper configuration.

As illustrated in Figures 6-9, a second type of inner frame 37 is made according to this invention from a blank 16". The inner frame 37 can be used in a cigarette packet 1' containing two groups 3 of cigarettes 4, preferably but not necessarily the same, wrapped in respective sheets 5 of wrapping material, and an interposed inner frame 37.

The blank 16" is made up of two substantially identical portions arranged symmetrically about a median line through the blank 16" itself. This median line coincides with the line of weakness 38 running along the blank 16" in a direction parallel to a vertical longitudinal direction of an assembled packet 1' housing the inner frame 37 (Figure 7).

Below is a description only of a first half of the blank 16" (the one on the right of the line of weakness 38 in Figure 7) and the parts of the second half of the blank 16" are denoted by the same reference numerals as

– as those of the container 2 of Figures 1 and 2), is parallel to the front wall 11' of the container 2', and two side strips 41, each of which is connected to the front wall 40 along a respective longitudinal lateral edge defined by a line of weakness 42 parallel to the longitudinal line of weakness 38, that is, parallel to the longitudinal directions of extension of the side strips 41 themselves. A central zone of the upper edge of the front wall 40 of the inner frame 37 is delimited by a recess 43 whose purpose, in known manner, is to make it easier for a smoker to take the cigarettes 4 out of the container 2', and a central zone of the bottom edge of the front wall 40 is delimited in known manner by a protrusion 44 which is the same in shape and size as the recess 43.

Along an upper portion of the line of weakness 42 furthest away from the line of weakness 38 there is an indentation 45 substantially in the shape of a C and comprising a straight central portion parallel to the respective line of weakness 42 and two end portions extending across the line of weakness 42 itself. Each indentation 45 defines a tab 46, which is co-planar with the front wall 40 and which protrudes laterally from the front wall 11' of the container 2' to define, in known manner, a brake to the movements of the lid 7' relative to the container 2' about the hinge line 8'.

The side strip 41 furthest away from the line of weakness 38 has, in a substantially central zone of its lateral edge 47 spaced from the front wall 40, two indentations 48 directed perpendicularly towards the line of weakness 42 which defines the other lateral edge of the side strip 41. The ends of the indentations 48 spaced from the lateral edge 47 coincide with the respective ends of two lines of weakness 49 and 50, which are parallel to the line of weakness 38 and longitudinally aligned with each other and which are directed respectively upwards and downwards with reference to the inner frame 37 inside the container 2'. The top end of the line of weakness 49 is situated in proximity to an upper edge zone of the inner frame 37, while the bottom end of the line of weakness 50 is located

on the lower edge of the inner frame 37 itself. The other ends of the two indentations 48 are longitudinally aligned with the lateral edge 47 and are connected to each other by a further indentation 39 which is parallel and aligned with the lateral edge 47 itself.

The lines of weakness 49 and 50 partly define a lateral edge 51, parallel to the line of weakness 38, of a substantially rectangular wall 52 and they connect the wall 52 to the side strip 41 adjacent to it.

In proximity to a lateral edge 53 of the wall 52 opposite and parallel to the lateral edge 51, the wall 52 has a line of weakness 54. The line of weakness 54 is parallel to the edge 53 and, together with the edge 53, laterally delimits a wall 54a constituting a lateral portion of the wall 52, and has two breaks 55 in it, located respectively in the upper half and in the lower half of the wall 52. By way of example, there are two breaks 55 but a different number of them is also imaginable.

At each of the breaks 55, the wall 52 has formed in it an indentation 56 which is substantially in the shape of a C and whose concavity faces towards the line of weakness 38. Each indentation 56 defines a tab 57 which lies in the same plane as the wall 52 and whose functions will become clearer as this description continues.

It should be noted that on the wall 52', which is symmetrically opposite the wall 52 about the line of weakness 38, the tabs 57' are (preferably) offset relative to the tabs 57 along a direction parallel to the line of weakness 38. More specifically, as shown in Figure 7, the tabs 57' on the wall 52' are higher up on the inner frame 37 than the corresponding tabs 57 on the wall 52.

The side strip 41 has two elongate indentations 58 formed in it which are substantially as long as the tabs 57 and parallel to the line of weakness 42. The indentations 58 are spaced from the line of weakness 42 by a stretch whose length is equal to the width of the side strips 41 at the lines of weakness 49 and 50.

With reference to a direction parallel to the line of weakness 38, the indentations 58 are located at the same level as corresponding tabs 57 on the wall 52. Similarly, the side strip 41' has two elongate indentations 58' formed in it which, with reference to a direction parallel to the line of weakness 38, are located at the same level as corresponding tabs 57' on the wall 52'.

The assembly of the inner frame 37, as illustrated in particular in Figures 8, 9, 12 and 13, is carried out using a receiving seat 62 for receiving the inner frame 37 and two wrapped groups 3'.

As shown in Figures 12 and 13, the seat 62 has a C-shaped cross section and is made up of two identical box-shaped elements 63 (in the preferred embodiment of the packet 1'), which have an L-shaped cross section and which are hinged to each other along a hinge 64 to define the seat 62. Each of the box-shaped elements 63 comprises a wall 65, which is substantially the same size and shape as the large front wall of a wrapped group 3' of cigarettes 4, and a wall 66, connected perpendicularly to one edge of the respective wall 65 and being substantially the same shape and size as the small side walls of a wrapped group 3' or, alternatively, the same shape and size as the side strips 41 of the inner frame 37. The seat 62 is therefore defined by the two mutually hinged walls 65 of the box-shaped elements 63 and the two walls 66 connected to the walls 65.

The box-shaped elements 63 can be rotated in both directions about an axis 67 located along a hinge 64, to pass from the configuration of Figure 12 to that of Figure 13 and vice versa. More precisely, in the configuration of Figure 13, the walls 65 which define the seat 62 are co-planar and the walls 66 are parallel to each other and perpendicular to the walls 65, while in the configuration of Figure 12, the walls 65 are slightly inclined to each other and the walls 66 diverge slightly.

To assemble the inner frame 37, the seat 62 is placed in the conditions shown in Figure 12 and the large front walls of two wrapped groups 3' of

cigarettes 4 are rested against the respective walls 40 and 40' of the inner frame 37 situated inside the seat 62.

The walls 54a and 54a' are first folded about the respective lines of weakness 54 and 54' through an angle of 90° which brings them under the plane of the sheet of Figure 7.

The side strips 41 and 41' adjacent to the line of weakness 38 are then folded about the line of weakness 38 itself in such a way as to bring them face to face with each other above the plane of the sheet of Figure 7. The side strips 41, 41' extending between the walls 40, 40' and 52, 52', respectively, as shown in Figure 12, are then folded by 90° about the respective lines of weakness 42, 42' in such a way as to bring them face to face with respective small side walls of the aforementioned wrapped groups 3' of cigarettes 4. Next, the walls 52 and 52' are folded through 90° about the respective lines of weakness 49, 50 and 49', 50' in such a way as to bring them face to face with respective large rear walls of the wrapped groups 3'.

It should be noted that the groups 3 of cigarettes 4 inside the container 2' (hence also the wrapped groups 3') have a thickness, measured perpendicularly to the two large side walls 11', 12' of the container 2' which is less than the thickness of the container 2' in the same direction. It should also be noted that the walls 52 and 52' of the assembled inner frame 37 are spaced, respectively, from the front walls 40 and 40' of the inner frame 37 itself by a stretch whose length is approximately the same as the thickness of the group 3 of cigarettes 4.

As a result of these folding operations, the tabs 57, 57' are brought in front of respective indentations 58, 58', with the lateral edges 53, 53' of the walls 54a, 54a' positioned in proximity to the walls 40, 40'. The tabs 57, 57' are then made to enter the indentations 58, 58' by moving two portions of the seat 62, by making the box-shaped elements 63 rotate about the axis 67 in such a way that the walls 66 of the box-shaped

elements 63 push the walls 52, 52' (provided with the tabs 57, 57') towards the side strips 41, 41' (provided with the indentations 58, 58') and the seat 62 is brought to the condition shown in Figure 13.

As a result of what is described above, the inner frame 37 is securely held in the configuration just adopted and securely encloses the two wrapped groups 3' of cigarettes 4.

The tabs 57 and 57' and the indentations 58 and 58' thus constitute locking means for locking the rear walls 52 and 52' of the inner frame 37 to respective side strips 41 and 41'.

In the same way as what is set out above for the inner frame 16, an alternative method for assembling the inner frame 37 entails positioning the walls 54a and 54a' against the respective side strips 41 and 41' and with the lateral edges 53 and 53' positioned in proximity to the large rear wall 12' of the container 2' (Figure 9a).

In a further possible method of assembling the inner frame 37, as shown in Figure 13a, the walls 54a and 54a' are not initially folded about the respective lines of weakness 54 and 54' but remain in the same plane as the walls 52, 52'. Then, when the walls 52 and 52' are folded by 90° about the lines of weakness 49 and 42', the walls 54a and 54a' meet the portions of the side strips 41, 41' which are not facing the small side walls of the wrapped groups 3' of cigarettes 4, that is, the portions of the side strips 41, 41' exceeding the thickness of the groups 3 of cigarettes 4, and the walls 54a and 54a' are forced to rotate through 90° about the respective lines of weakness 54, 54' and to come to rest against the side strips 41, 41', with their lateral edges 53, 53' positioned in such a way that, when the packet 1' is completed, they are located in the proximity of the large rear wall 12' of the container 2'. The tabs 57, 57' are then made to enter the respective indentations 58, 58' by a pushing action which forces a temporary and reversible elastic deformation of the tabs 57, 57' and of the indentations 58, 58' and which secures the inner frame 37 in its

proper configuration.

Figure 14 shows a blank 16''' which can be used to make an inner frame 73 (Figure 16) and constituting a variant embodiment of the blank 16' used to make the inner frame 16. The blank 16''', whose parts – where identical to those of the blank 16' – are denoted by the same reference numerals, differs from the blank 16' in that it does not have the indentations 34 and 36, the tabs 35, the line of weakness 31 and the wall 32. Also, the side strip 18 opposite to the side strip 18 connected to the wall 28, is provided, in the proximity of a lateral edge 68 of it opposite to the line of weakness 19 and in each of two zones 68a at different levels, with two lines of weakness 69 perpendicular to the edge 68 and extending a little way into the side strip 18, whose ends opposite the edge 68 are joined to each other by an indentation 70. The indentation 70 is spaced from the line of weakness 19 by a stretch whose length is approximately the same as the thickness of the wrapped group 3' of cigarettes 4. From a point on the edge 68 located at a median position relative to the lines of weakness 69 there extends also an indentation 71 perpendicular to the selfsame edge 68 and connecting the edge 68 to the indentation 70.

The indentations 70 and 71, together with portions of the edge 68 and the lines of weakness 69, define, in each of the zones 68a, two rectangular tabs 72 which are connected to the side strip 18 by respective lines of weakness 69.

