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(54) **COLLECTIVE CONTAINER, COLLECTIVE CONTAINER BLANK AND COLLECTIVE CONTAINER KIT WITH INDIVIDUAL CONTAINERS**

(57) The subject matter of the invention is a collective container used with individual containers, especially for soft fruit and mushrooms. Moreover, the invention provides the collective container blank and the kit that in-

cludes it. The collective container can be used in the transport, sales, during harvest and purchase of soft fruit and mushrooms.

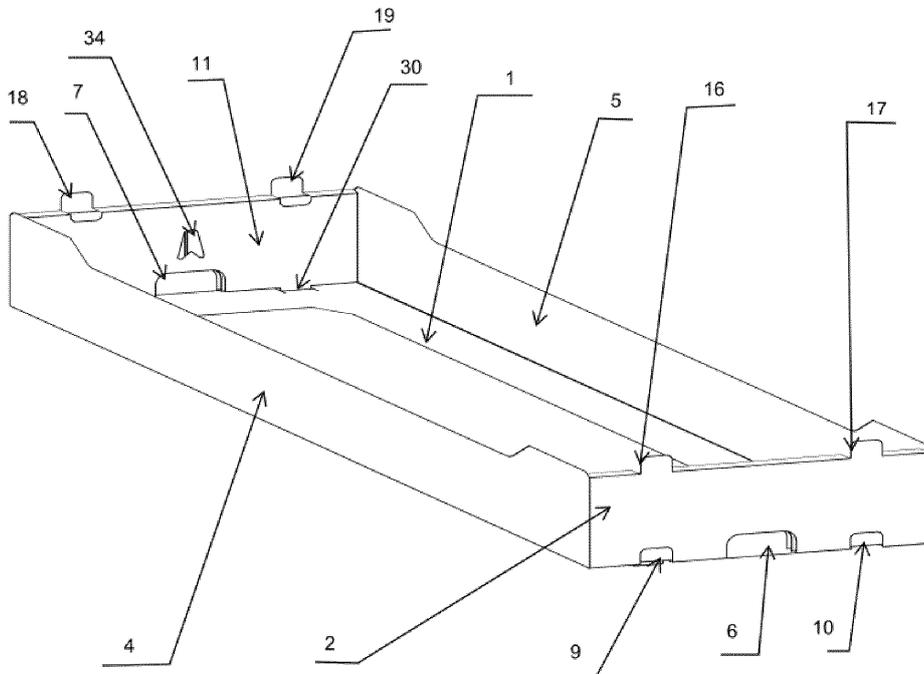


Fig. 1

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## Description

### Field of the invention

[0001] The subject matter of the invention is a collective container used together with individual containers, especially for fruit, vegetables and mushroom, a collective container blank and a collective container kit with individual containers. The collective container can be used during transport, storage, sales, harvest and purchase of fruit, vegetables and mushroom.

### Prior art

[0002] Collective packages used to collect, purchase, sell, transport and store fruit, mushroom and other products requiring transport in containers are often referred to as boxes, crates or, alternatively, containers. Such boxes, crates, containers or collective containers are usually made of corrugated cardboard, solid cardboard, polypropylene, planks or wood veneer.

[0003] Various types of fruit transportation boxes are known in the art.

[0004] Patent application PL211677 discloses an open-top container that can be stacked one on another and that is in the shape of a cuboid with an open-top surface, made of a single piece of flat, rigid sheet material, containing a horizontal bottom, vertical longer side walls, vertical shorter front wall, vertical shorter back wall, vertical stiffening walls, in which the cut lines, incision lines and/or scoring lines determine planes representing the horizontal bottom surface and vertical side walls, front wall and back wall surfaces connected to it at an angle of 90° using the clips, corner posts and reinforcing walls. The container can be machine or manually folded.

[0005] A prior art also discloses a cardboard sheet cut on a blanking die, which is manually folded by bending the four side walls (as shown in fig. 1). The two shorter walls are flap walls overlapping four tabs protruding from the long walls. Lock tabs on the shorter sides, after bending, enter so-called latches at the bottom of the box, which, at the same time, lock the flap walls with the tabs. The side and flap walls are, at the same time, structural elements, stiffening the package. The degree of stiffening depends on the quality and grammage of the corrugated cardboard used. The process of folding such a box takes approx. 15 seconds.

[0006] A prior art also discloses a cardboard sheet cut on a blanking die, which is automatically folded (as shown in fig. 2). The sheet, after cutting, is automatically collected from a feeder to a box forming machine. The bottom and side walls are created by bending the elements of the cardboard die cut by the machine. The flap elements are covered by fast-curing adhesive, which, after bending the side flaps, cures immediately. This stiffens the structure and provides the final form and shape. The side and flap walls are, at the same time, structural elements stiffening the package. The degree of stiffening depends on

the quality and grammage of the corrugated cardboard. The process of folding such a box is fully automated and takes about 3 seconds.

[0007] These solutions according to the art do not, however, solve the drawbacks related to:

- lengthy time of the manual folding process (this applies to boxes according to the art as presented in fig. 1); folding the box according to the art is labour and time consuming and takes about 15 seconds (as shown in fig. 1);
- using an abundance of raw materials to produce a suitable blank; forming proper flaps is possible when using a significant amount of raw materials (as shown in figs. 1 and 2);
- cost of transport (in the case of the prior art presented in fig. 2); when ordering automatically folded boxes, automatic folding results in the box being more structurally stable, but due to the fact that automatic gluing machines are very expensive, thus there is not a lot of them, transport and logistics of empty boxes from distribution centres is very expensive and burdensome, as well as empty boxes take storage space;
- the lengthy, and thus expensive, process of fruit and vegetables cooling in the boxes. Fruit and vegetables cooling time inside the box is relatively lengthy, and forced circulation of cool air inside the box is significantly hindered by a closed bottom or insufficient number of vent holes which do not correspond with the holes in the individual containers inserted into collective boxes. Maintenance of the required temperature of fruit and vegetables in collective boxes is not easy and requires dedicated trucks. Due to the abovementioned aspects, the process of cooling fruit and vegetables is not easy and is expensive.

[0008] The mentioned drawbacks of the prior art containers and packages obstruct their application, especially by soft fruit planters; however, until now, they did not have much of a choice. There is a need on the market for new collecting containers that correspond to individual containers, the application of which is user friendly.

[0009] For this reason, the aim of the invention is the development of a collective container dedicated for proper individual container, which will be thrown away after a single cycle, disposed of or recycled, and additionally, it will be easy to handle and transport by a planter and be consumer friendly. The aim of the invention is to streamline the time-consuming stage of container folding on the spot or, in the case of glued boxes, transport the container in its final form, as well as to reduce the expensive process of cooling fruit and vegetables in boxes and make the process more effective.

### Summary of the invention

[0010] The subject matter of the invention is a collective container in a cuboid form with an open-top surface

made of a flat, rigid sheet material, having a bottom, vertical side walls, external front and back vertical walls and internal front and back vertical walls, in which cutting lines, incision lines and/or scoring lines determine the surface representing the bottom surface and vertical surfaces of the side walls, the surfaces of external vertical front and back walls, as well as the internal vertical front and back wall connected to it at an angle of 90°, wherein, the external front vertical wall and external back vertical wall is fitted with at least one cut out hole at the bottom edge of the external front vertical wall and bottom edge of the external back vertical wall, adequately, allowing for stacking the containers, each of the external front vertical wall and external back vertical wall is fitted with at least one vertical setting fin to stack the container, which protrudes from the top edge of external front vertical and top edge of external back vertical wall, adequately, and corresponds to the setting hole, at least one side wall is fitted with at least one leaf, however it is placed adjacently to the edge of at least one of the side walls perpendicular to the bottom, at least one holder is cut out in the external front vertical wall and external back vertical wall in the middle part of the bottom edge of external front vertical wall and in the middle part of the bottom edge of external back vertical wall.

**[0011]** The container can be characterized by that at least two setting holes for stacking the containers are made in the external front vertical wall and external back vertical wall, wherein, these are located at the bottom edge of external front vertical wall and at the bottom edge of external back vertical wall between holder and the side edge of the external front vertical wall and side edge of external back vertical wall, adequately, vertical setting fins are made in the external front vertical wall and external back vertical wall in the peripheral part of the top edge of external front vertical wall and in the peripheral part of the top edge of external back vertical wall, adequately, which correspond to setting holes for stacking the containers, and the container has a hole taking at least 70% of the bottom surface.

**[0012]** In the first preferred aspect of the invention, the collective container can be characterized by the fact that lock tabs are provided on the bottom edge of internal front vertical wall and on the bottom edge of internal back vertical wall in the peripheral part of the edge, which correspond to holes allowing for stacking the packages, wherein the lock tabs are located firmly in the setting holes, with each of the lock tab in one hole, forming a clamp holding the internal front vertical wall and internal back vertical wall perpendicular to the bottom, and leaves are inserted into space formed by folding external front vertical wall and internal front vertical wall and into space formed between external back vertical wall and internal front vertical wall, wherein, two leaves are inserted into space between external front vertical wall and internal front vertical wall and

the two remaining leaves are inserted into space between external back vertical wall and internal front vertical wall so that vertical side walls are held perpendicular to the bottom and the container forms stable whole, and the bottom has at least one hole which area takes at least 70% of the total bottom area.

**[0013]** In the second preferred aspect of the invention, the container is made of rigid sheet material, which encompasses segments connected with each other in sequence, which when folded along the cutting lines, incision lines and/or scoring lines form side wall adjoining external vertical back wall from one side and external vertical front wall from the other side, to which side wall fitted with on leaf abuts,

wherein, to ends of the sheet are permanently connected with each other by connecting a leaf to external front vertical wall by means of fitting means, bottom is formed of two strips of rigid sheet material, wherein the strips adhere with one edge to the bottom edges of side walls and with the second, perpendicular edge adhere to peripheral part of the bottom edge of external front vertical wall and to peripheral part of external back vertical wall, wherein the strips are fixed to external front vertical wall and external back vertical wall by means of connecting bottom leaves which are extension of the strips forming the bottom to the bottom peripheral part of external front vertical wall and to bottom peripheral part of external back vertical wall, adequately by fixing means so that the container forms stable whole.

**[0014]** In the third preferred aspect, the collective container can be characterized by the fact that rigid sheet material consists of two identical sheet elements glued so that one sheet element when folded along cutting line, incision line and/or scoring line forms external front vertical wall and internal front vertical wall and side wall and bottom strip, wherein bottom wall is fitted with a leaf on the side opposite to external front vertical wall, the second sheet element forms external back vertical wall and internal back vertical wall, side wall and bottom strip, wherein side wall is fitted with a leaf on the side opposite to external back vertical wall, sheet elements are connected with the surface of two leaves by fixing the leaf to external back vertical wall using fixing means and by fixing the leaf to external front vertical wall by fixing means so that the container forms stable whole,

the bottom is formed of two strips of rigid sheet material, wherein the strips adjoin with one edge to the bottom edges of side walls adequately and with the second perpendicular edge adjoin the peripheral side of the bottom edge of external front vertical wall and to peripheral side of external back vertical wall, wherein, strips are fixed to external front vertical wall and external back vertical wall by connecting the bottom leaves, being an extension of bottom forming strips to the bottom peripheral part of external front vertical wall and to the bottom peripheral part of external back vertical wall by fixing means.

**[0015]** In the fourth preferred aspect of the invention, the container can be characterized by the fact that it has "M" shaped hole in the central part of the internal front vertical wall and central part of the internal front vertical wall and additionally it has a crossbeam of cross-section in the form of "V" letter, wherein the crossbeam is set so that ends of the crossbeam are positioned inside the "M" shaped holes and the crossbeam extends along central longitudinal axis of the container.

**[0016]** Subject of the invention is also a blank of the container according to the first aspect of the invention, having a form of flat, rigid sheet material with a bottom, side walls located adjacently to the bottom on its opposite sides adequately, wherein the first side wall adjoins the bottom with its edge and the other side wall adjoins to the bottom with its edge, external front vertical wall, wherein external front vertical wall adjoins with its top edge the top edge of internal front vertical wall and with the second edge parallel to the top edge, i.e. bottom edge, to the bottom, and the two remaining edges are free, wherein external front vertical wall is located between internal front vertical wall and the bottom, external vertical back wall, wherein external vertical back wall is located between internal back vertical wall and the bottom and the with the top edge it adjoins internal back vertical wall and with the edge parallel to the top edge, i.e. bottom edge, to the bottom and the two remaining edges are free, wherein the internal front vertical wall is positioned adjacently with its top edge to external front vertical wall and it is positioned on the opposite side to the bottom,

the internal back vertical wall is positioned adjacently with its top edge to external back vertical wall and it is positioned on the opposite side to the bottom,

characterized by the fact that

bottom edge of internal front vertical wall has lock tabs and the bottom edge of internal back vertical wall has lock tabs,

setting fins extend from the top edge of external front vertical wall in its peripheral part, and at its bottom edge on peripheral side of the wall, setting holes are cut out that correspond to setting fins, and a holder is cut out in the centre,

setting fins extend from the top edge of external back vertical wall in its peripheral part, and at its bottom edge on peripheral side of the wall, setting holes are cut out that correspond to setting fins, and a holder is cut out in the centre,

wherein, leaves adapted for insertion into the space between external front vertical wall and internal front vertical wall and between external back vertical wall and internal back vertical wall are the extension of edges of side walls perpendicular adequately to edges adjoining the bottom, wherein the blank has a hole taking at least 70% of bottom area.