To assemble the inner frame 73 obtained from the blank 16''', as shown in Figure 16, a large front wall of a wrapped group 3' of cigarettes 4 (or of a non-wrapped group 3) is brought to rest against the front wall 17 of the inner frame 73 itself.

The side strip 18 of the inner frame 73 connected to the wall 28 is then folded through 90° about the respective line of weakness 19 in such a way as to bring it near a small side wall of the wrapped group 3' of cigarettes 4, and more precisely, face to face and in contact with that

small side wall, while the other side strip 18 is in turn folded through 90° about the respective line of weakness 19, in such a way as to bring it near the other small side wall of the wrapped group 3' of cigarettes 4. Lastly, the wall 28 is folded by an angle of 90° about the line of weakness 27 in such a way as to position it to face the large rear wall of the wrapped group 3'.

The tabs 72 on a side strip 18 are then folded, preferably by a right angle, about respective lines of weakness 69 which connect the tabs 72 to the side strip 18, towards the other side strip 18 of the inner frame 73, positioning the tabs 72 perpendicularly and resting against the wall 28, as shown in Figure 16.

As a result of what is described above, the inner frame 73 is securely held in the configuration just adopted, with the wall 28 held against the wrapped group 3' of cigarettes 4 by the tabs 72.

The tabs 72, because they are foldable perpendicularly against the rear wall 28, thus constitute locking means for locking the rear wall 28 of the inner frame 16''' to the side wall 18.

Figure 14a shows a blank 16^{V} constituting a variant embodiment of the blank 16''' of Figure 14 and which can be used to make the inner frame 73' of Figure 16a.

The blank 16^{V} differs from the blank 16''' firstly in that it does not have the indentations 71 and in that the lines of weakness 69 are replaced by indentations 80 of equal length. Also, the side 29 which delimits one side of the wall 28 coincides with a line of weakness 29' which connects the wall 28 itself to a wall 32' which is similar in size and position to the wall 32 of the blank 16' of Figure 3. In proximity to a lateral edge 32'' of it opposite to the line of weakness 29' and in each of the two zones 68a at different levels and substantially corresponding to those of the tabs 72 in the side strip 18, the wall 32' is provided with two tabs 72a identical to the tabs 72 of the side strip 18. Each tab 72a is defined by indentations and

lines of weakness which are the same as those of the tabs 72 of the side strip 18, denoted by the same reference numerals, but differing in that the tabs 72 are connected to the side strip 18 at the top by means of the respective lines of weakness 69, whilst the tabs 72a are connected to the wall 32' at the bottom by means of the respective lines of weakness 69.

To assemble the inner frame 73' of Figure 16a obtained from the blank 16^{V}, a large front wall of a wrapped group 3' of cigarettes 4 (or of a non-wrapped group 3) is brought to rest against the front wall 17 of the inner frame 73' itself. The side strip 18 of the inner frame 73' connected to the wall 28 is then folded through 90° about the respective line of weakness 19 in such a way as to bring it near a small side wall of the wrapped group 3' of cigarettes 4, and more precisely, face to face and in contact with that small side wall, while the other side strip 18 is in turn folded through 90° about the respective line of weakness 19, in such a way as to bring it near the other small side wall of the wrapped group 3' of cigarettes 4. Lastly, the wall 28 is folded by an angle of 90° about the line of weakness 27 in such a way as to position it to face the large rear wall of the wrapped group 3'.

The tabs 72 on a side strip 18 and the tabs 72a on the wall 32' are then folded, preferably by a right angle, about respective lines of weakness 69 which connect the tabs 72 to the side strip 18 and the tabs 72a to the wall 32', towards the side strip 18 extending between the walls 17 and 28 of the inner frame 73', positioning the tabs 72 perpendicularly and resting against the wall 28, as shown in Figure 16a.

Figure 15 shows a blank 16^{IV} which can be used to make an inner frame 79 and constituting a variant embodiment of the blank 16'' used to make the inner frame 37. The blank 16^{IV}, whose parts – where identical to those of the blank 16'' – are denoted by the same reference numerals, differs from the blank 16'' in that it does not have the indentations 56, 56' and 58, 58', the tabs 57, the lines of weakness 54, 54' and the walls 54a, 54a'.

Also, in proximity to the line of weakness 38 and in each of the two zones 74a and 74b at different levels, the side strips 41, 41' opposite to the side strips 41, 41' connected to the walls 52, 52' are provided with respective indentations 75 and 76 defined by three consecutive sides of a rectangle and positioned on opposite sides of the line of weakness 38 itself. In the context of each of the zones 74a and 74b, an indentation 75 and an indentation 76 are located side by side horizontally and mutually juxtaposed, that is to say, having a shared side which is superposed on the line of weakness 38. Also, in the context of the zone 74a, the concavity of the indentation 75 is (by way of example) facing downwards, whilst that of the indentation 76 is (by way of example) facing upwards. In the context of the zone 74b, the concavity of the indentations 75 and 76 are (by way of example) facing directions opposite to those just mentioned.

Each of the indentations 75, 76 is connected to the respective side strip 41, 41' by means of a line of weakness 77 made in the side strip 41, 41' itself, which connects the two ends to each other.

Each of the indentations 75, 76 delimits within itself, in the context of the respective side strip 41, 41', a tab 78 which, as will become clearer as this description continues, may be rotated, relative to the plane the respective side strip 41, 41' lies in, about the line of weakness 77 associated with the tab 78 itself and which connects the tab 78 to the corresponding side strip 41, 41'.

For assembly of the inner frame 79, performed by folding the blank 16^{IV} as shown in Figure 17, the large front walls of two wrapped groups 3' of cigarettes 4 are rested against the walls 40 and 40' of the inner frame 16^{IV}. The side strips 41 and 41' adjacent to the line of weakness 38 are then folded about the line of weakness 38 itself in such a way as to bring them face to face with each other above the plane of the sheet of Figure 15. The side strips 41 ,41' extending between the walls 40, 40' and 52,

52', respectively, are then folded by 90° about the respective lines of weakness 42, 42' in such a way as to bring them face to face with respective small side walls of the aforementioned wrapped groups 3' of cigarettes 4. Next, the walls 52 and 52' are folded through 90° about the respective lines of weakness 49, 50 and 49', 50' in such a way as to bring them face to face with respective large rear walls of the wrapped groups 3'.

It should be noted that the groups 3 of cigarettes 4 inside the container 2' (hence also the wrapped groups 3') have a thickness, measured perpendicularly to the two large side walls 11', 12' of the container 2' which is less than the thickness of the container 2' in the same direction. It should also be noted that the walls 52 and 52' of the assembled inner frame 37 are spaced, respectively, from the front walls 40 and 40' of the inner frame 37 itself by a stretch whose length is approximately the same as the thickness of the group 3 of cigarettes 4.

After the folding operations listed above, the tabs 78 are rotated (for example) by 90° about the lines of weakness 77 associated therewith, relative to the planes the respective side strips 41, 41', lie in, and are positioned perpendicularly in contact with the walls 52, 52' to keep them lightly pressed against the respective wrapped groups 3' of cigarettes 4.

As a result of what is described above, the inner frame 79 is securely held in the configuration just adopted and securely encloses the two wrapped groups 3' of cigarettes 4.

The tabs 78, because they are foldable perpendicularly against the rear walls 52, 52', thus constitute locking means for locking the rear walls 52 and 52' of the inner frame 79 to respective side walls 41 and 41'.

The cigarette packets 1, 1' described in the foregoing fully achieve the aforementioned aims in that they can, respectively, contain one/two wrapped group/groups 3' of cigarettes 4 of reduced size using an inner frame 16, 37, 73, 79 which is simple in shape and easy to fold, which

does not require designing and construction of special, expensive packing machines for the production of the packets 1, 1' and which can be handled by standard packing machines with only very minor modifications to the packaging lines.

CLAIMS

1. A cigarette packet comprising a container (2; 2') for housing at least one group (3) of cigarettes (4) and having an open upper end (6, 6'); the container (2; 2') having a lid (7; 7') closing the open upper end (6; 6'), a bottom wall (10; 10'), two large side walls (11, 12; 11', 12') opposite and parallel to each other, and two small side walls (13; 13') opposite and parallel to each other; there being a rigid inner frame (16; 37; 73; 79), having at least one front wall (17; 40, 40') and at least two side walls (18; 41, 41') integral with respective lateral edges of each front wall (17; 40, 40'), the inner frame (16; 37; 73; 79) being connected in a folded position inside the container (2; 2') in such a way as to protrude partly outside the open upper end (6; 6') and engage an inside surface of the lid (7; 7') when the lid (7; 7') is in the closed position; and the at least one group (3) of cigarettes (4) having a thickness, measured perpendicularly to the two large side walls (11, 12; 11', 12') of the container (2; 2'), which is less than the thickness of the container (2; 2') in the same direction, characterized in that the inner frame (16; 37; 73; 79) has, relative to each front wall (17; 40, 40'), a rear wall (28; 52, 52') which is connected by a first lateral edge of it to an edge of a first side wall (18; 41, 41') of the inner frame (16; 37; 73; 79); the rear wall (28; 52, 52') being spaced from the respective front wall (17; 40, 40') by a length approximately equal to the thickness of the respective group (3) of cigarettes (4); and locking means (35; 57, 57'; 36; 58, 58'; 72; 78) being provided for locking the rear wall (28; 52, 52') to a further side wall (18; 41, 41') of the inner frame (16; 37; 73; 79), these locking means consisting of at least one tab (35; 57, 57') which is associated with each rear wall (28; 52, 52') and which is positioned close to a second lateral edge of the rear wall (28; 52, 52') opposite the respective first lateral edge; the further side wall (18; 41, 41') of the inner

frame (16; 37) being provided with at least one indentation (36; 58, 58') which can be engaged by the tab (35; 57, 57').

2. The cigarette packet according to claim 1, characterized in that the inner frame (16; 37) comprises a front wall (17; 40, 40'), two side walls (18; 41, 41') integral with respective lateral edges of the front wall (17; 40, 40') and a rear wall (28) connected to a side wall (18; 41, 41') of the inner frame (16; 37) adjacent to a small side wall of the container (2; 2'); the rear wall (28) of the inner frame (16; 37) being associated with two tabs (35), constituting the locking means, and the other side wall (18; 41, 41') of the inner frame (16; 37) having two indentations (36), wherein each of the indentations (36) can be engaged by one of the tabs (35).

3. The cigarette packet according to claim 1, characterized in that the inner frame (37) comprises two front walls (40, 40'), four side walls (41, 41'), wherein each of the side walls (41, 41') is integral with a lateral edge of one of the front walls (40, 40'), and two rear walls (52, 52'), wherein each of the rear walls (52, 52') is connected to a side wall (41, 41') of the inner frame (37) adjacent to a small side wall of the container (2'); each of the two rear walls (52, 52') of the inner frame (37) connected respectively to one of the side walls (41, 41') being associated with two tabs (57, 57') constituting the locking means and each of the other side walls (41, 41') of the inner frame (37) having two indentations (58, 58'), wherein each of the indentations (58, 58') can be engaged by one of the tabs (57, 57').