**[0017]** Subject of the invention is also the container blank according to the second aspect of the invention, which has a bottom composed of two bottom strips with

bottom leaves properly adjoining the edges of bottom strips perpendicular to bottom edges of side walls, side walls positioned with their bottom edges adjacently to bottom strips, adequately, the first side wall adjoins the strip with its edge, the second side wall adjoins the strip with its edge and adjacently with its side edges perpendicular to edges - the first side wall to external front vertical wall and on the opposite side to external back vertical wall and the second side wall to external front vertical wall and on the opposite side to the leaf, external front vertical wall, wherein external front vertical wall is located between the first side wall and the second side wall and it adjoins with its first side edge to the first side wall and with its second side edge to the second side wall, and with its top edge it adjoins internal front vertical wall and it has a holder cut out at the bottom edge in the central part and holes in the peripheral part corresponding to setting fins located on the top edge of external front vertical wall;

external back vertical wall, wherein external back vertical wall is located adjacently with shorter edge to the side wall and the other shorter side edge of the wall remains free, wherein the external back vertical wall adjoins with its top edge internal front vertical wall and it has a holder cut out at the bottom edge in the central part and holes in the peripheral part corresponding to setting fins located on the top edge of external back vertical wall;

leaf, adjoining the side edge perpendicular to side wall edge, on the side opposite to external front vertical wall, is adapted to connect with peripheral part of external back vertical wall,

wherein bottom strips form the bottom whose surface is open in 70%.

**[0018]** Subject of the invention is also the container blank according to the fourth aspect of the invention, comprising one sheet element, which has one bottom strip with bottom leaves properly adjoining the shorter edges of the bottom strip, which are perpendicular to edge adjoining the bottom wall; side wall adjoining the bottom strip;

external front vertical wall, wherein external front vertical wall is located adjacently with the first side edge to the side wall and the second shorter side edge of the wall remains free, top edge adjoins internal front vertical wall and wherein it has a holder cut out at the bottom edge in the central part and holes in the peripheral part corresponding to setting fins located on the top edge of external front vertical wall; and

leaf, adjoining the side edge of side wall side wall, on the side opposite to external front vertical wall, is adapted to connect with the second element of the blank;

and the other sheet element, which has one bottom strip with bottom leaves properly adjoining the shorter edges of the bottom strip, which are perpendicular to edge adjoining the bottom wall; side wall adjoining the bottom strip;

external back vertical wall, wherein external back vertical wall is located adjacently with the first side edge to the

side wall and the other shorter side edge of the wall remains free, top edge adjoins internal back vertical wall and wherein it has a holder cut out at the bottom edge in the central part and holes in the peripheral part corresponding to setting fins located on the top edge of external back vertical wall; and

leaf, adjoining the side edge of side wall side wall, on the side opposite to external back vertical wall, is adapted to connect with the first element of the blank;

**[0019]** Subject of the invention is also a blank according to any of the aforementioned aspects of the invention characterized by the fact that it has an "M" shaped hole located in the central part of internal front vertical wall and in the central part of internal front vertical wall.

**[0020]** Subject of the invention is also a kit including a collecting container according to the invention and individual containers inserted in it.

**[0021]** Moreover, subject matter of the invention is collective container in the cuboid form with open top surface, made of flat, rigid sheet material, having a bottom, vertical side walls, external front and back vertical walls and internal front and back vertical walls, in which cutting lines, incision lines and/or scoring lines determine surface representing bottom surface and vertical surfaces of side walls, surfaces of external vertical front and back walls as well as internal vertical front and back wall connected to is at the angle 90°,

wherein, each of the external front vertical wall and external back vertical wall is fitted with at least one cut out hole at the bottom edge of external front vertical wall and bottom edge of external back vertical wall, adequately, allowing for stacking the containers,

each of the external front vertical wall and external back vertical wall is fitted with at least one vertical setting fin to stack the container, which protrudes from the top edge of external front vertical and top edge of external back vertical wall, adequately, and corresponds to the setting hole,

at least one side wall is fitted with at least one leaf, however it is placed adjacently to the edge of at least one of the side walls perpendicular to the bottom,

at least one holder is cut out in the external front vertical wall and external back vertical wall in the middle part of the bottom edge of external front vertical wall and in the middle part of the bottom edge of external back vertical wall.

**[0022]** The container can be characterized by that at least two setting holes for stacking the containers are made in the external front vertical wall and external back vertical wall,

wherein, these are located at the bottom edge of external front vertical wall and at the bottom edge of external back vertical wall between holder and the side edge of the external front vertical wall and side edge of external back vertical wall, adequately,

vertical setting fins are made in the external front vertical wall and external back vertical wall in the peripheral part of the top edge of external front vertical wall and in the

peripheral part of the top edge of external back vertical wall, adequately, which correspond to setting holes for staking the containers, and the container has a hole taking at least 50% of the bottom surface.

**[0023]** The containers may have the following dimensions when assembled: 79/29 cm. Alternatively, the dimensions after folding can be 59/39 cm.

**[0024]** Orientation of the corrugation in corrugated board is very important for the container design, as it determines the rigidity and strength of the packaging. If the corrugation runs in such a way that its length is parallel to the shorter side of the base, the structural strength is much higher than in the case when the corrugation is situated in the level of the packaging. While designing the container according to the invention, the high strength of the packaging was the constructional tenet, allowing for their palletization up to 16 layers with fruit.

Brief description of figures

**[0025]** The subject of the invention is presented in the following figures:

Illus. 1 presents a hand-made container according to the art.

Illus. 2 presents an automatically folded container according to the art.

Fig. 1 presents a perspective view of the collective container according to the first embodiment; Fig. 2 presents a perspective view of the collective container according to the second embodiment;

Fig. 3 presents a perspective view of the collective container according to the third embodiment;

Fig. 4 presents a perspective view of the collective container according to the fourth embodiment;

Fig. 5 presents a top view of the collective container blank according to the first embodiment; Fig. 6 presents side elevation view of the collective container blank according to the second embodiment;

Fig. 7 presents side elevation view of the collective container blank according to the third embodiment;

Fig. 8 - 11 present subsequent stages of folding the collective container blank according to the first embodiment;

Fig. 12 - 14 present subsequent stages of folding the collective container blank according to the third embodiment;

Fig. 15 presents the container element according to the fourth embodiment;

Fig. 16 presents the collective container kit with individual containers in a perspective view;

Fig. 17 presents a perspective view of the col-

lective container according to the sixth embodiment;

Fig. 18 presents a top view of the collective container blank according to the seventh embodiment

**[0026]** The following numbering is used in the description:

- 1 - bottom
- 1a - bottom strip
- 1b - bottom strip
- 2 - external vertical front wall
- 3 - external vertical back wall
- 4 - vertical side wall
- 5 - vertical side wall
- 6 - holder
- 7 - holder
- 8 - internal vertical front wall
- 9 - setting hole
- 10 - setting hole
- 11 - internal vertical back wall
- 12 - setting hole
- 13 - setting hole
- 16 - setting fin
- 17 - setting fin
- 18 - setting fin
- 19 - setting fin
- 20 - leaf
- 21 - leaf
- 22 - leaf
- 23 - leaf
- 25 - bottom leaf
- 26 - bottom leaf
- 27 - lock tab
- 28 - lock tab
- 29 - lock tab
- 30 - lock tab
- 31 - bottom leaf
- 32 - bottom leaf
- 33 - M-shaped hole
- 34 - M-shaped hole
- 35 - crossbeam
- 36 - individual container

### Description of embodiments

**[0027]** According to the first embodiment, the invention applies to the collective container presented in fig. 1 cut out from a sheet of corrugated cardboard and designed for manual folding. The aspect of the invention was also presented in the form of the container blank in the form of a sheet cut out of corrugated cardboard presented on fig. 5 and figs. 8 - 11 presenting subsequent stages of folding the container from flat blank to three-dimensional collective container. Even though that in this aspect the collective container is designed for manual folding, it does not exclude the option of automatic or

semi-automatic folding.

**[0028]** Fig. 5 presents collective container in the form of sheet blank before it is folded along bending lines and manually or otherwise folded in to the collective container form. As shown in fig. 5, the container blank has a form of a flat, rigid sheet material, which has a bottom 1, whose area is open in at least 70%. Persons ordinary skill in the art will notice that 70% of open bottom area can be achieved by making one hole of area corresponding to 70% of the bottom area of by making a few holes, preferably two or four, which total area is at least 70% of the bottom area.

**[0029]** The blank shown in fig. 5 also has side walls 4, 5 located adjacently to the bottom 1, correspondingly on its opposite sides: first side wall 4 adjacently with the first edge 14 to the bottom 1 and the second side wall 5 adjacently with the second edge 15 to the bottom.

**[0030]** Persons ordinary skill in the art will notice that side wall can have rectangular shape, but can also have a narrowing in the top part so that the middle part of the top edge of side walls is positioned slightly lower than the peripheral part of the top edge of side walls, as presented on the figure.

**[0031]** The blank also have external front vertical wall 2, wherein external front vertical wall 2 is located between internal front vertical wall 8 and the bottom 1. External front vertical wall 2 adjoins with its top edge to internal top edge of front vertical wall 8 and with the second edge, i.e. bottom and parallel to the top edge, to the bottom 1, and the two remaining edges of the internal front vertical wall are free.

**[0032]** On the side opposite to the bottom 1, the blank has external vertical back wall 3, wherein external vertical back wall 3 is located between internal front vertical wall 11 and the bottom 1 and the with the top edge it adjoins internal front vertical wall 11 and with the edge parallel to the top edge, i.e. bottom edge, to the bottom. The remaining two edges of external back vertical wall remain free.

**[0033]** As shown in fig. 5, internal front vertical wall 8 is located adjacently with its top edge to internal front vertical wall 2 and it is located on the side opposite to the bottom 1 and the internal back vertical wall 11 is located adjacently with its top edge to the external back vertical wall 3 and it is positioned on the side opposite to the bottom 1.

**[0034]** At the same time, bottom edge of internal front vertical wall 8 has lock tabs 27, 28 and the bottom edge of internal back vertical wall 11 has lock tabs 29, 30. Lock tabs are used as clips to lock internal walls in setting holes, 9, 10, 12, 13 located two each at the bottom edge of external front vertical wall 2 and bottom edge of external back vertical wall 2. Because of the lock tabs and setting holes, it is possible to provide stable container in a few seconds.

**[0035]** Fig. 5 presents also that setting fins 16, 17 extend from the top edge of external front vertical wall 2 in its peripheral part, and at its bottom edge on peripheral

side of the wall 2, setting holes 9, 10 are cut out that correspond to setting fins 16, 17. Setting fins are used to stack the containers. When stacking the containers one on the other, setting fins are positioned inside the setting holes of the collective container positioned over the container with fins. Persons ordinary skill in the art will notice that setting fins can be placed in any location on the edge on condition that these locations correspond to setting holes.

**[0036]** The holder 6 is cut out in the centre of the top edge of external front vertical wall 2. The holder is used to lift the container.

**[0037]** Similarly, setting fins 18, 19 extend from the top edge of external back vertical wall 3 in its peripheral part, and at its bottom edge on peripheral side of the wall 3, setting holes 12, 13 are cut out that correspond to setting fins, and a holder 7 is cut out in the centre. Protruding and cut out elements in the external back vertical wall have the same functions as those described above in case of external front vertical wall.

**[0038]** Leaves 21, 22, 23, 24 are the extension of shorter edges of side walls 4, 5, i.e. edges perpendicular to edge 14 and 15, adjoining the bottom 1, adapted to insert them inside the space between external and internal front vertical wall and between external and internal back vertical wall.

**[0039]** External 2 and internal 8 vertical front wall and external 3 and internal 11 vertical back wall as well as leaves 21, 22, 23, 24 are at the same time structural elements stiffening the container after assembly. The degree of stiffening depends on the quality and grammage of corrugated cardboard and the direction of waves in the corrugated cardboard. Alternatively, container blank is made of a cardboard, carton or polypropylene. As an example, one may use three-layer corrugated cardboard with wave B of thickness ca. 3 mm.

**[0040]** Collective container according to the first embodiment can be delivered in a flat version, in the form of a blank, as shown in fig. 5 for DIY assembly. At the site it is delivered to, it can be manually folded, wherein the folding takes significantly less than in case of a container according to prior art as presented on draw. 1.

**[0041]** Fig. 1 presents collective container folded from a blank given in fig. 5 according to the first embodiment. Collective container is in a cuboid shape with open top surface and it is made of a single piece of flat, rigid sheet material. The container has a bottom 1, vertical side walls 4, 5, external vertical front 2 and back 3 wall and internal vertical front 8 and back 11 wall.

**[0042]** Bottom edges of internal front vertical wall 8 and bottom edge of internal back vertical wall 11, in the peripheral part of the edge, have lock tabs 27, 28, 29, 30 which correspond to setting holes 9, 10, 12, 13. Setting holes are used to stack packages and at the same time, in this embodiment, together with lock tabs 27, 28, 29, 30 form clips holding the internal front vertical wall 8 and internal back vertical wall 11 perpendicularly to the container bottom 1. The container also has a pair of holder

6, 7 cut out in the middle parts at the bottom edges of external wall 2, 3 and internal walls 8, 11. As presented in fig. 1, the container forms stable whole because of lock tabs 27, 28, 29, 30 firmly inserted in the setting holes 9, 10, 12, 13, one lock tab in one hole and because that two leaves 22, 23 are inserted from the side of front external wall 2 into the space between external front vertical wall 2 and internal front vertical wall 8 and the remaining two leaves 20, 21 from the side of back external wall 3 into the space between external back vertical wall 3 and internal front vertical wall 11.

**[0043]** To clarify the subsequent stages of folding the container according to the first embodiment, fig. 8 - 11 present subsequent stages of folding the collective container. Fig. 8 shows the first stage of folding - folding the side walls 4, 5 of the blank of fig. 5 and creating a frame. Leaves 20, 21, 22, 23 and internal back vertical wall and external front vertical wall 2 as well as internal back vertical wall 11 and internal front vertical wall 8 are not folded. Fig. 9 shows the second stage of folding - folding the leaves 20, 21, 22, 23 of fig. 5 and creating a frame. Internal back vertical wall and external front vertical wall 2 as well as internal back vertical wall 11 and internal front vertical wall 8 are not folded. Fig. 10 presents the third stage of folding the blank of fig. 5 into the collective container according to the first embodiment - folding the external back vertical wall 3 and external front vertical wall 2. Leaves 20, 21, 22, 23 are folded and form a frame. Internal back vertical wall 11 and internal front vertical wall 8 are not folded. Fig. 11 presents the fourth stage of folding - folding internal back vertical wall 11 and internal front vertical wall 8. Leaves 20, 21, 22, 23 are folded and form a frame. Internal back vertical wall and external front vertical wall 2 are folded and internal back vertical wall 11 and internal front vertical wall 8 are partially folded. The last stage of folding, not shown on figure, is inserting the lock tabs 27, 28, 29, 30 in setting holes 9, 10, 12, 13 and providing stable container, as shown in fig. 1.

**[0044]** According to the second embodiment of the invention presented in the form of a container in fig. 2 and in the form of corresponding container blank in fig. 6, the container has a form of cut out sheet of corrugated cardboard and designed for semi-automatic folding. This does not exclude the option of automatic or manual folding.

**[0045]** Fig. 6 presents collective container in the form of sheet blank before it is folded along bending lines and connected by cold gluing or using two-sided adhesive tape into the collective container form.

**[0046]** Fig. 6, bottom 1 of the blank is composed of two bottom strips 1a, 1b equipped with bottom leaves 25, 26, 31, 32, adequately adjacent to shorter edges of the bottom strips 1a, 1b, i.e. edges perpendicular to edges adjacent to side walls 4, 5. Surface of the bottom is open to about 70%. Persons ordinary skill in the art will notice that in case of this embodiment, one cannot use a hole, as in case of the first embodiment. Space in the bottom is formed by placing special bottom strips 1a, 1b being

an extension of side walls and forming the bottom.

**[0047]** The blank has an external front vertical wall 2, wherein external front vertical wall 2 is located between side wall 4 and side wall 5 and it adjoins with the first side edge to the side wall 4 and with the second side edge to the side wall 5, and with the top edge to internal front vertical wall 8, wherein at the bottom edge it has a holder 6 cut out in the central part and setting holes 9, 10 in the peripheral part of the side wall 2 corresponding to lock tabs 16, 17 on the top edge of the wall 2. The blank also has an external front vertical wall 3, wherein external front vertical wall 3 is located adjacently with its shorter edge to the side wall 4 and the second shorter edge of side wall 3 remains free, wherein wall 3, adjoins with its top edge to internal front vertical wall 11 and at the bottom edge it has a holder 7 cut out in the central part and setting holes 12, 13 in the peripheral part of the side wall 2 corresponding to lock tabs 18, 19 on the top edge of the wall 3. The blank can be characterized by the fact that side walls 4, 5 are located with their bottom edges 14, 15 adjacently to the bottom strips 1a, 1b, adequately the first side wall 4 adjacent with its edge 14 to the strip 1a and the other side wall 5 adjacent with its edge 15 to the strip 1b as well as adjacent with their side edges to external vertical walls 2, 3, adequately side wall 4 to external front vertical wall 2 and to external back vertical wall 3 and the side wall 5 to external back vertical wall 2. Key element of this embodiment is leaf 23 being an extension of side wall 5 and located on the side opposite to side wall 5 comparing to external front vertical wall 2. It is adapted to connect the peripheral part of external back vertical wall 3.

**[0048]** The provision of a stable container is possible due to the special blank of the collective container, as presented in fig. 6, by connecting the side wall 5 with the internal wall 3 in its peripheral part, as presented in fig. 3, by connecting the leaf 23, being an extension of the side wall 5, by fixing means to the surface of the external back vertical wall 3.

**[0049]** Fig. 3 presents a collecting container according to the second embodiment, in a cuboid shape with an open-top surface. The container is formed from a single piece of flat, rigid sheet material. The container has a bottom 1 comprising strips 1a, 1b open at least 70%, vertical side walls 4, 5, an external vertical front 2 and back 3 wall and an internal vertical front 8 and back 11 wall. The collecting container is formed by connecting the side wall 5 with the external back vertical wall 3 of the sheet in the form of a blank, as shown in fig. 6, by fixing means on the surface on one leaf 23. The bottom 1 is formed of two strips 1a, 1b of rigid sheet material, wherein the strips 1a, 1b adjoin with longer edges to the bottom edges of side walls 4, 5 adequately and with shorter perpendicular edges adjoin the peripheral part of the bottom edges of the external front vertical wall 2 and the external back vertical wall 3. The strips 1a, 1b are fixed to the external front vertical wall 2 and the external back vertical wall 3 by connecting the bottom leaves 25, 26,

31, 32, being an extension of the bottom strips 1a, 1b composing the bottom from the side of shorter edges to the bottom peripheral part of external front vertical wall 2 and to the bottom peripheral part of external back vertical wall 3 by fixing means. Persons ordinary skill in the art will notice that the fixing means can include a hot and cold applied adhesive or two-sided adhesive tape.

**[0050]** The blank construction shown in fig. 6 allows for folding it flat for transport purposes or to deliver the collective collecting container according to the second embodiment in the form of a semi-finished product, wherein the side wall 5 is permanently fixed to the external back vertical wall 3 using the fixing means as presented in fig. 13, and the whole is folded flat, as presented in fig. 14.

**[0051]** According to the third embodiment of the invention, the collective container is provided as shown on fig. 3 made of a two-element blank whose elements are identical to these presented in fig. 7. This embodiment is also presented in fig. 12 - 14 presenting stages of folding the semi-finished product and the collective container. The container according to the third embodiment has the form of a cut out sheet of corrugated cardboard and is designed for semi-automatic folding. This does not exclude the option of automatic or manual folding.

**[0052]** Fig. 7 presents two elements of the sheet blank before the two elements are bent along the bending lines and connected by means of a hot or cold applied adhesive or two-sided adhesive tape into the form of the collective container according to the third embodiment.

**[0053]** Each of the blank elements has one bottom strip designated as 1a or 1b with bottom leaves designates as 25, 27 or 31, 28, 32, adequately adjacent to the shorter edges of the bottom strip 1a or bottom strip 1b, i.e. edges perpendicular to edges adjacent to side wall 4 or side wall 5. Moreover, each of the blank elements has a side wall designated as 5 or 6 located adjacent to one of the bottom strips 1a, 1b. Each of the elements has one external vertical wall designated as 2 or 3, wherein the external vertical wall is positioned adjacently with its first side edge to the side wall designated as 5 or 6 and the other side edge of external vertical wall remains free. The external vertical wall 2 or external vertical wall 3 adjoins with its top edge to the internal vertical wall designated as 8 or 11, wherein in the central part at the bottom edge it has a cut out holder 6 or 7 and setting holes designated as 9, 10, or 12, 13, located in the peripheral part of wall 2 or wall 3, which corresponds to setting fins designated as 16, 17 or 18, 19, located on the top edge of wall 2 or wall 3. Each of the elements has a leaf designated as 23 or 20 adapted to connect the elements with each other. To provide a full blank of the collective container presented in fig. 12, leaf 20 is permanently fixed with the peripheral part of external front vertical wall 2. To obtain the semi-finished product as presented in figs. 13 and 14, leaf 23 is permanently fixed with the peripheral part of the external back vertical wall 3. Because of the bottom strips 1a and 1b, the surface of the bottom is 72% open.

**[0054]** Elements of the blank have side walls designated as 4 and 5, which are positioned with bottom edges 14 and 15 adjacently to the bottom strips 1a, 1b, adequately the first side wall 4 adjoins strip 1a with its edge 14 and the second side wall 5 adjoins strip 1b with its edge 15. In the blank elements, the side wall adjoins with side edges - side wall 4 to external back vertical wall 3 and side wall 5 to external front vertical wall 2.

**[0055]** The blank construction shown in fig. 7 allows for folding the blank flat for transportation purposes or delivering the collective container according to the third embodiment in the form of the semi-finished product, as presented in figs. 11 - 13 directly to the site: plantation, purchase place. At the same time, the provision of the container in the form of two elements significantly facilitates the transport and production of the blank.

**[0056]** Fig. 3 presents the collective container in the cuboid form with open top surface consisting of 2 elements of flat, rigid sheet material in the form of elements presented in fig. 7. The container has a bottom 1, open approximately 70%, vertical side walls 4, 5, external vertical front 2 and back 3 wall and internal vertical front 8 and back 11 walls. The collective container is made by bending elements presented in fig. 7 along the bending lines and connecting side wall 5 of one element with external vertical wall 3 of the other element A behind the surface of leaf 23 of the first element, using fixing means and connecting side wall 4 of the other element with external vertical wall 2 of the first element behind the surface of leaf 20 of the first element B, using fixing means. The bottom 1 is formed of two strips 1a, 1b of rigid sheet material, wherein the strips 1a, 1b adjoin with one edge to the bottom edges of side walls 4, 5 adequately, and with the second perpendicular edge adjoin the peripheral part of the bottom edge of external vertical walls 2 and 3. Wherein, strips 1a, 1b are fixed to external vertical walls 2 and 3 by connecting the bottom leaves 26, 27, 31, 32, being an extension of bottom strips 1a, 1b composing the bottom, adequately bottom leaves 25, 26 to the bottom peripheral part of external front vertical wall 2 and bottom leaves 31, 32 to the external back vertical wall 3 by means of fixing means. The surface of the bottom is about 70% Open. Persons ordinarily skilled in the art will notice that in the case of this embodiment, one cannot use a hole, as in the case of the first embodiment. The space in the bottom is formed by placing special bottom strips being an extension of the side walls and forming the bottom.

**[0057]** Figs. 12 - 14 present subsequent stages of folding the container presented in fig. 3. Fig. 12 presents the first stage of forming the container - connecting 2 elements of fig. 7 with each other by means of the surface of leaf 20 and closing the external walls 8 and 11 and connecting them with external walls 2 and 3, adequately. Leaf 23 remains free. Fig. 13 presents the second stage of connecting the container elements - connecting the second external wall 3 with side wall 5 by means of the surface of the leaf 23 and forming the container frame.

Strips 1a, 1b remain free, bottom leaves are not connected with external walls. Fig. 14 presents the method of folding the container alternatively to the second stage, wherein as in the second stage, the second external wall 3 is connected with side wall 5 using leaf 23 and the container frame is formed. Strips 1a, 1b remain free, bottom leaves are not connected with external walls, but the container is in the flat folded version. In such a form, the container is delivered to a plantation or packing site.

**[0058]** Containers according to embodiments 1 - 3 are compatible as collective containers for fruit containers disclosed in patent application P-415748.

**[0059]** According to the fourth embodiment of the invention presented in fig. 4, the container has the form of a cut out sheet of corrugated cardboard and designed for semi-automatic folding. This does not exclude the option of automatic or manual folding. The container blank, according to the fourth embodiment is the same as the container blank according to the second and the third embodiment, but additionally has two M shaped holes adapted to receive cross-beam 35.

**[0060]** As presented in fig. 4, container M shaped holes 33, 34 are cut out in the central part of internal front vertical wall 8 and the central part of internal front vertical wall 11, and additionally the container has a cross-beam of cross-section in the form of the letter "V", wherein the cross-beam is set so that the ends of the cross-beam are positioned inside the M shaped holes and the cross-beam extends along the central longitudinal axis of the container.

**[0061]** Cross-beam 35 as shown in fig. 15 is made of flat, rigid sheet material, preferably corrugated cardboard in the shape of a rectangle, which is bent in the centre along the longer side to a V shape.

**[0062]** In the other aspect of the invention, M shaped holes and a cross-beam can be applied in containers according to the first embodiment.

**[0063]** The term "fixing means" is known to a person ordinarily skilled in the art and applies to hot gluing, cold gluing or by means of two-sided adhesive tape, but it also means binding using staples or stitching.

**[0064]** The surface of the collective container bottom 50% open according to the invention provides access of air to individual containers inside the collective container. The bottom of the container according to the invention can be open at least 50%, 60%, 70%, 75%, 80%, 85%, 90% or 95%. The percentage the bottom of the collective container according to the invention is open depends on the material the container is made of and the individual containers are made of which are inserted inside it. In one embodiment of the collective container according to the invention, opening the bottom surface provides at least one hole. However, the hole or holes are located so that they prevent the falling out of individual containers inserted inside the collective container according to the invention. More preferably, proper opening of the bottom provides one centrally located hole made in the bottom of the container according to the invention, which is sim-

ilar to a rectangle in shape, wherein the remaining fragments around it provide sufficient support for individual containers placed inside the collective container according to the invention. In the alternative embodiment, when the collective container bottom opening is provided by two strips positioned along the bottom edges of the side walls, these are sufficiently wide to provide support for individual containers located inside the collective container according to the invention.

**[0065]** In one embodiment, the collective container according to the invention is used to store individual containers, the length of which corresponds to the width of the collective container according to the invention (i.e. the width of the wall formed by folding the internal and external front vertical walls and internal and external back vertical walls). The length of the collective container according to the invention (i.e. the length of its side walls) will be the multiplicity of individual containers widths which will be inserted in it.

**[0066]** Alternatively, it is possible to place inside the collective container according to the invention shorter containers than the width of the collective container. This is possible because of the cross-beam installed along the central longitudinal axis of the collective container. In this embodiment, shorter individual containers will be supported on one side on the bottom fragments or bottom strips, and on the other side on the cross-beam, which will prevent their falling out through the open surface of the bottom of the container according to the invention.

**[0067]** Alternatively, it is possible to place inside the collective container, according to the invention, containers of a length equal to half of the width of the collective container. In this embodiment, shorter individual containers will be supported on one side on the bottom fragments or bottom strips, and on the other individual container, which will prevent their falling out through the open surface of the bottom of the container according to the invention.