4. A cigarette packet comprising a container (2; 2') for housing at least one group (3) of cigarettes (4) and having an open upper end (6, 6'); the container (2; 2') having a lid (7; 7') closing the open upper end (6; 6'), a bottom wall (10; 10'), two large side walls (11, 12; 11', 12') opposite and parallel to each other, and two small side walls (13; 13') opposite and parallel to each other; there being a rigid inner frame (16; 37; 73; 79), having at least one front wall (17; 40, 40') and at least two side walls (18; 41, 41') integral with respective lateral edges of each front wall (17; 40,

40'), the inner frame (16; 37; 73; 79) being connected in a folded position inside the container (2; 2') in such a way as to protrude partly outside the open upper end (6; 6') and engage an inside surface of the lid (7; 7') when the lid (7; 7') is in the closed position; and the at least one group (3) of cigarettes (4) having a thickness, measured perpendicularly to the two large side walls (11, 12; 11', 12') of the container (2; 2'), which is less than the thickness of the container (2; 2') in the same direction, characterized in that the inner frame (16; 37; 73; 79) has, relative to each front wall (17; 40, 40'), a rear wall (28; 52, 52') which is connected by a first lateral edge of it to an edge of a first side wall (18; 41, 41') of the inner frame (16; 37; 73; 79); the rear wall (28; 52, 52') being spaced from the respective front wall (17; 40, 40') by a length approximately equal to the thickness of the respective group (3) of cigarettes (4); and locking means (35; 57, 57'; 36; 58, 58'; 72; 78) being provided for locking the rear wall (28; 52, 52') to a further side wall (18; 41, 41') of the inner frame (16; 37; 73; 79), these locking means comprising at least one tab (72; 72a, 78') which is formed in the side wall (18; 41, 41') itself and which, in use, can be folded against a rear wall (28; 52, 52').

5. A method for making a cigarette packet according to any one of claims 1 to 3, the cigarette packet comprising a container (2; 2') for housing at least one group of cigarettes and provided with an open upper end (6; 6') and the container (2; 2') having a lid (7; 7') closing the open upper end (6; 6'), a bottom wall (10; 10'), two large side walls (11, 12; 11', 12') opposite and parallel to each other, and two small side walls (13; 13') opposite and parallel to each other; there being a rigid inner frame (16; 37), having at least one front wall (17; 40, 40') and at least two side walls integral with respective lateral edges of each front wall (17; 40, 40'), the inner frame (16; 37) being connected in a folded position inside the container (2; 2') in such a way as to protrude partly outside the open upper end (6; 6') and engage an inside surface of the lid (7; 7') when the lid (7; 7') is in the

closed position; and the at least one group of cigarettes having a thickness, measured perpendicularly to the two large side walls of the container (2; 2'), which is less than the thickness of the container (2; 2') in the same direction; the method comprising the steps of placing the inner frame (16; 37) inside a receiving seat (60; 62), placing at least one group of cigarettes in contact, by means of a large front wall, with a respective front wall (17; 40, 40') of the inner frame (16; 37), and folding the side walls (18; 41, 41') of the inner frame (16; 37) so as to bring them close to respective small side walls of the group (3) of cigarettes (4); and being characterized in that it comprises the further steps of folding against a large rear wall of each group (3) of cigarettes (4) a wall (28; 52, 52') of the inner frame (16; 37), placing it so it is spaced from the front wall (17; 40, 40') already in contact with the group (3) of cigarettes (4) by a length approximately equal to the thickness of the respective group (3) of cigarettes (4), and inserting at least one tab (35; 57, 57') associated with each rear wall (28; 52, 52') of the inner frame (16; 37) in a corresponding indentation (36; 58, 58') associated with a side wall (18; 41, 41') of the inner frame (16; 37).

6. The method according to claim 5, characterized in that, with regard to each group (3) of cigarettes (4), the folding of the side walls (18; 41, 41') of the inner frame (16; 37) is performed by placing the side walls (18; 41, 41') so they are parallel to each other, folding against a large rear wall of each group (3) of cigarettes (4) a respective rear wall (28; 52, 52') of the inner frame (16; 37), and making the tabs (57, 57') go into respective indentations (58, 58') by a pushing action which forces a temporary and reversible elastic deformation of the tabs (57, 57') and the indentations (58, 58').

7. The method according to claim 5, characterized in that, with regard to each group (3) of cigarettes (4), the folding of the side walls (18; 41, 41') of the inner frame (16; 37) is performed by initially placing the side walls

(18; 41, 41') slightly apart from each other, with the tabs (35; 57, 57') associated with each rear wall (28; 52, 52') of the inner frame (16; 37) facing corresponding indentations (36; 58, 58') associated with the side walls (18; 41, 41') of the inner frame (16; 37), and then moving at least one side wall (18; 41, 41') towards a respective small side wall of the group (3) of cigarettes (4).

8. The method according to claim 7, characterized in that the insertion of the tabs (35; 57, 57') associated with each rear wall (28; 52, 52') of the inner frame (16; 37) inside corresponding indentations (36; 58, 58') associated with the side walls (18; 41, 41') of the inner frame (16; 37) is performed by moving at least a portion of the receiving seat (60; 62).

9. A method for making a cigarette packet according to claim 4, the cigarette packet comprising a container (2; 2') for housing at least one group of cigarettes and provided with an open upper end (6; 6') and the container (2; 2') having a lid (7; 7') closing the open upper end (6; 6'), a bottom wall (10; 10'), two large side walls (11, 12; 11', 12') opposite and parallel to each other, and two small side walls (13; 13') opposite and parallel to each other; and there being a rigid inner frame (73; 79), having at least one front wall (17; 40, 40') and at least two side walls (18; 41, 41') integral with respective lateral edges of each front wall (17; 40, 40'), the inner frame (73; 79) being connected in a folded position inside the container (2; 2') in such a way as to protrude partly outside the open upper end (6; 6') and to engage an inside surface of the lid (7; 7') when the lid (7; 7') is in the closed position; and the at least one group of cigarettes having a thickness, measured perpendicularly to the two large side walls of the container (2; 2'), which is less than the thickness of the container (2; 2') in the same direction; the method comprising the steps of placing at least one group of cigarettes in contact, by means of a large front wall, with a respective front wall (17; 40, 40') of the inner frame (73; 79), and folding the side walls (18; 41, 41') of the inner frame (73; 79) so

as to bring them close to respective small side walls of the group (3) of cigarettes (4); and being characterized in that it comprises the further steps of folding against a large rear wall of each group (3) of cigarettes (4) a wall (28; 52, 52') of the inner frame (73; 79) placing it so it is spaced from the front wall (17; 40, 40') already in contact with the group (3) of cigarettes (4) by a length approximately equal to the thickness of the respective group (3) of cigarettes (4), and folding the tabs (72; 72a; 78), defined on at least part of the side walls (18; 41, 41') by respective indentations (70, 71; 75, 76), about respective lines of weakness (69; 77) which connect them to the side walls (18; 41, 41'), for resting them against a rear wall (28; 52, 52') of the inner frame (73; 79).

FIG.1

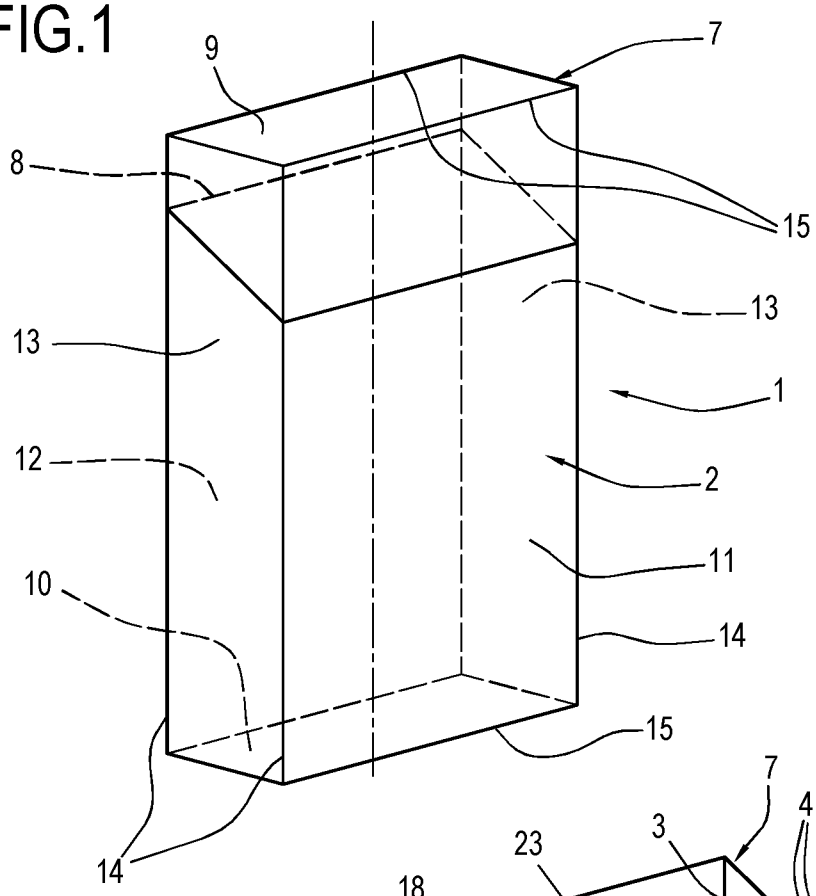

9
7
8
15
13
13
1
12
2
11
10
14
15
14

FIG.2

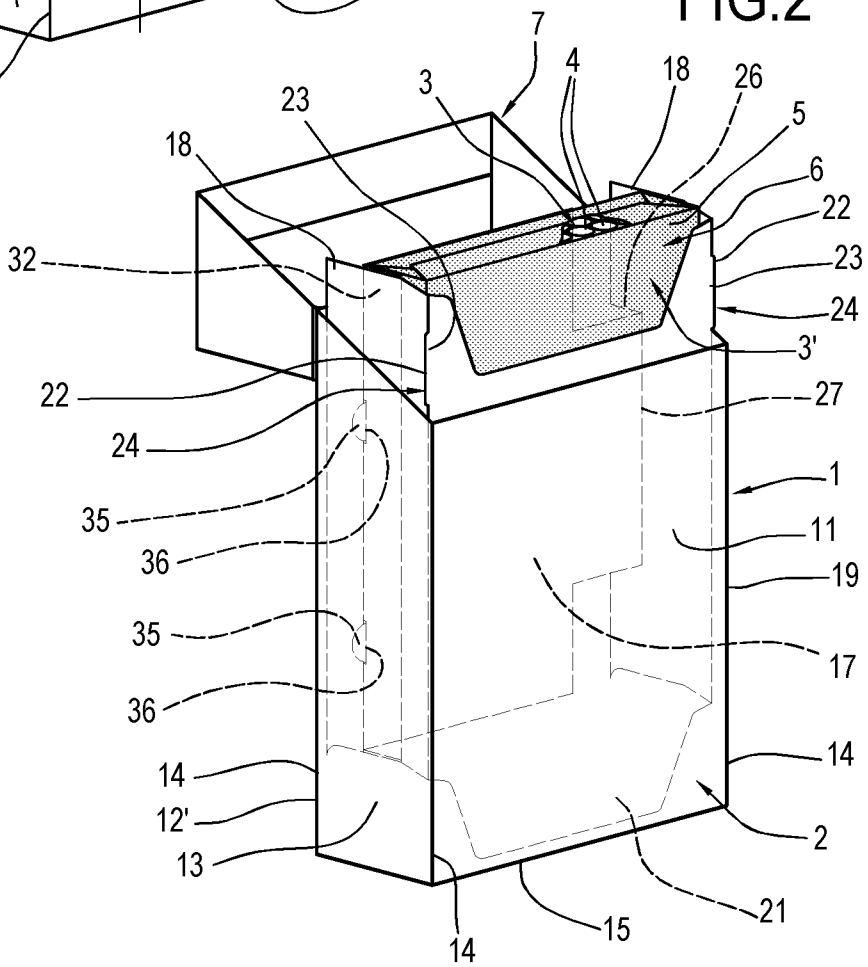

7
4
18
26
3
23
5
18
6
22
32
23
24
3'
22
27
24
1
35
11
36
19
35
17
36
14
14
12'
2
13
21
15
14