**[0068]** According to the fifth embodiment, the invention provides a kit comprising the collective container according to the invention and removable individual containers 36 located inside it. According to the invention, individual containers are any containers that can be used to harvest, purchase, transport and store soft fruit, such as punnets. The height of individual containers 36 basically corresponds to or is less than the height of side walls 4, 5 and the front and back walls formed by folding external vertical front wall 2 and internal vertical front wall 8, as well as external vertical back wall 3 and internal vertical back wall 11, so that it is possible to stack collective containers, according to the invention, which house individual containers. The width of containers 36 is selected so that the length of the collective container according to the invention, i.e. the length of its side walls 4, 5 represents the multiplicity of the width of the containers 36. This allows for matching the number of individual containers so that after inserting them into the collective container according to the invention they cannot freely

move along the collective container, and at the same time it is possible to easily remove and insert them.

**[0069]** In one embodiment, the length of individual containers 36 basically corresponds to the width of the collective container according to the invention, i.e. the width of the front wall and back wall formed by folding external vertical front wall 2 and internal vertical front wall 8, as well as external vertical back wall 3 and internal vertical back wall 11. This means that individual containers are supported by fragments of the bottom 1 in the collective container according to the invention surrounding the hole, as mentioned in the first embodiment or alternatively they are supported by bottom strips 1a, 1b as mentioned in the second and the third embodiment. This way individual containers 36 cannot freely move sideways in the collective container according to the invention, and at the same time they are protected against falling through the bottom 1 of the collective container according to the invention.

**[0070]** Alternatively, in embodiment of the invention, individual containers 36 have a length less than the width of the collective container according to the invention. In such a case, it is necessary to apply the collective container according to the invention from the fourth, i.e. with cross-beam 35. In this case, individual containers are supported on cross-beam 35 on one side and on bottom 1 fragments or bottom strips 1a, 1b on the other.

**[0071]** A special form of the kit according to the invention is presented in fig. 16, which shows the collective container according to the first embodiment, which is additionally fitted with M shaped holes 33, 34 in the central part of internal front vertical wall 8 and the central part of internal back vertical wall 11, as well as cross-beam 35, where in it includes individual containers 36 located in two rows, one next to the other, which are inserted so that their shorter edges are positioned in parallel to side walls 4, 5 of the collective container and cross-beam 35 and longer edges are located parallel to external vertical front wall 2 and external vertical back wall 3. Moreover, each of the individual containers is supported by bottom strip 1a or bottom strip 1b from one side and by cross-beam 35 on the other. Such support precludes their falling out from the collective container according to the invention. Individual containers 36 are placed closely one next to the other, which precludes their shifting, but at the same time allows for easy insertion and removal of a container from the collective container according to the invention.

**[0072]** According to the sixth embodiment, the invention applies to the collective container presented in fig. 17 cut out from a sheet of corrugated cardboard and designed for manual folding. Even though in this aspect the collective container is designed for manual folding, it does not exclude the option of automatic or semi-automatic folding. The container blank in fig. 17 has the form of a flat, rigid sheet material, which has a bottom 1, whose area is open in 52% open. Persons ordinarily skilled in the art will notice that 52% of open bottom area can be

achieved by making one hole of an area corresponding to 52% of the bottom area or by making a few holes, preferably two or four, whose total area is at least 52% of the bottom area. The container in fig. 17 is the same as the container in fig. 1, except that the bottom has a hole sized 52% of the bottom area.

**[0073]** According to the seventh embodiment, the invention applies to the collective container presented in fig. 18 cut out from a sheet of corrugated cardboard and designed for manual folding. In the seventh embodiment, the pre-cut has all the features of the pre-cut shown in the first embodiment of the invention, but it differs from the pre-cut shown in the first embodiment of the invention by the fact that it is made from corrugated board, wherein the orientation of the corrugation in the corrugated board, from which the pre-cut is made, is such that the direction of length of the internal corrugation in the board is parallel to the straight line running through the shorter side of the container base. Due to the orientation of the corrugation in the corrugated board, the structural strength of the container after folding from this pre-cut is significantly higher than in the case when the corrugation in the board would run parallel to the length of the base. For the sake of such orientation of the corrugation, the board is not crushed while the containers are stacked one upon another.

**[0074]** The containers according to the invention:

- save up to 20% of raw materials, by using a new blank and removing the bottom - which is of great importance, not only from the costs standpoint, but environmental protection as well;
- the box is delivered directly to the planter as a flat piece, which significantly reduces the costs of transport and storage;
- the process of gluing takes ca. 5 seconds and is done by a simple semi-automatic machine, operated by an unskilled person;
- due to the delivery of flat boxes, the storage space is reduced to a minimum;
- significant improvement of cooling conditions of fruit inside the box from its bottom due to lack of the bottom and adapting individual containers to it, which significantly improves the circulation of cool air.

**[0075]** A new blank can be folded/glued manually directly in the plantation at a rate close to an automatic machine without engaging transport means and using the workforce. By eliminating the box bottom, faster fruit cooling is possible, which is very important in the cooling process as well as the transportation and logistics processes, and favourably affects the value and quality of fruit.

**[0076]** An advantage of the solutions according to the invention is the reduction of folding/gluing time from ca. 15 s in the prior art to ca. 5 s.

**[0077]** The application of semi-automatic folding for individual purposes eliminates distribution centres which

are intermediaries between raw materials producers and planters. Because of the new blank, folding the new box is much easier and faster. This allows for the application of new boxes both by small producers of fruit and vegetables and by large planters.

## Claims

1. The collective container in the cuboid form with an open top surface, made of flat, rigid sheet material, having a bottom (1), vertical side walls (4, 5), external front (2) and back (3) vertical walls and internal front (8) and back (11) vertical walls, in which cut lines, incision lines and/or scoring lines determine planes representing the horizontal bottom (1) surface and vertical side walls (4, 5), front wall (2) and back wall (3) surfaces and internal vertical front (8) and back (11) wall connected to it at an angle of 90°.
- wherein, each external front vertical wall (2) and external back vertical wall (3) is fitted with at least one cut out hole at the bottom edge of the external front vertical wall (2) and bottom edge of the external back vertical wall (3), adequately, allowing for stacking the containers,
- wherein, each external front vertical wall (2) and external back vertical wall (3) is fitted with at least one setting fin for stacking the containers, which protrudes from the top edge of the external front vertical wall (2) and the top edge of the external back vertical wall (3), adequately, and corresponds with its location to a setting hole,
- at least one side wall (4, 5) is fitted with at least one leaf (20, 21, 22, 23). However, it is placed adjacent to the edge of at least one of the side walls (4, 5) perpendicular to the bottom (1),
- at least one holder (6, 7) is cut out in the external front vertical wall (2) and external back vertical wall(3) in the middle part of the bottom edge of the external front vertical wall (2) and in the middle part of the bottom edge of the external back vertical wall (3).
- characterized in that**
- at least two setting holes (9, 10, 12, 13) for stacking the containers are made in the external front vertical wall (2) and external back vertical wall (3), wherein, these are located at the bottom edge of the external front vertical wall (2) and at the bottom edge of the external back vertical wall (3) between holder (6, 7) and the side edge of the external front vertical wall (2) and the side edge of the external back vertical wall (3), adequately,
- vertical setting fins (16, 17, 18, 19) are made in the external front vertical wall (2) and the external back vertical wall (3) in the peripheral part of the top edge of the external front vertical wall (2) and in the peripheral part of the top edge of the external back ver-

tical wall (3), adequately, which corresponds to setting holes (9, 10, 12, 13) for stacking the containers; wherein the container has a hole taking at least 50% of the bottom surface.

2. The container, according to claim 1, is **characterized in that** lock tabs (27, 28, 29, 30) are provided on the bottom edge of the internal front vertical wall (8) and on the bottom edge of the internal back vertical wall (11) in the peripheral part of the edge, which corresponds to setting holes (9, 10, 12, 13) allowing for stacking the packages, wherein the lock tabs (27, 28, 29, 30) are located firmly in the setting holes (9, 10, 12, 13), with each of the lock tabs in one hole, forming a clamp holding the internal front vertical wall (8) and internal back vertical wall (11) perpendicular to the bottom (1); leaves (20, 21, 22, 23) are inserted into the space formed by folding the external front vertical wall (2) and the internal front vertical wall (8), and into the space formed between the external back vertical wall (3) and the internal front vertical wall (11); wherein, two leaves (20, 21) are inserted into the space between the external front vertical wall (2) and the internal front vertical wall (8), and the two remaining leaves (22, 23) are inserted into the space between the external back vertical wall (3) and the internal front vertical wall (11) so that the vertical side walls (4, 5) are held perpendicular to the bottom (1), and the container forms a stable whole, and the bottom (1) has at least one hole whose area takes up at least 70% of the total bottom (1) area.
3. The container according to claim 1 is **characterized in that** the rigid sheet material cover segments connected with each other, which after bending along cutting lines, incision lines and/or scoring lines form the side wall (4) adjoining on one side the external vertical back wall (3) and on the other the external vertical front wall (2), to which the side wall (5) fitted with one leaf (23) abuts, wherein, the ends of the sheet are permanently connected with each other by connecting a leaf (23) to the external front vertical wall (2) by fitting means, the bottom (1) is formed of two strips (1a, 1b) of rigid sheet material, wherein the strips (1a, 1b) adhere with one edge to the bottom edges of side walls (4, 5) adequately and with the second, perpendicular edge adhere to the peripheral part of the bottom edge of the external front vertical wall (2) and to the peripheral part of the external back vertical wall (3), wherein the strips (1a, 1b) are fixed to the external front vertical wall (2) and the external back vertical wall (3) by means of connecting bottom leaves (25, 26, 31, 32) which are extensions of the strips (1a, 1b) forming the bottom to the bottom peripheral part of external front vertical wall (2) and to the bottom peripheral part of the external back vertical wall (3),

adequately by fixing means so that the container forms a stable whole.

4. The container according to claim 1, is **characterized in that** rigid sheet material consists of two identical sheet elements glued so that one sheet element, when folded along the cutting line, incision line and/or scoring line, forms the external front vertical wall (2) and the internal front vertical wall (8) and side wall (5) and bottom strip (1b), wherein the bottom wall is fitted with a leaf (23) on the side opposite to the external front vertical wall (2), the second sheet element forms the external back vertical wall (3) and the internal back vertical wall (11), side wall (4) and bottom strip (1a), wherein the side wall (4) is fitted with a leaf (20) on the side opposite to the external back vertical wall (3), sheet elements are connected with the surface of two leaves (20, 23) by fixing the leaf (23) to the external back vertical wall (3) using fixing means and by fixing the leaf (20) to the external front vertical wall (2) by means of fixing means so that the container forms a stable whole, the bottom (1) is formed of two strips (1a, 1b) of rigid sheet material, wherein the strips (1a, 1b) adjoin with one edge to the bottom edges (14, 15) of side walls (4, 5) adequately and with the second perpendicular edge adjoin the peripheral side of the bottom edge of the external front vertical wall (2) and to the peripheral side of the external back vertical wall (3), wherein, strips (1a, 1b) are fixed to the external front vertical wall (2) and the external back vertical wall (3) by connecting the bottom leaves (25, 26, 31, 32), being an extension of bottom forming strips (1a, 1b) to the bottom peripheral part of the external front vertical wall (3) and to the bottom peripheral part of the external back vertical wall (3) fixing means.
5. The container according to any of the foregoing claims is **characterized in that** it has an M shaped hole (33, 34) in the central part of the internal front vertical wall (8) and the central part of the internal front vertical wall (11), and the container additionally has a cross-beam (35) of a cross-section in the form of the letter V, wherein the cross-beam is set so that the ends of the cross-beam are positioned inside the M shaped holes (33, 34) and the cross-beam extends along the central longitudinal axis of the container.
6. The container blank according to claim 1 or 2 have the form of a flat, rigid sheet material having a bottom (1), side walls (4, 5) located adjacent to the bottom (1) on its opposites sides adequately, the first side wall (4) adjoins the bottom (1) with the edge (14), and the second side wall (5) adjoins the bottom (1) with edge (15),

the external front vertical wall (2), wherein the external front vertical wall (2) adjoins with its top edge the top edge of the internal front vertical wall (8) and with the second edge parallel to the top edge, i.e. bottom edge, to the bottom (1), and the two remaining edges are free, wherein the external front vertical wall (2) is located between the internal front vertical wall (8) and the bottom (1),

external vertical back wall (3), wherein the external vertical back wall (3) is located between the internal back vertical wall (11) and the bottom (1) and the with the top edge it adjoins the internal back vertical wall (11) and with the edge parallel to the top edge, i.e. the bottom edge, to the bottom (1) and the two remaining edges are free,

wherein the internal front vertical wall (8) is positioned adjacently, with its top edge to the external front vertical wall (2) and it is positioned on the side opposite to the bottom (1),

the internal back vertical wall (11) is positioned adjacently, with its top edge to the external back vertical wall (3) and it is positioned on the opposite side to the bottom (1), is

**characterized in that**

the bottom edge of the internal front vertical wall (2) has lock tabs (27, 28) and the bottom edge of the internal back vertical wall (11) has lock tabs (29,30), setting fins (16,17) extend from the top edge of the external front vertical wall (2) in its peripheral part, and at its bottom edge on the peripheral side of the wall (2), setting holes (9, 10) are cut out that correspond to setting fins (16, 17), and a holder (6) is cut out in the centre,

setting fins (16,17) extend from the top edge of the external back vertical wall (3) in its peripheral part, and at its bottom edge on the peripheral side of the wall (3), setting holes (12, 13) are cut out that correspond to setting fins, and a holder (7) is cut out in the centre,

wherein, leaves (21,22, 23, 24) adapted for insertion into the space between the external front vertical wall (2) and the internal front vertical wall (8) and between the external back vertical wall (3) and the internal back vertical wall (11) are the extension of edges of side walls (4, 5) perpendicular adequately to the edges (14, 15) adjoining the bottom (1),

wherein the container has a hole taking up at least 70% of the bottom surface.

7. The container blank, according to claim 1 or 3, is **characterized in that** it has

a bottom (1) comprising two bottom strips (1a, 1b) with bottom leaves (25, 26, 31, 32) properly adjacent to the edges of the bottom strips (1a, 1b) perpendicular to bottom edges (14, 15) of side walls (4, 5), side walls (4, 5) positioned with their bottom edges (14, 15) adjacent to bottom strips 1a, 1b), adequately, the first side wall (4) adjoins the strip (14) with its

edge (1a), the second side wall (5) adjoins the strip (1b) with its edge (15) and adjacent with its side edges perpendicular to edges (14, 15) - side wall (4) to the external front vertical wall(2) and on the opposite side to the external back vertical wall (3) and side wall (5) to the external front vertical wall (2) and on the opposite side to the leaf (23),

the external front vertical wall (2), wherein the external front vertical wall (2) is located between the side wall (4) and the side wall (5) and it adjoins with its first side edge to the side wall (4) and with its second side edge to the side wall (5), and with its top edge it adjoins the internal front vertical wall (8) and it has a holder (6) cut out at the bottom edge in the central part and holes (, 10) in the peripheral part corresponding to setting fins (16,17) located on the top edge of the external front vertical wall (2);

the external back vertical wall(3), wherein the external back vertical wall (3) is located adjacently, with shorter edge to the side wall (4) and the other shorter side edge of the wall (3) remains free, wherein the external back vertical wall (3) adjoins with its top edge the internal front vertical wall (11) and it has a holder (7) cut out at the bottom edge in the central part and setting holes (12, 13) in the peripheral part corresponding to setting fins (18, 19) located on the top edge of the external back vertical wall (3);

leaf (23), adjoining the side edge perpendicular to the side wall (5) edge (15), on the side opposite to the external front vertical wall (2) is adapted to connect with the peripheral part of the external back vertical wall (3),

wherein bottom strips (1a, 1b) form the bottom (1), the surface of which is 70%open.

8. The container blank, according to claim 1 or 4, is **characterized in that** it has a single sheet element (A) that has

one bottom strip (1b) with bottom leaves (26, 32) properly adjoining the shorter edges of the bottom strip (1b), which are perpendicular to the edge adjoining the bottom wall (5);

the side wall (5) adjoining the bottom strip (1b);

the external front vertical wall (2), wherein the external front vertical wall (2) is located adjacently with the first side edge to the side wall (5) and the second side edge of the wall remains free, the top edge adjoins the internal front vertical wall (8), wherein it has a holder (6) cut out at the bottom edge in the central part and holes (9, 10) in the peripheral part corresponding to setting fins (16,17) located on the top edge of the external front vertical wall (2); and leaf (23), adjoining the side edge of the side wall side wall (5), on the side opposite to external front vertical wall (2), is adapted to connect with the second element of the blank;

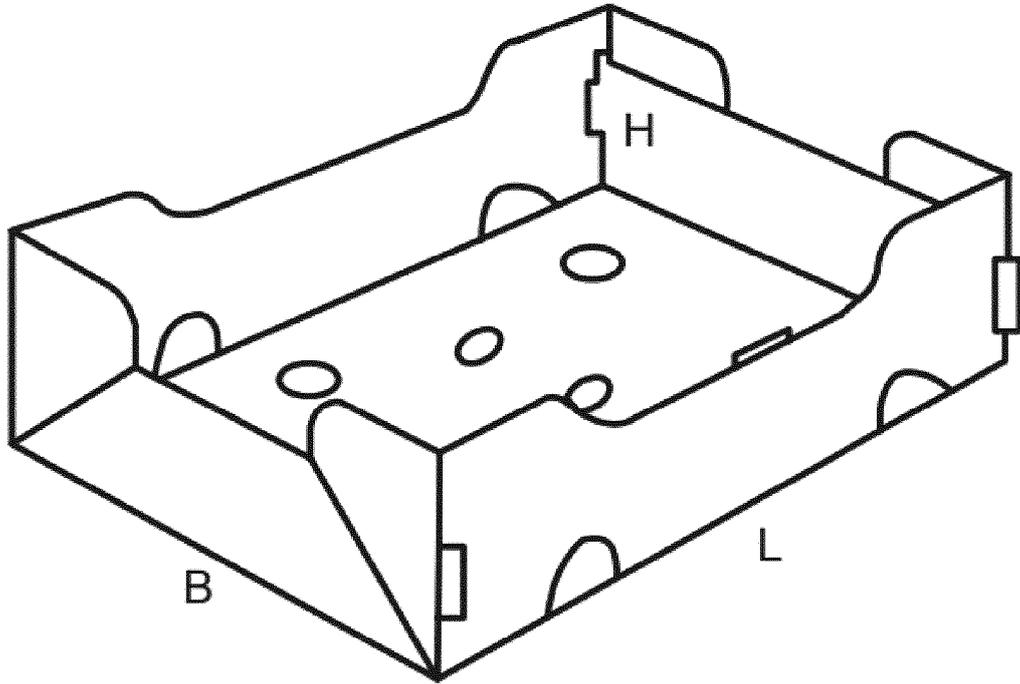
and the second sheet element (B) that has

one bottom strip (1a) with bottom leaves (25, 31)

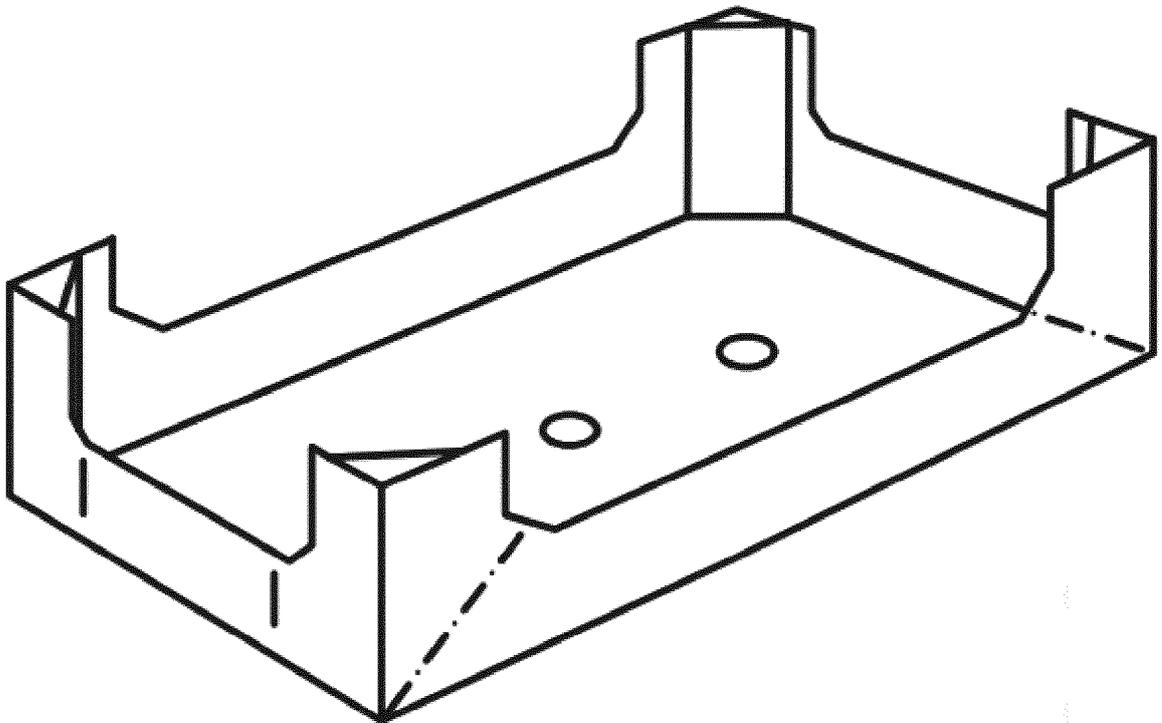
- properly adjoining the shorter edges of the bottom strip (1a), which are perpendicular to the edge adjoining the bottom wall (4);  
the side wall (4) adjoining the bottom strip (1a);  
the external back vertical wall (3), wherein the external back vertical wall (3) is located adjacently with the first side edge to the side wall (4) and the second side edge of the wall remains free, the top edge adjoins the internal back vertical wall (11), wherein it has a holder (7) cut out at the bottom edge in the central part and holes (11, 12) in the peripheral part corresponding to setting fins (18,19) located on the top edge of the external back vertical wall (3); and leaf (20), adjoining the side edge of side wall side wall (4), on the side opposite the external back vertical wall (3), is adapted to connect with the first element of the blank;
9. The blank, according to any of the claims 6 or 7, or the blank according to claim 8, is **characterized in that** it has a M shaped holes (33, 34) located in the central part of the internal front vertical wall (8) and the central part of the internal front vertical wall (9).
10. The collective container kit, according to any of the claims 1 - 5 and holding removable individual containers (36), wherein the height of individual containers (36) basically corresponds to or is less than the height of side walls (4, 5) and front and back walls formed by folding the external vertical front wall (2) and the internal vertical front wall (8) as well as the external vertical back wall (3) and the internal vertical back wall (11), and the length of the collective container according to the invention corresponds to the length of its side walls (4, 5) and represents the multiplicity of containers' (36) width and allows for their packing one next to the other.
11. The kit, according to claim 10, is **characterized in that** it has a collective container mentioned in claim 1-4, the length of individual containers corresponds to the collective container width that corresponds to the external front vertical wall (2) and the external back vertical wall (3), and the individual containers (36) are positioned in a single row and are supported by the bottom (1).
12. The kit, according to claim 11, is **characterized in that** it has a collective container mentioned in claim 5, the length of individual containers is less than half of the collective container width corresponding to half of the width of the external front vertical wall (2) and the external back vertical wall (3), and the individual containers (36) are positioned in two rows and are supported by the bottom (1) on one side and by the cross-beam (35) on the other.
13. The collective container in the cuboid form with an

open top surface, made of flat, rigid sheet material, having a bottom (1), vertical side walls (4, 5), external front (2) and back (3) vertical walls and internal front (8) and back (11) vertical walls, in which cut lines, incision lines and/or scoring lines determine planes representing horizontal bottom (1) surface and vertical side walls (4, 5), front wall (2) and back wall (3) surfaces and internal vertical front (8) and back (11) walls connected to it at an angle of 90°. wherein, each of the external front vertical walls (2) and external back vertical walls (3) is fitted with at least one cut out hole at the bottom edge of the external front vertical wall (2) and the bottom edge of the external back vertical wall (3), adequately, allowing for stacking the containers,  
each of the external front vertical walls (2) and external back vertical walls (3) is fitted with at least one vertical setting fin to stack the containers, which protrudes from the top edge of the external front vertical wall (2) and the top edge of the external back vertical wall (3), adequately, and corresponds to the setting hole,  
at least one side wall (4, 5) is fitted with at least one leaf (20, 21, 22, 23). However, it is placed adjacently to the edge of at least one of the side walls (4, 5) perpendicular to the bottom (1),  
at least one holder (6, 7) is cut out in the external front vertical wall (2) and the external back vertical wall (3) in the middle part of the bottom edge of the external front vertical wall (2) and in the middle part of the bottom edge of the external back vertical wall (3),is  
**characterized in that**  
the external front vertical wall (2) and external back vertical wall (3) has at least two setting holes (9, 10, 12, 13) for stacking the containers,  
wherein these are located at the bottom edge of the external front vertical wall (2) and at the bottom edge of the external back vertical wall (3) between the holder (6, 7) and the side edge of the external front vertical wall (2) and the side edge of the external back vertical wall (3), adequately,  
the vertical setting fins (16, 17, 18, 19) are made in the external front vertical wall (2) and the external back vertical wall (3) in the peripheral part of the top edge of the external front vertical wall (2) and in the peripheral part of the top edge of the external back vertical wall (3), adequately, which corresponds to setting holes (9, 10,12, 13) for stacking the containers;  
wherein the container has a hole taking up at least 50% of the bottom surface.