FIG.3

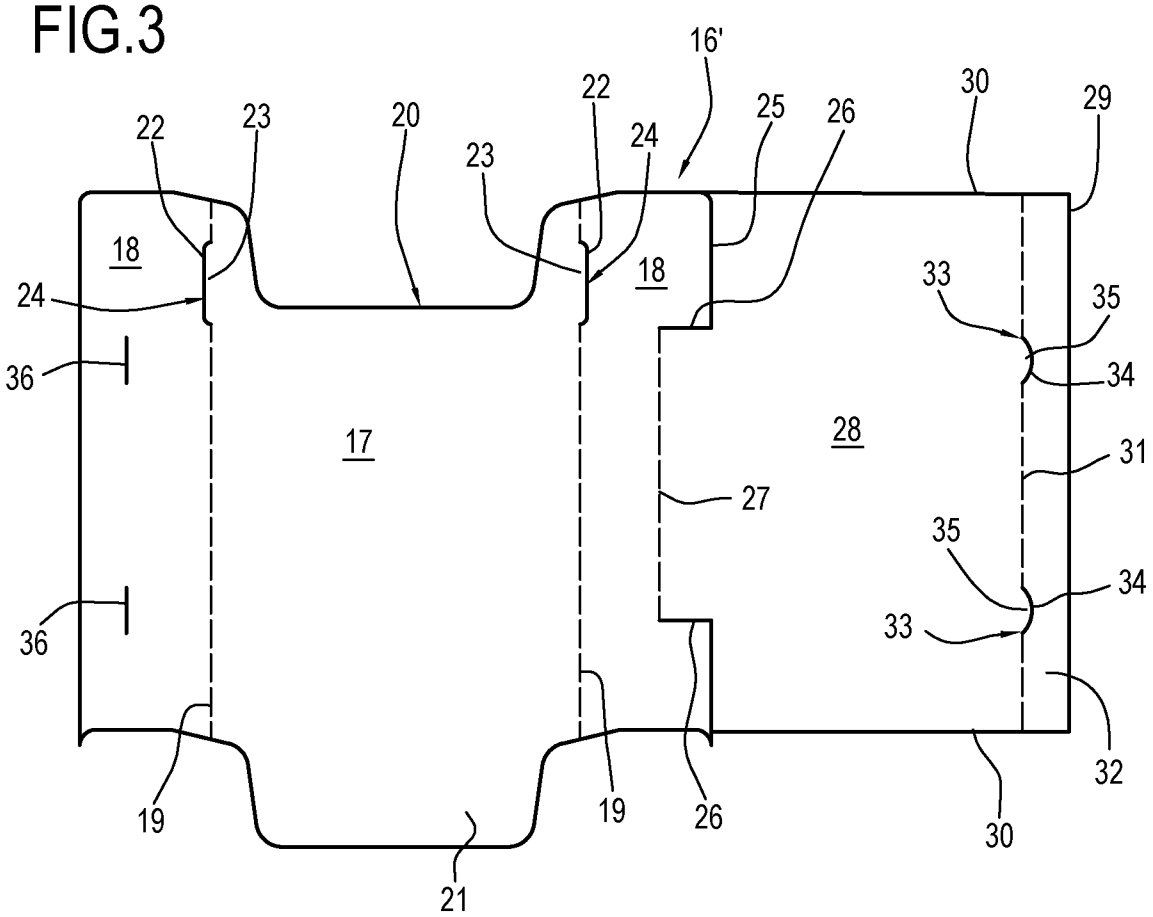

16'
22
23
20
22
24
25
26
30
29
23
18
18
24
33
35
36
34
17
28
31
27
35
34
33
36
32
19
19
26
30
21