Prior art



Draw. 1



Draw. 2

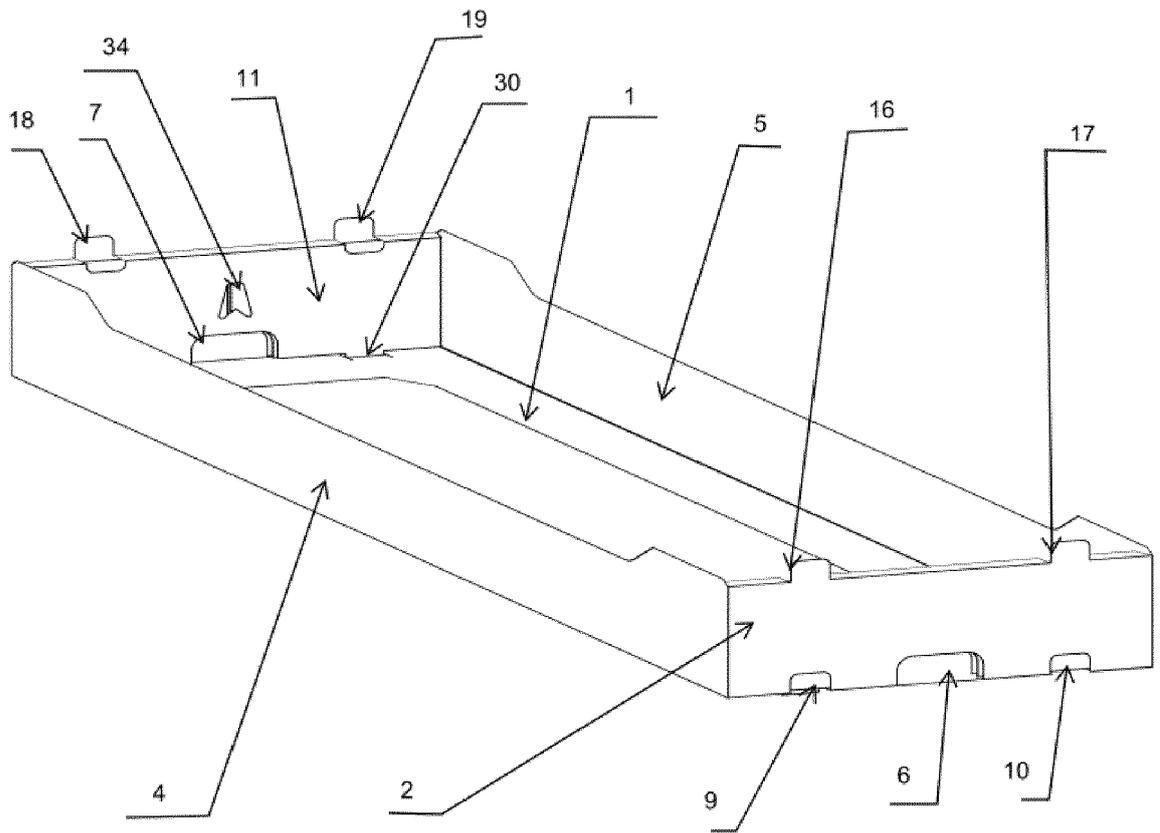


Fig. 1



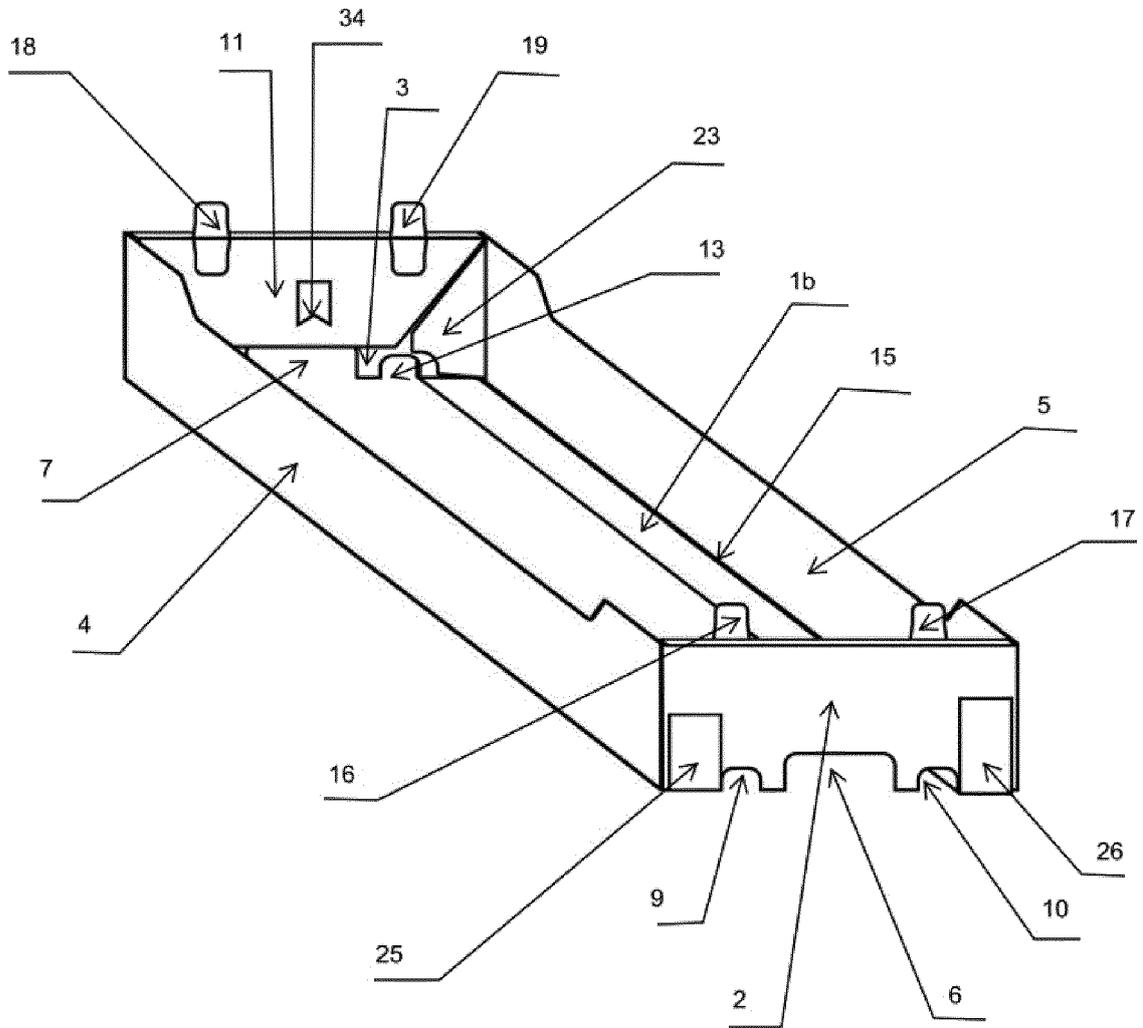


Fig. 3

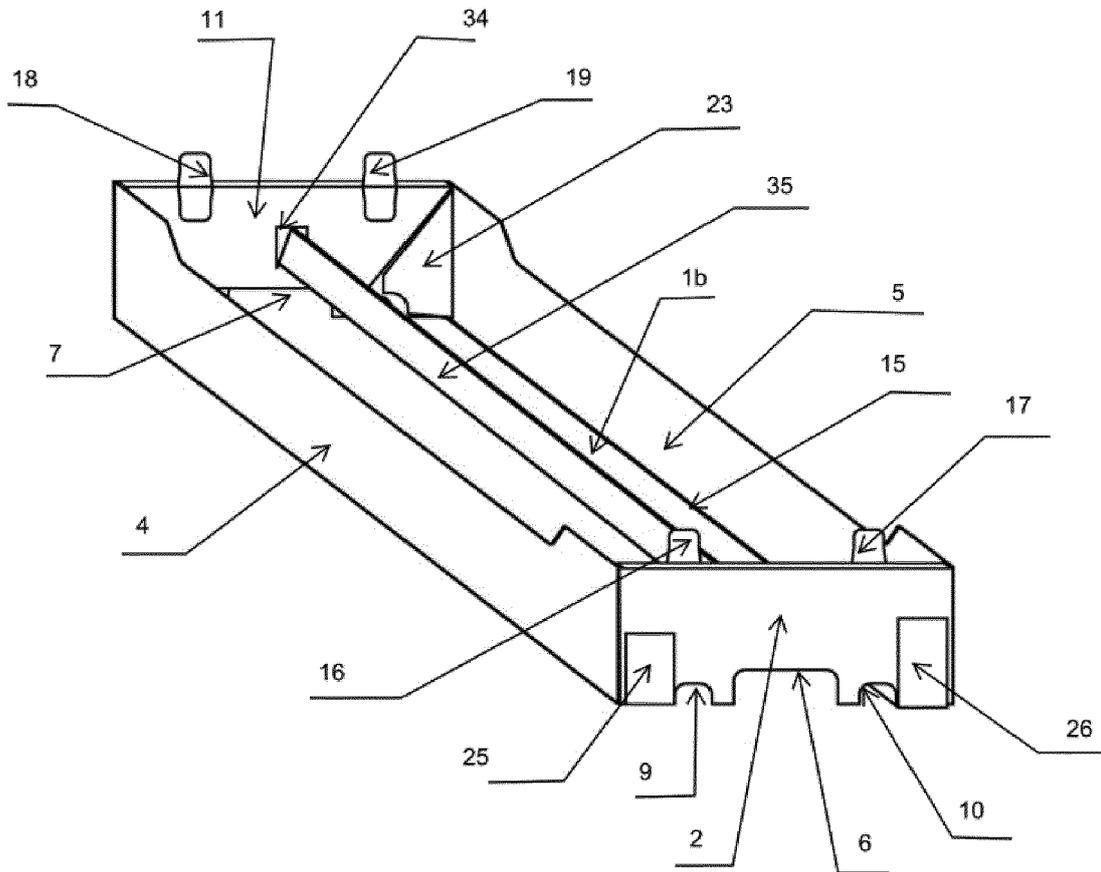


Fig. 4

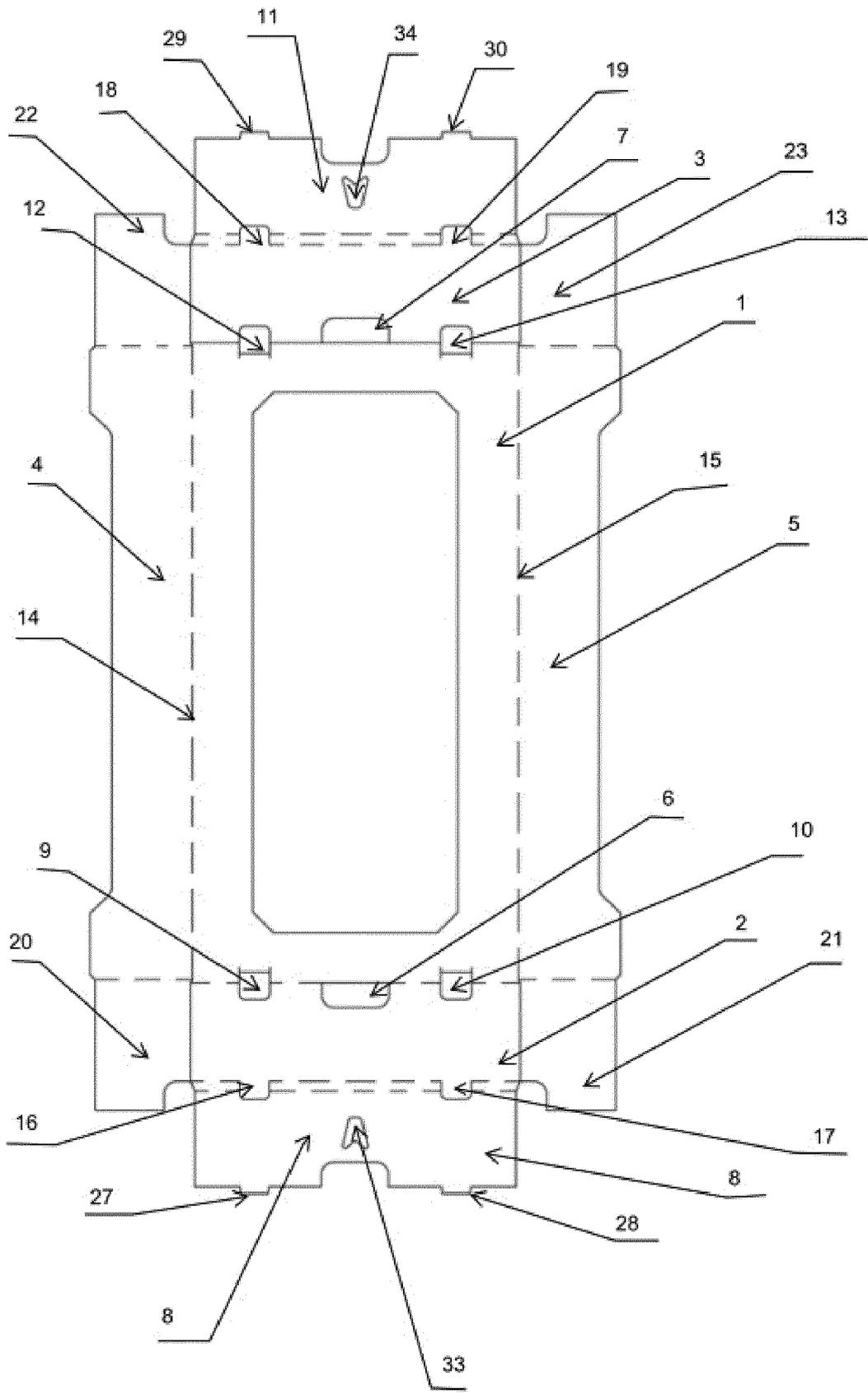


Fig. 5

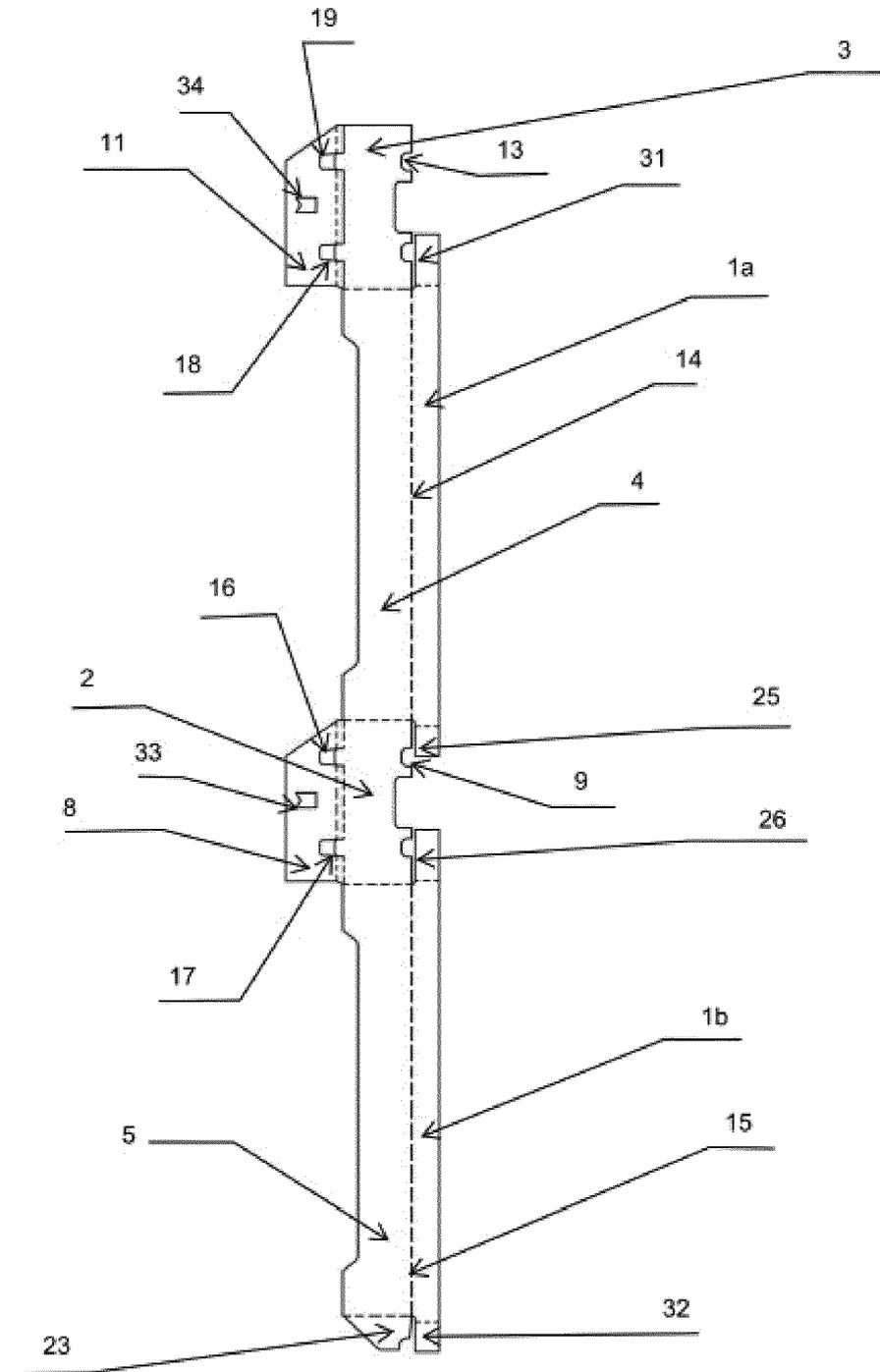


Fig. 6



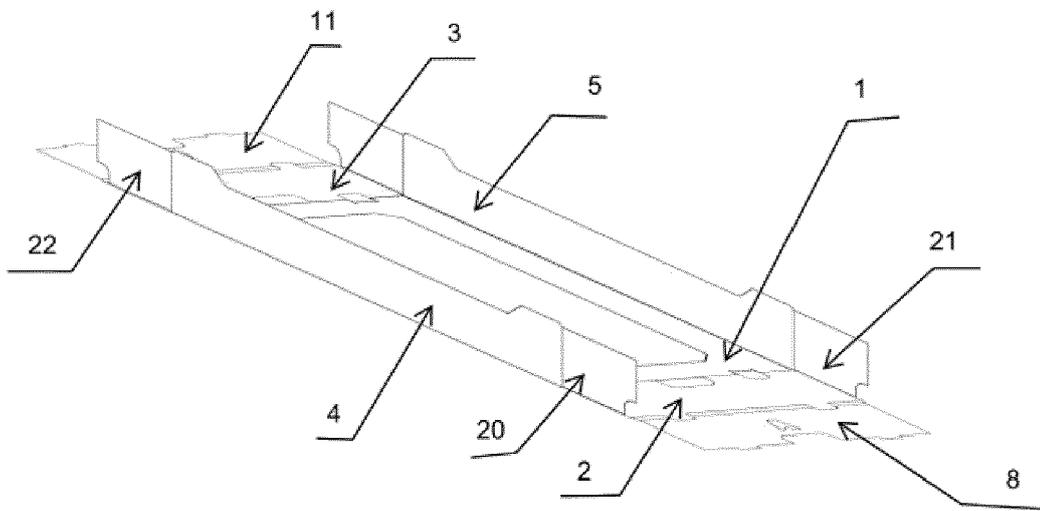


Fig. 8

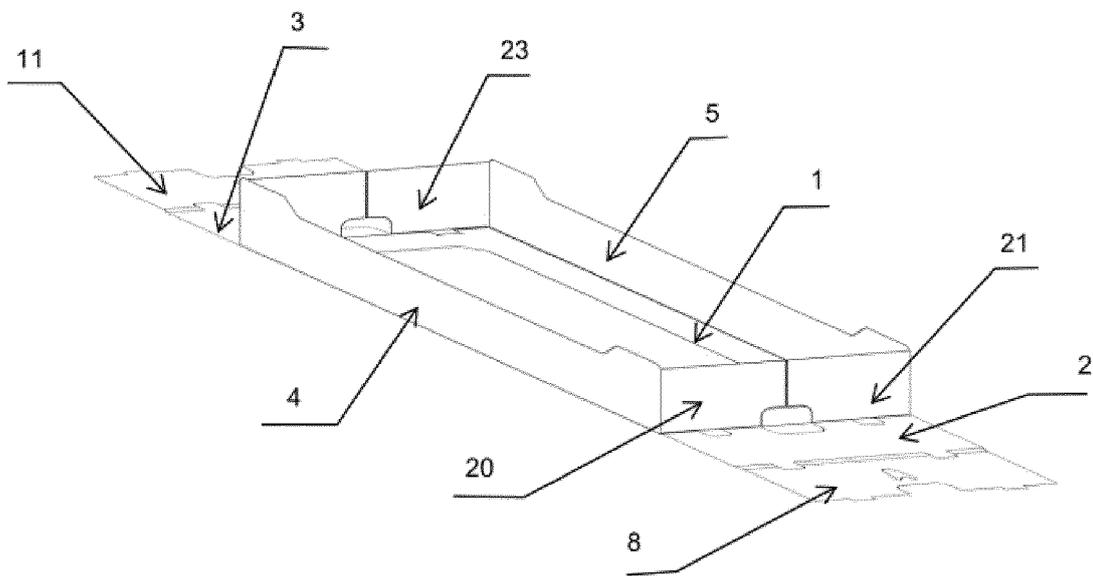


Fig. 9

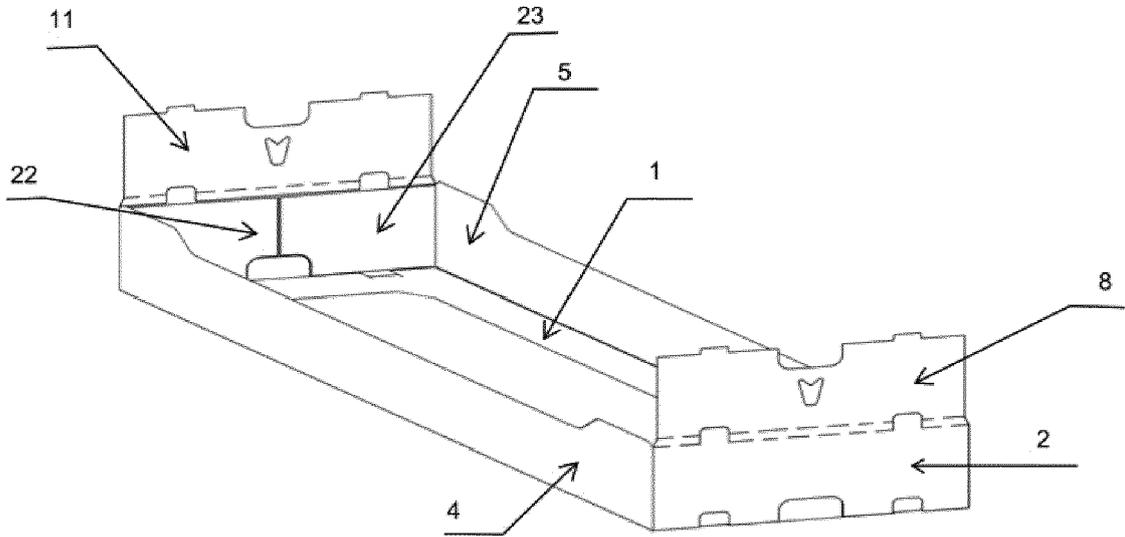


Fig. 10

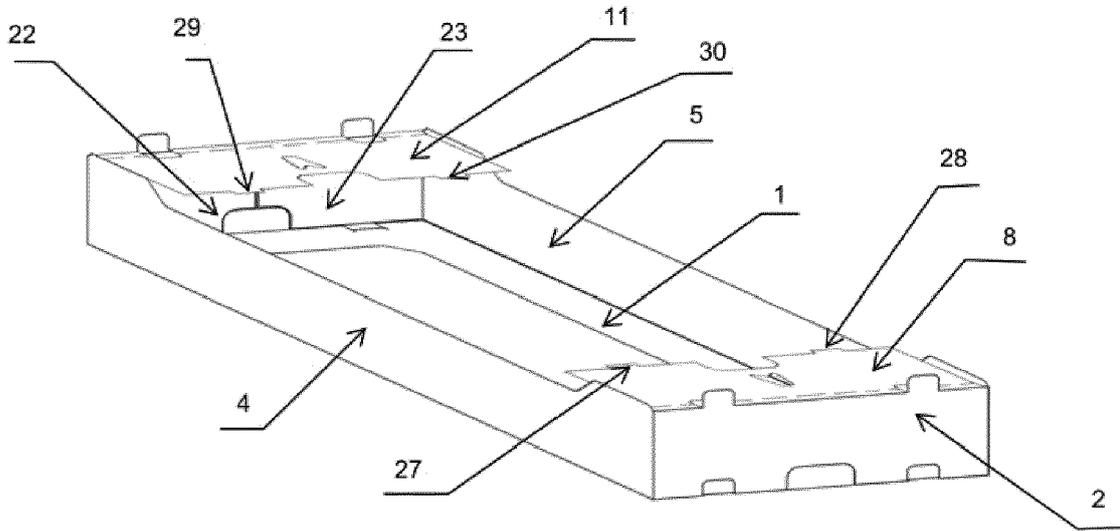


Fig. 11

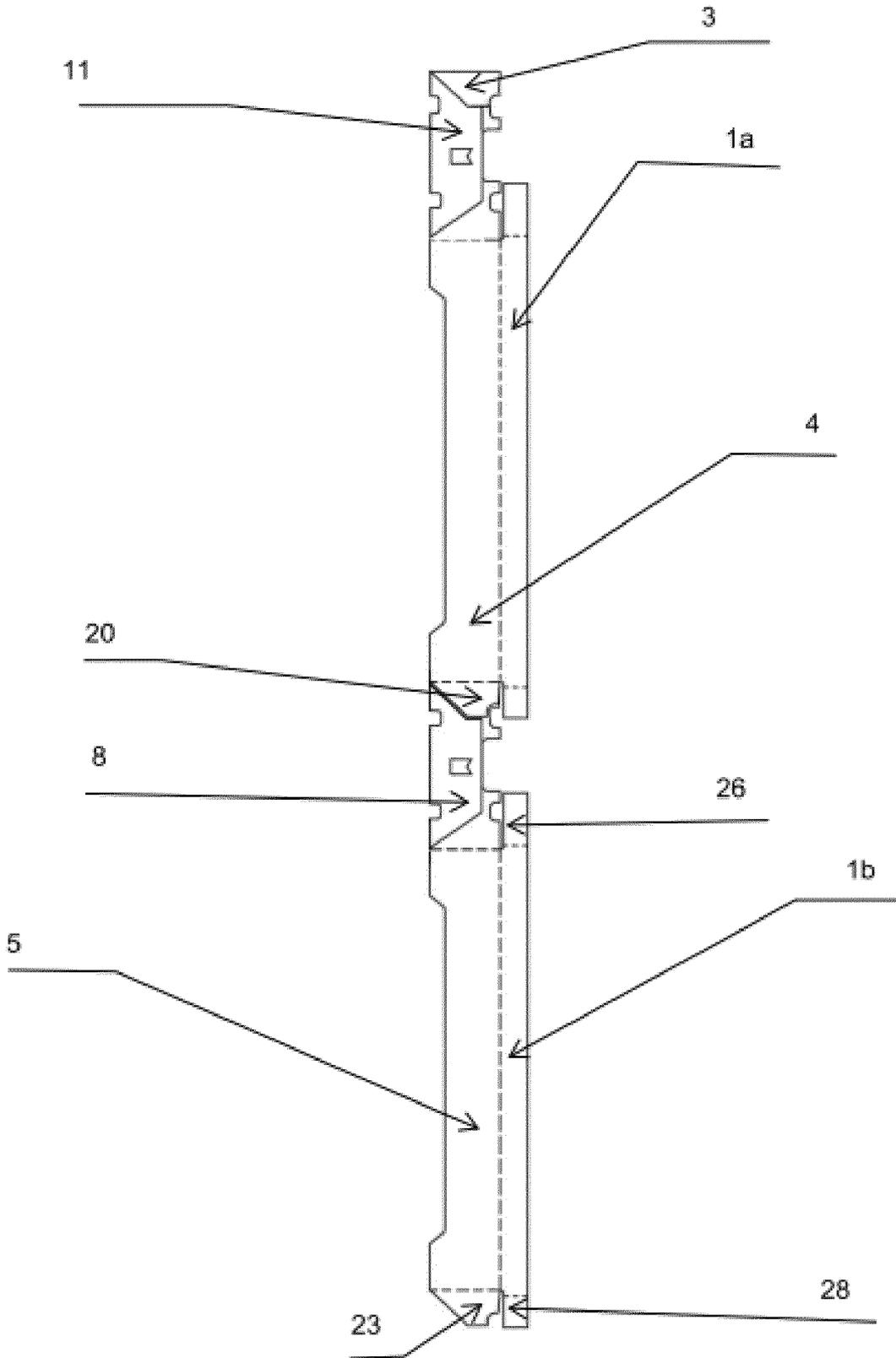