FIG.4

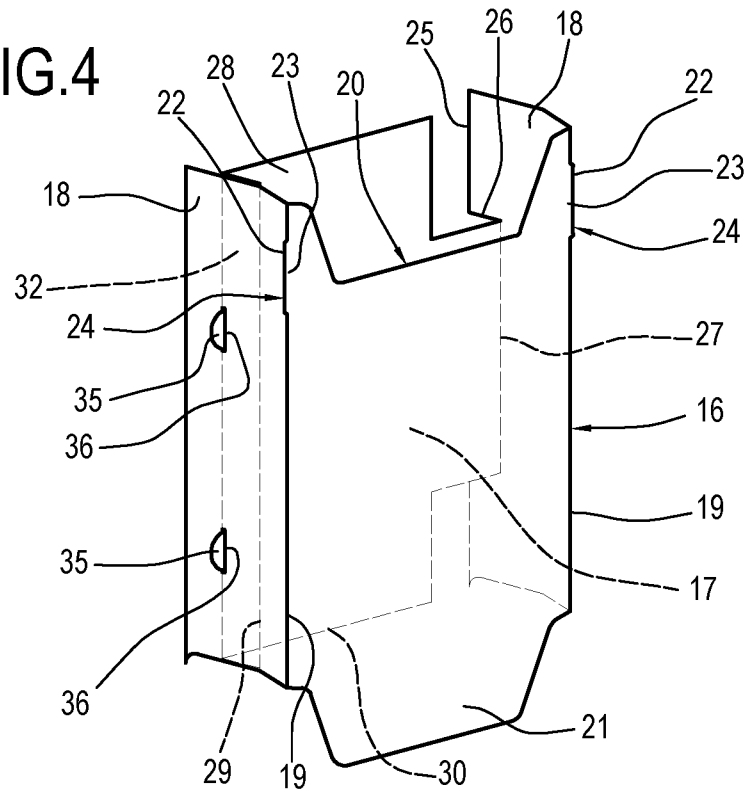

25
26
18
28
23
20
22
22
18
23
24
32
24
27
35
16
36
19
35
17
36
21
29
19
30

FIG.5

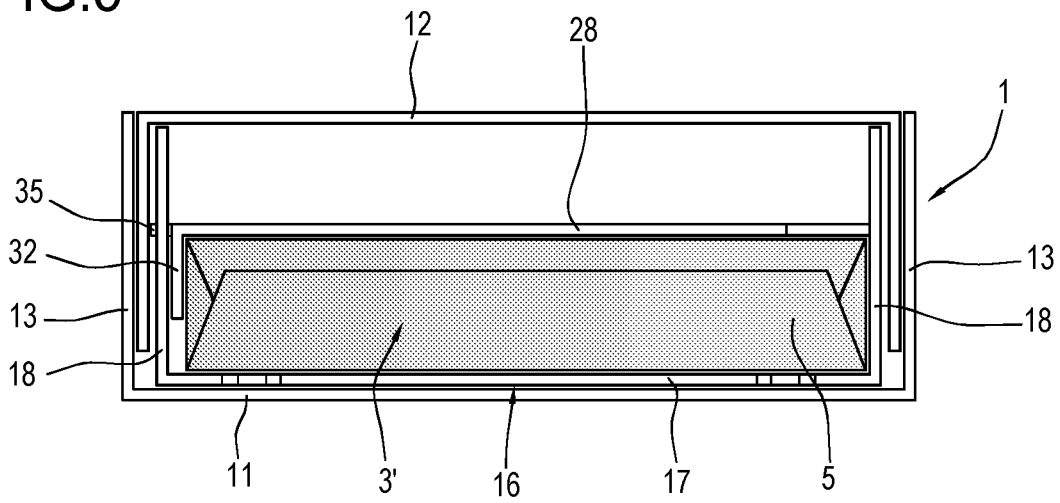

12
28
1
35
32
13
18
13
18
11
3'
16
17
5

FIG.5a

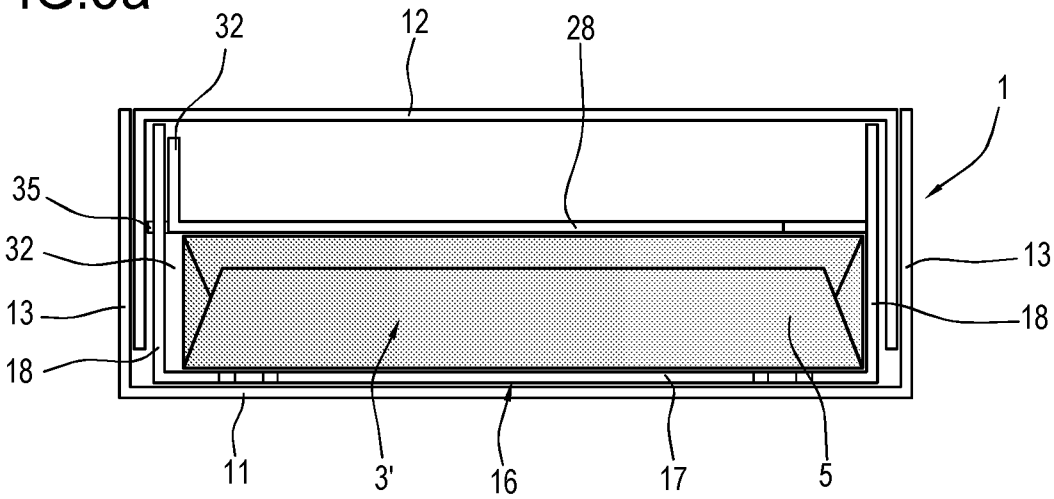
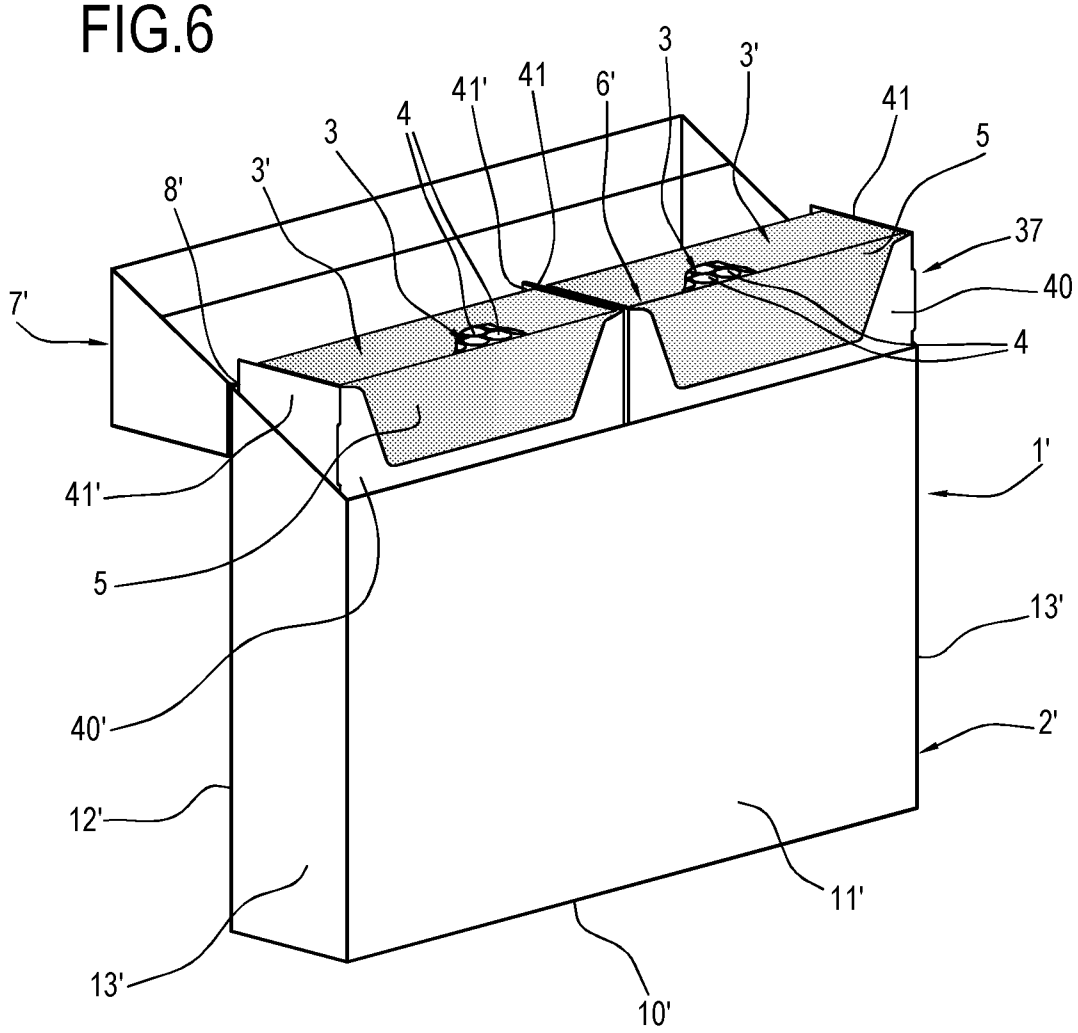

32
12
28
1
35
32
13
18
13
18
11
3'
16
17
5

FIG.6



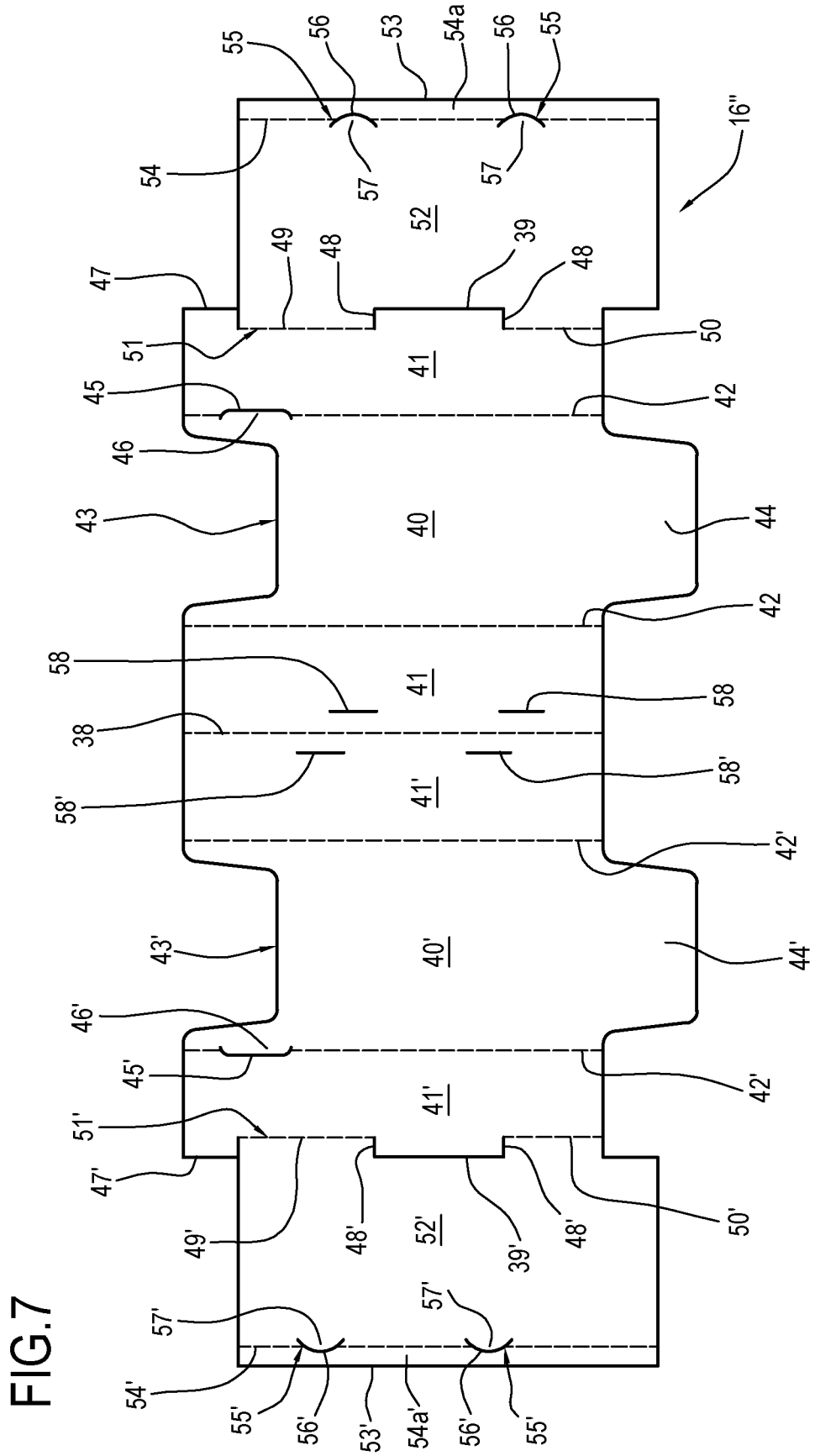

55
56
53
54a
56
55
16"
54
57
57
52
49
48
39
48
47
51
41
50
45
42
46
43
40
44
42
58
41
58
38
58'
41'
58'
42'
43'
40'
44'
46'
45'
42'
51'
41'
47'
49'
48'
52'
39'
48'
50'
57'
57'
54'
55'
56'
53'
54a'
56'
55'

FIG.7

FIG.8

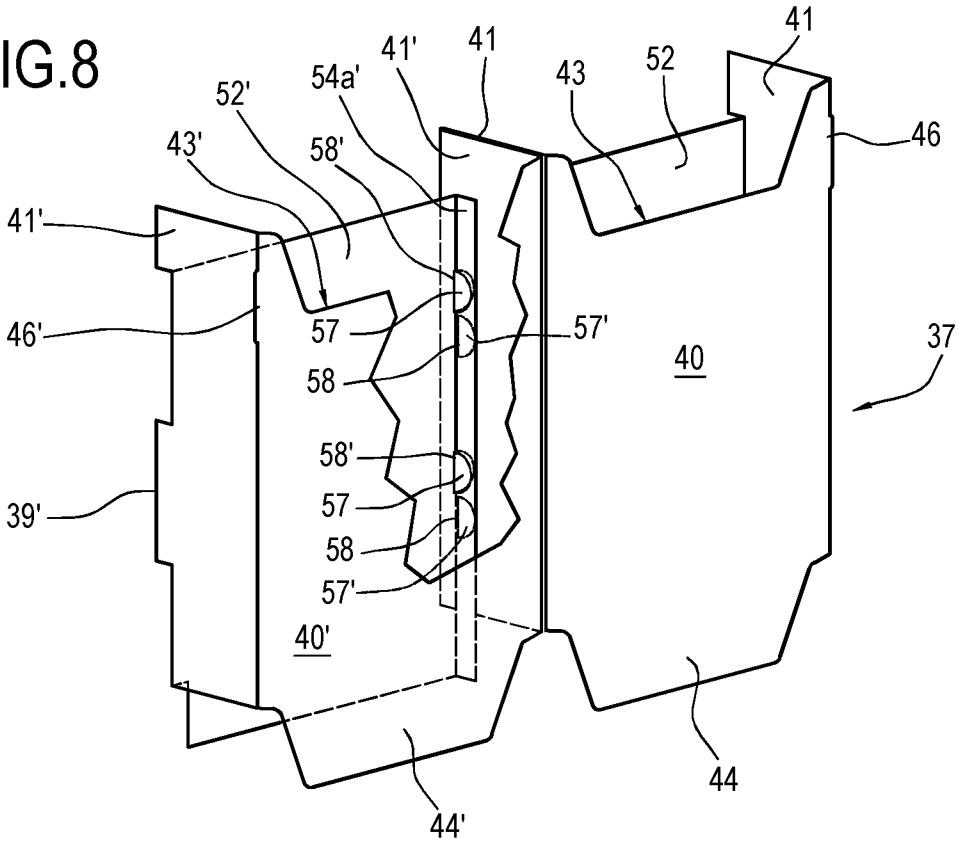

41
41'
41
54a'
43
52
52'
46
43'
58'
41'
46'
57
57'
37
40
58
58'
39'
57
58
57'
40'
44
44'

FIG.9

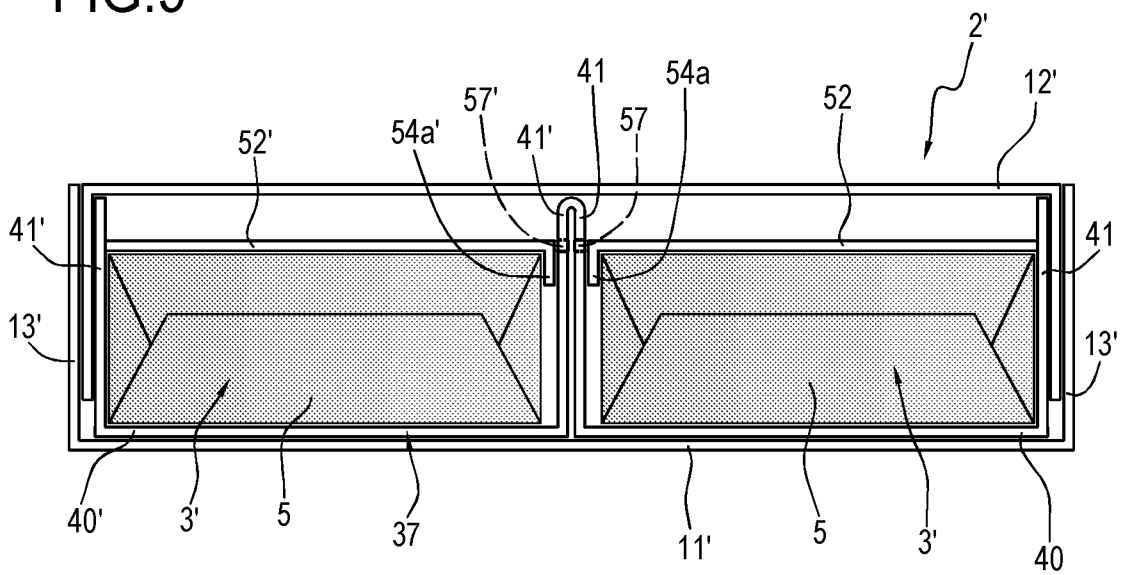

2'
12'
41
54a
57'
52
52'
54a'
41'
57
41'
41
13'
13'
40'
3'
5
37
11'
5
3'
40

FIG.9a

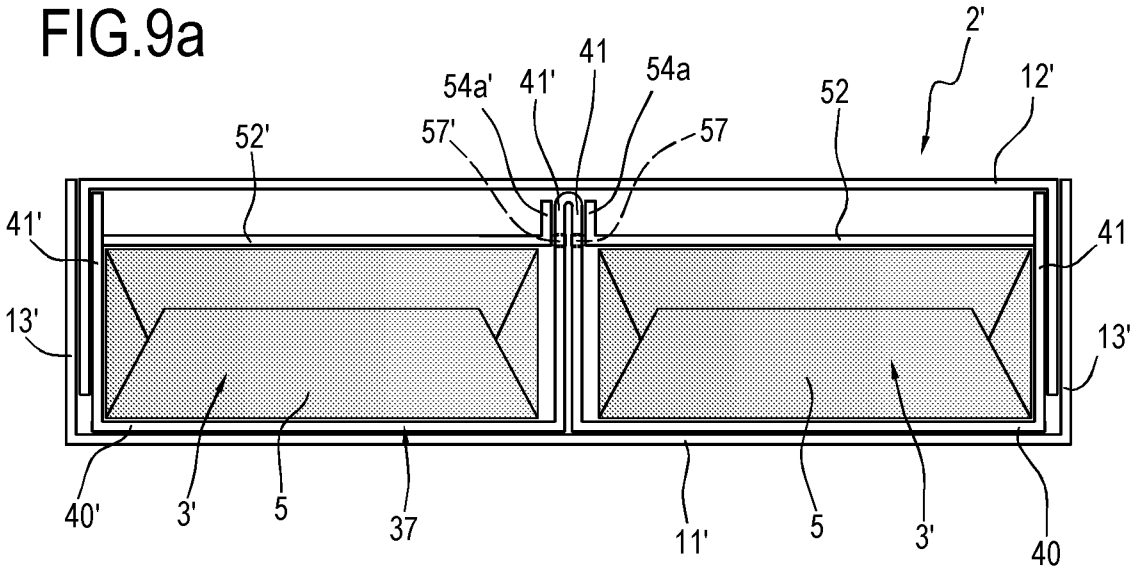


FIG.10

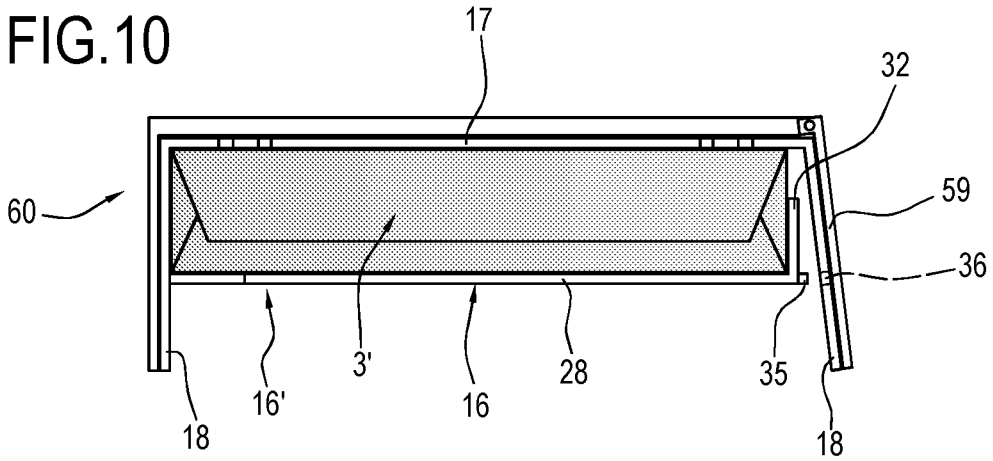


FIG.11

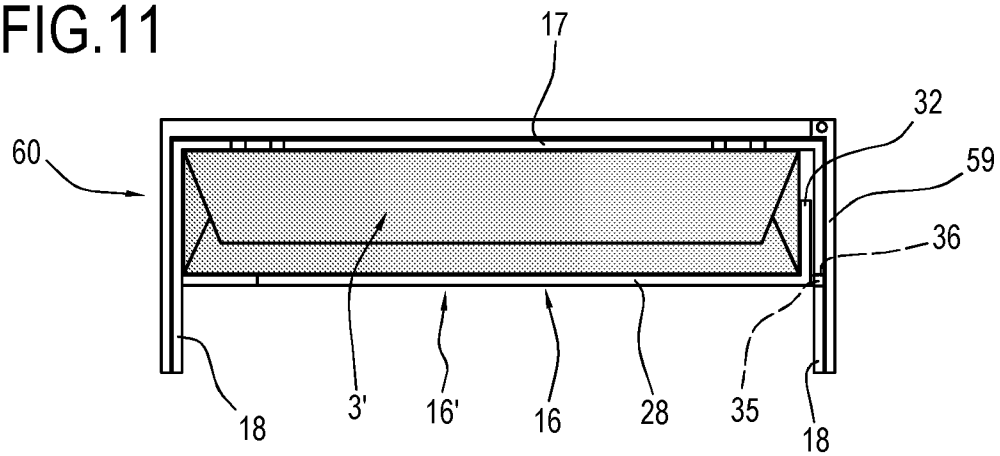


FIG.11a

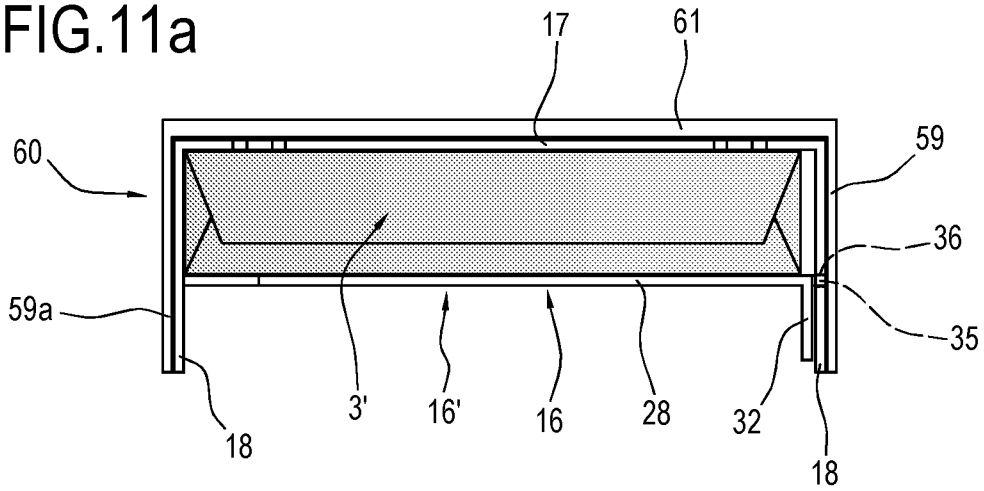


FIG.12

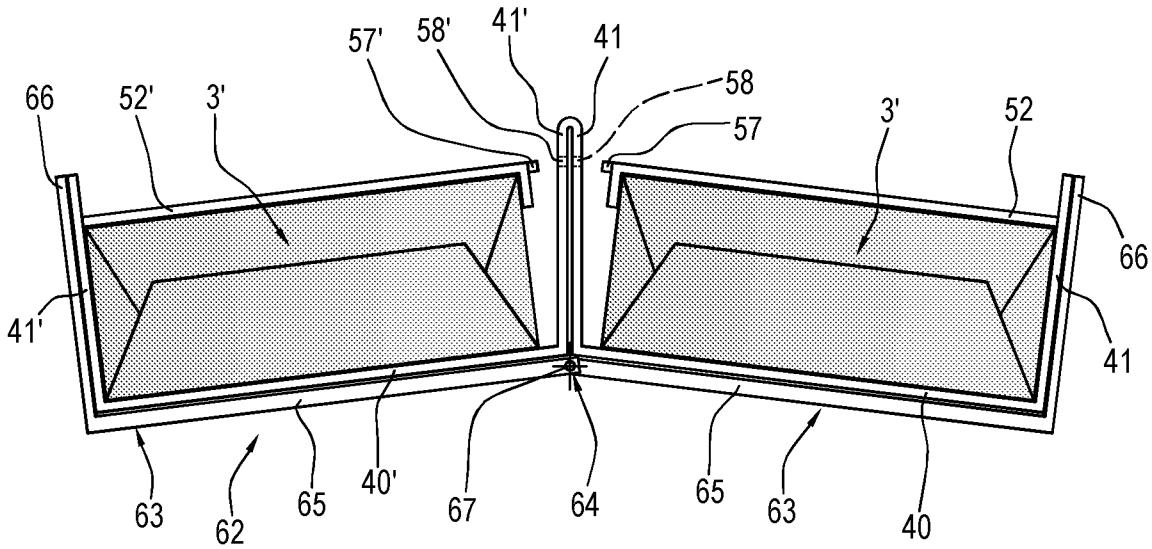


FIG.13

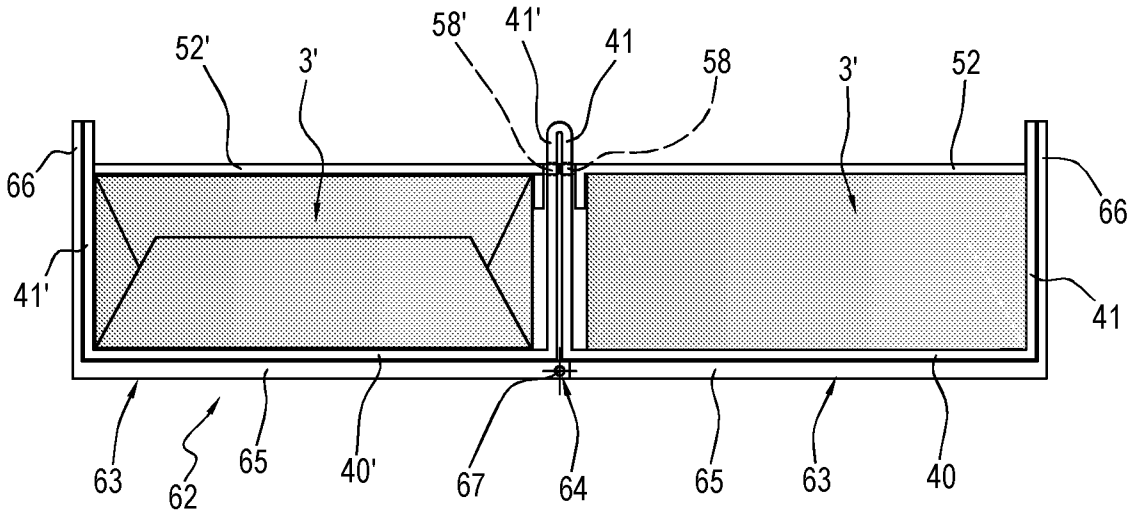


FIG.13a

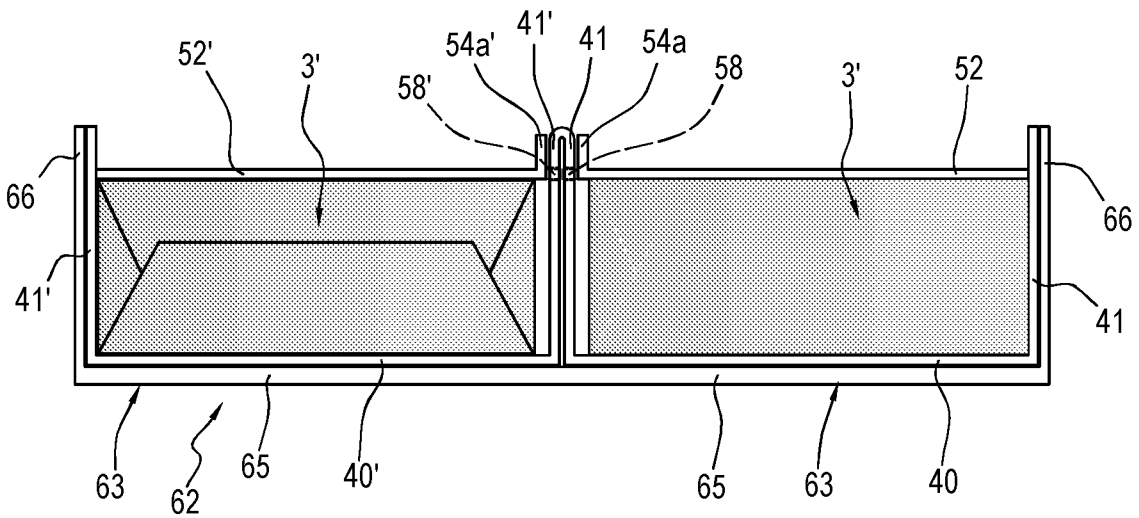


FIG.14

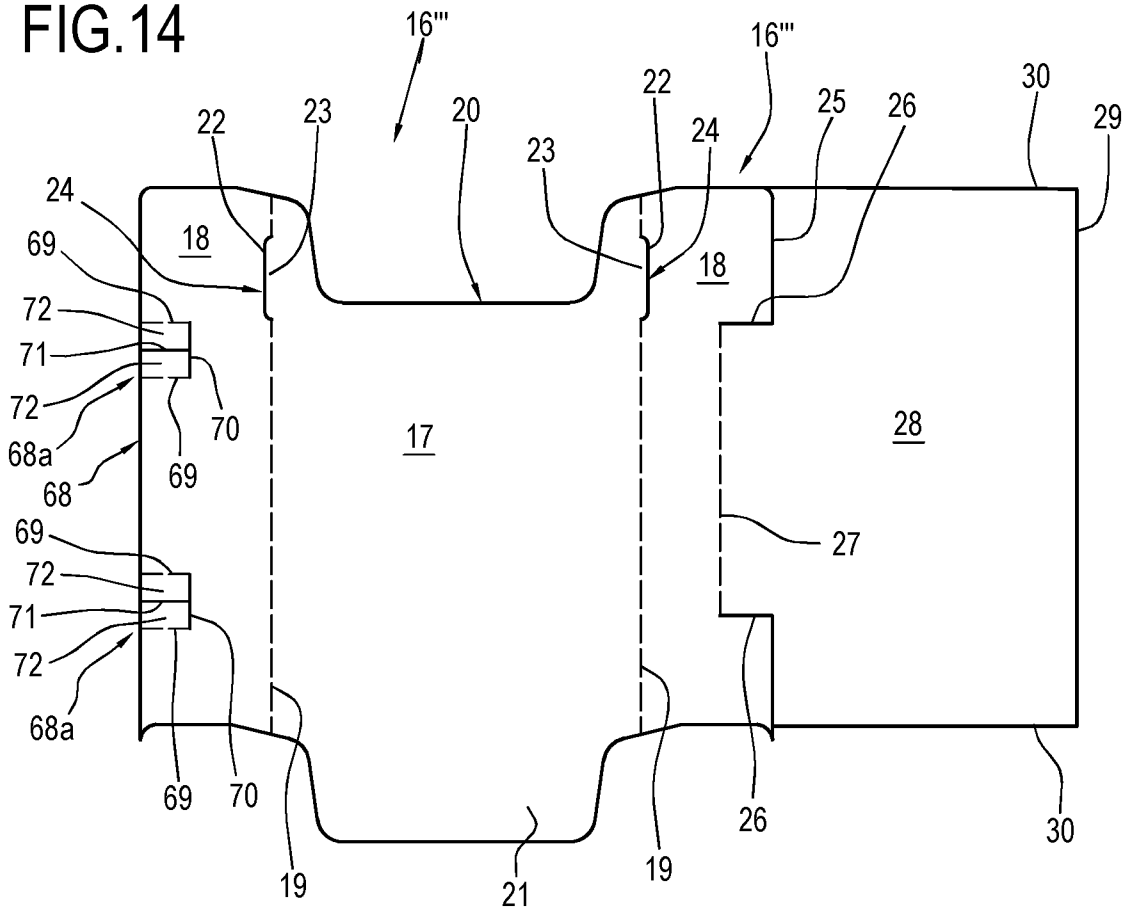

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FIG.16

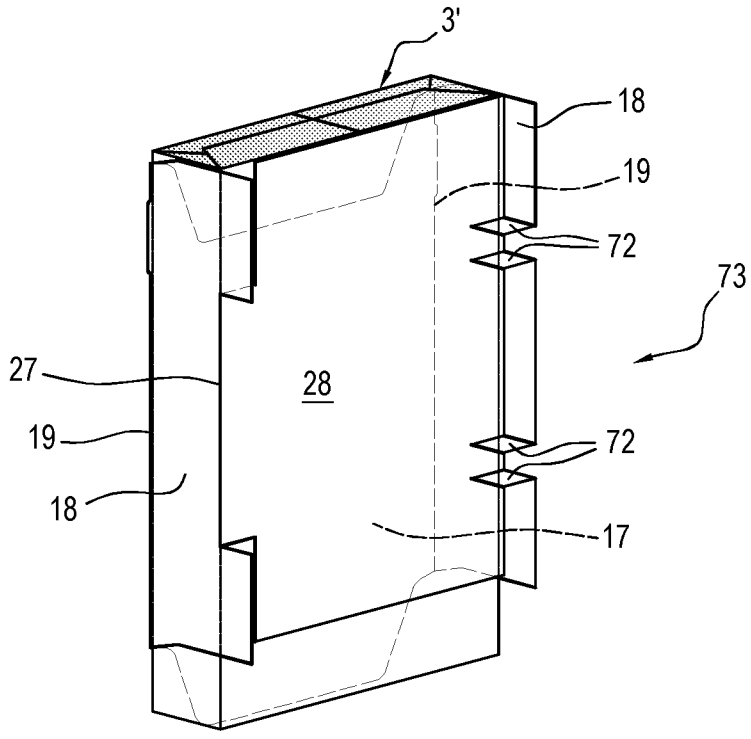

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FIG.14a

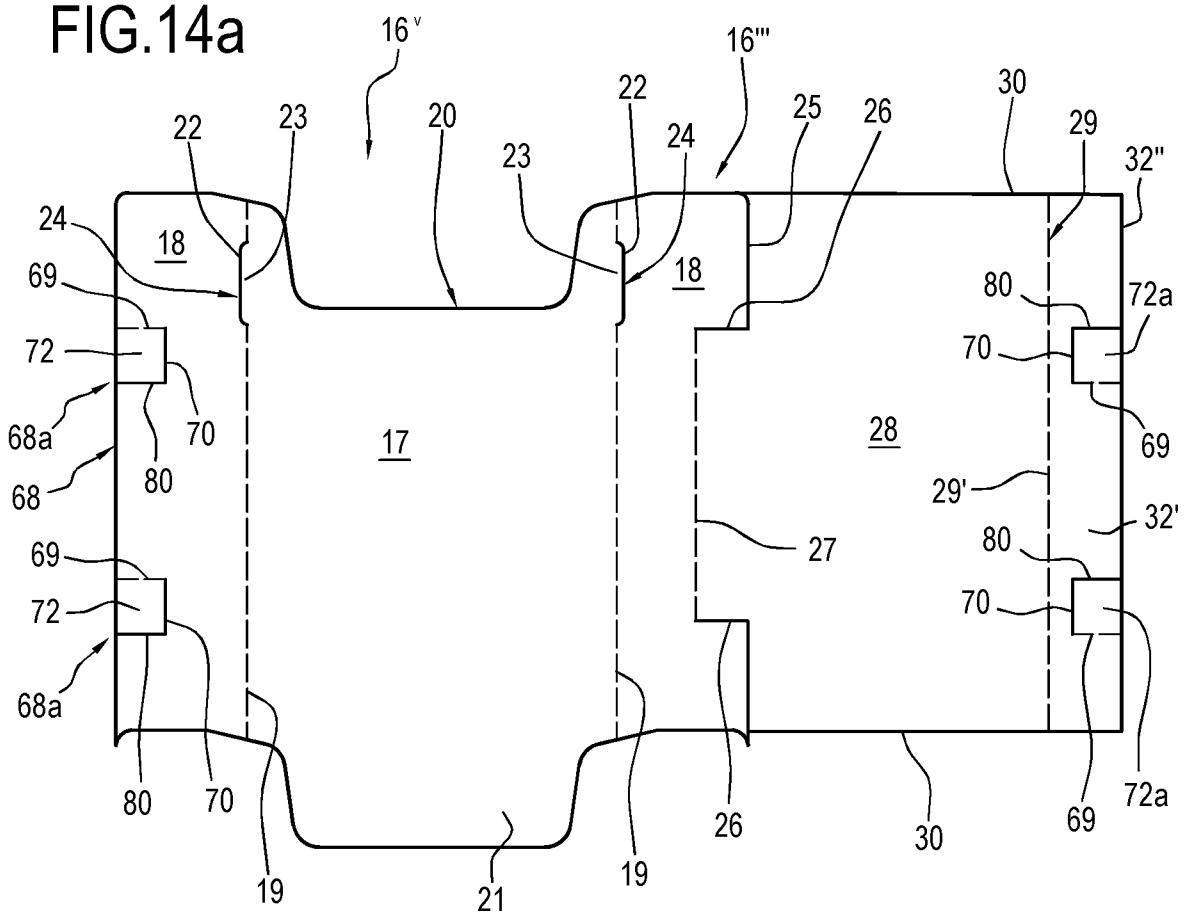


FIG.16a

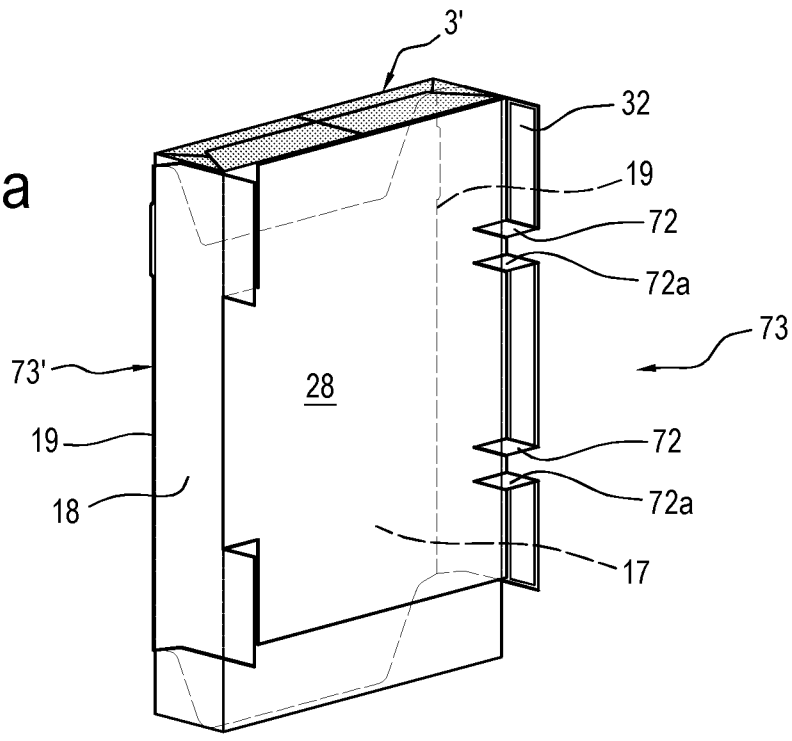


FIG.15

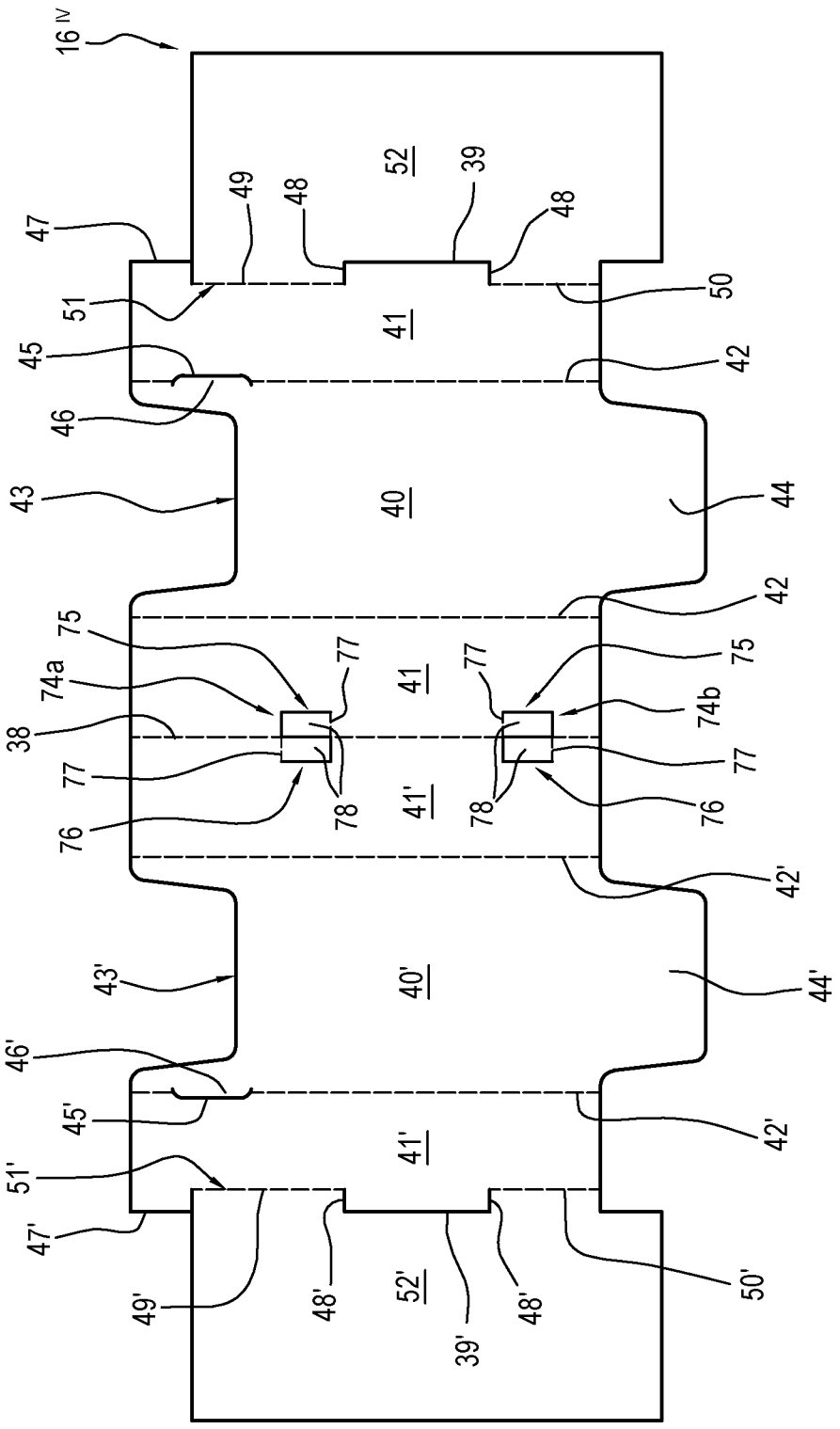
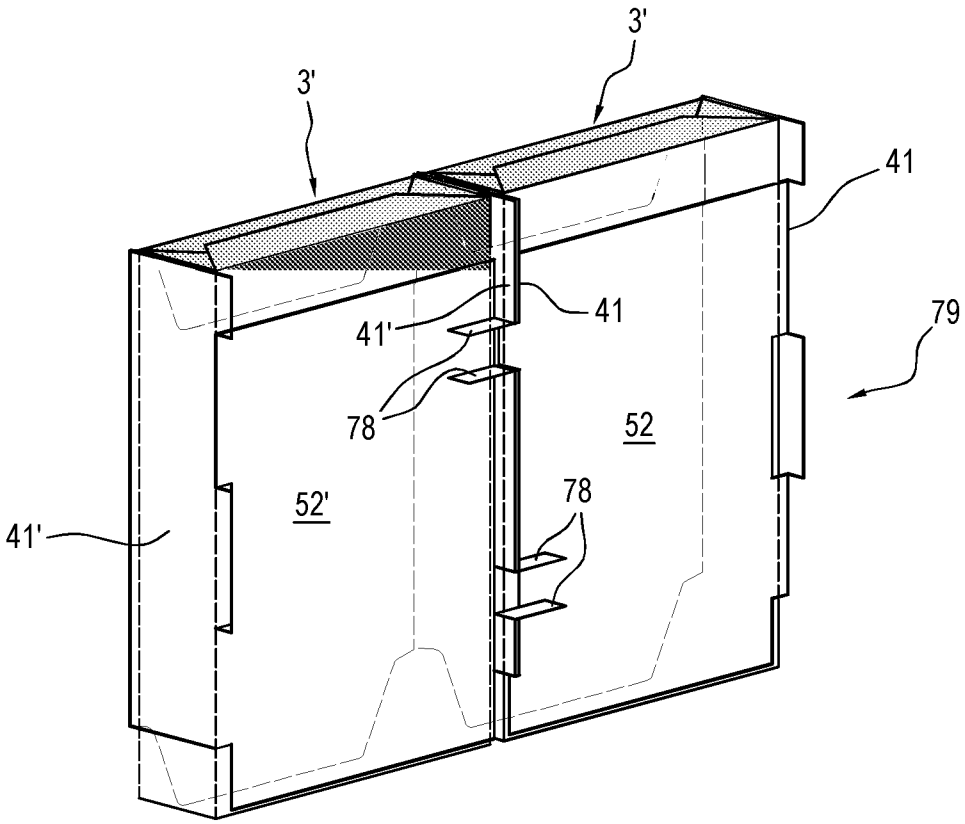

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FIG.17



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2015/059924

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D5/66 B65D85/10
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2011/060795 A1 (GUNDLACH VERPACKUNG GMBH [DE]; ILGNER KLAUS [DE]) 26 May 2011 (2011-05-26)	1,4,5
A	US 2013/334293 A1 (COATNEY TED R [US] ET AL) 19 December 2013 (2013-12-19) the whole document	1,6
A	DE 43 42 523 A1 (FOCKE & CO [DE]) 22 June 1995 (1995-06-22)	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5 April 2016	28/04/2016

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Ungureanu, Mirela

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2015/059924

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011060795 A1	26-05-2011	NONE	
US 2013334293 A1	19-12-2013	NONE	
DE 4342523 A1	22-06-1995	DE 4342523 A1	22-06-1995
		JP H07251889 A	03-10-1995
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