Fig. 12

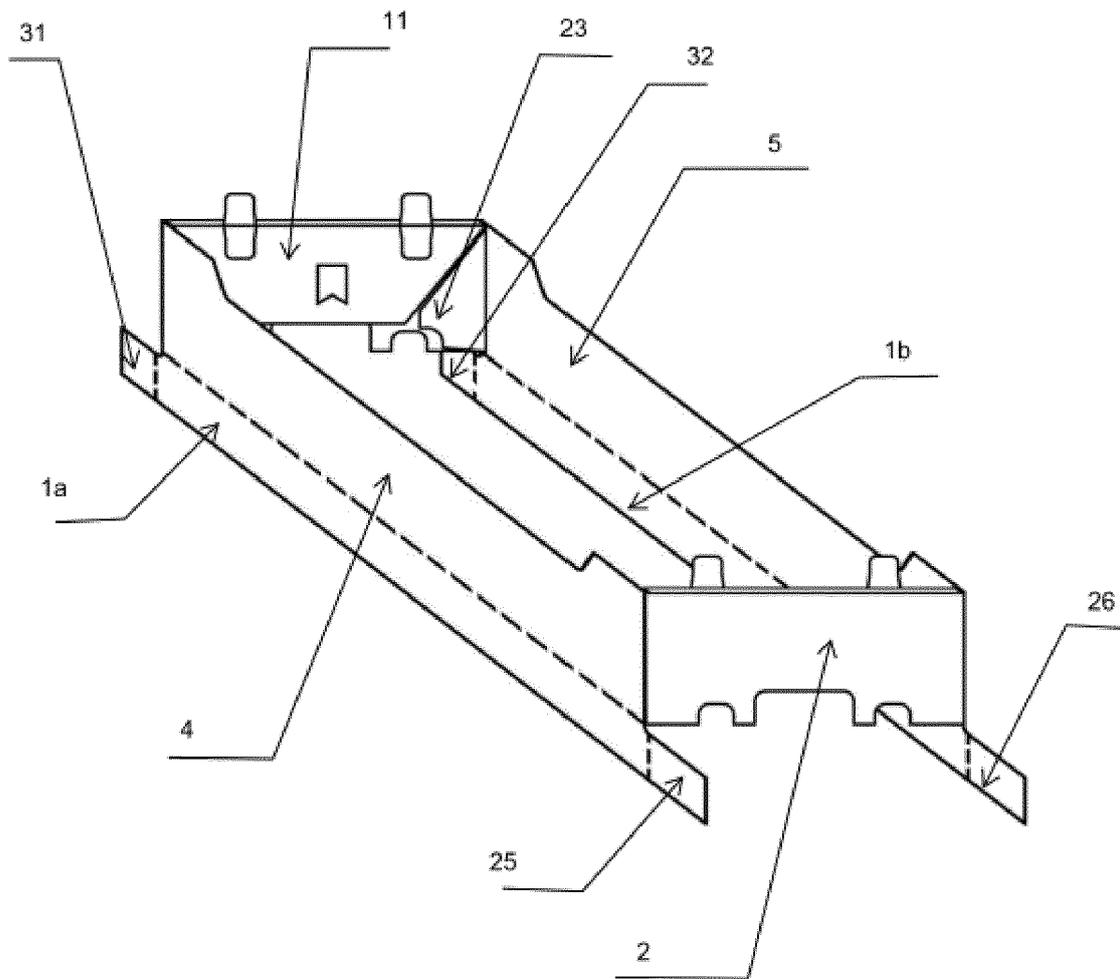


Fig. 13

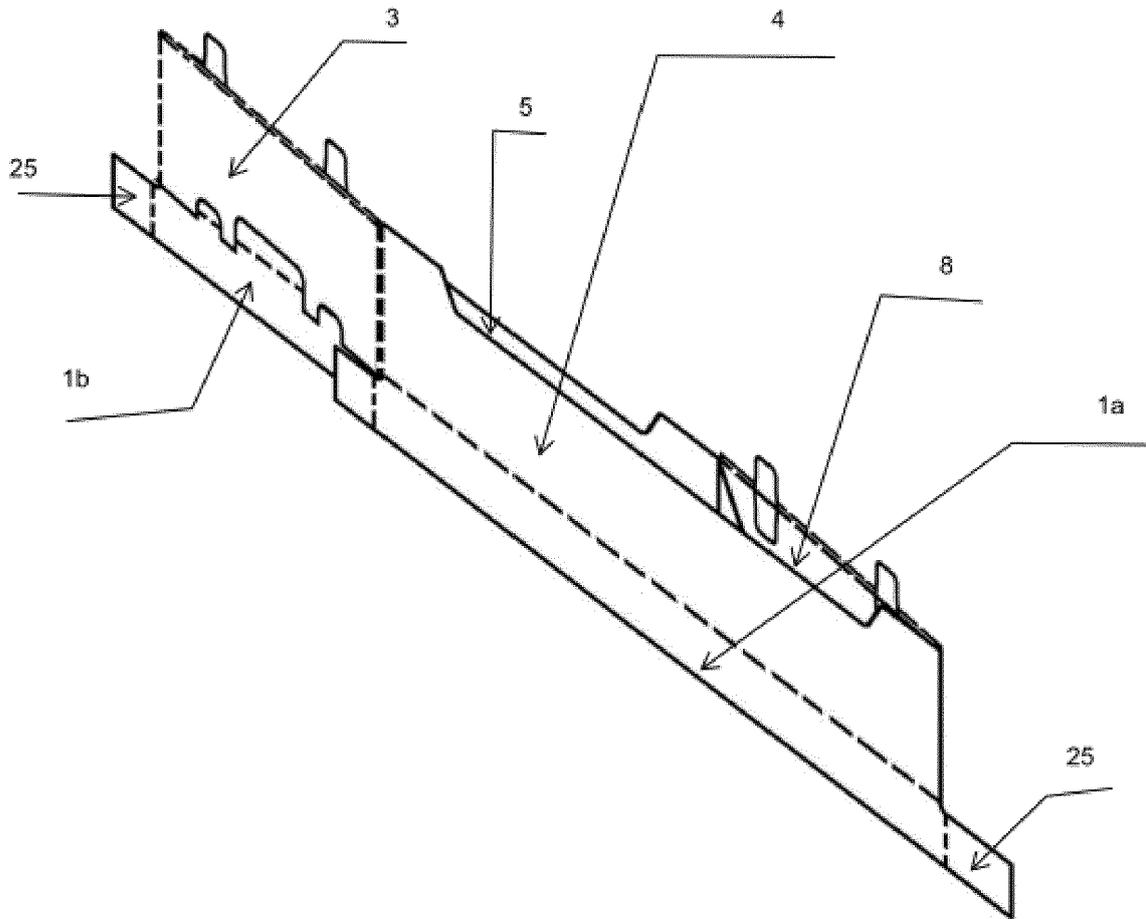


Fig. 14

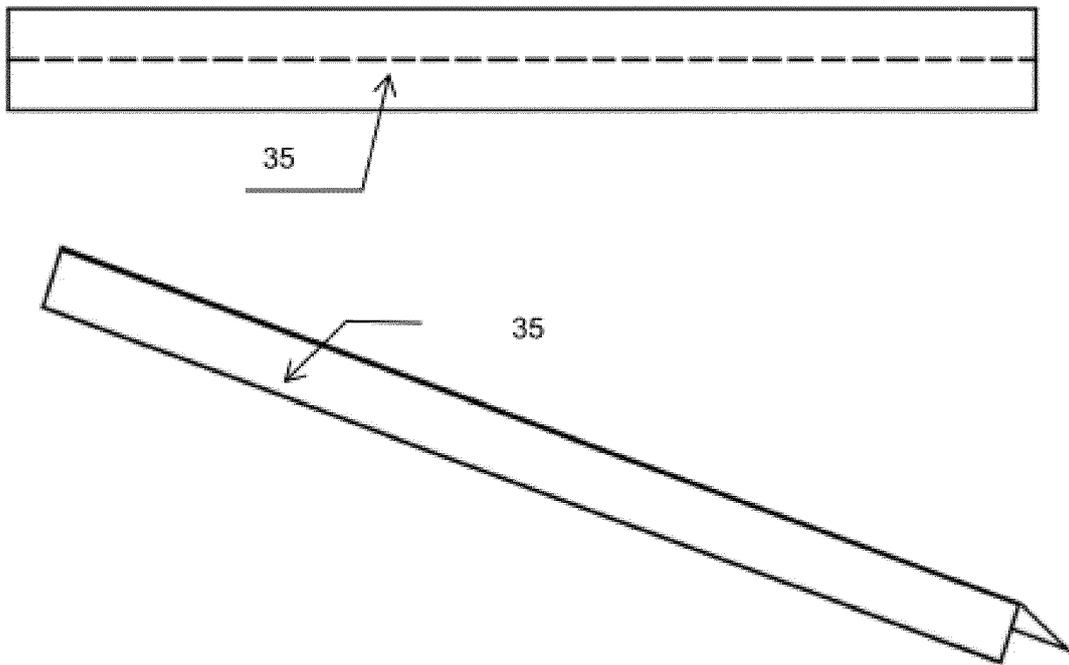


Fig. 15

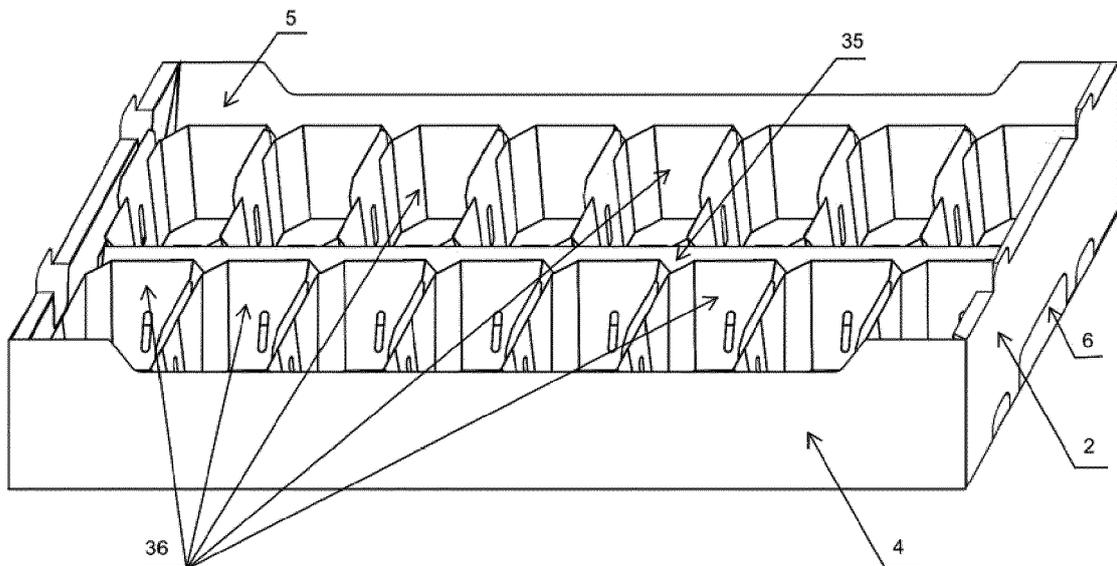


Fig. 16

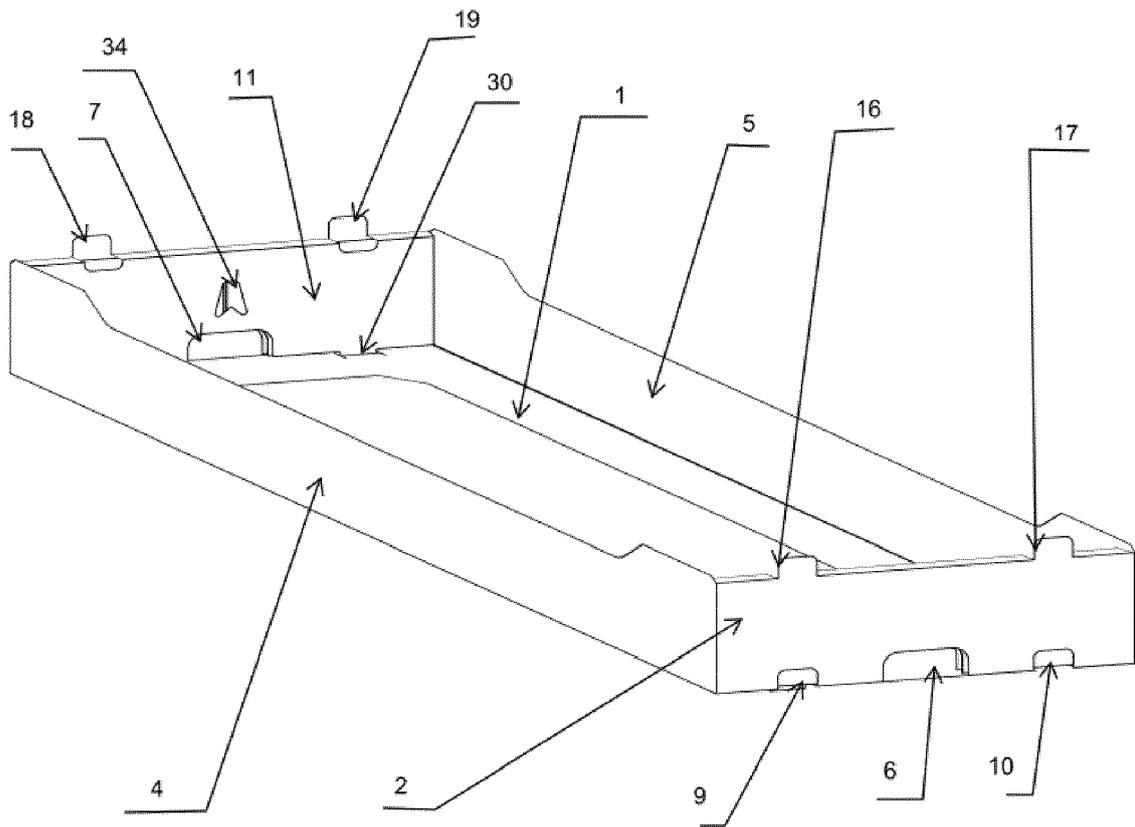


Fig. 17

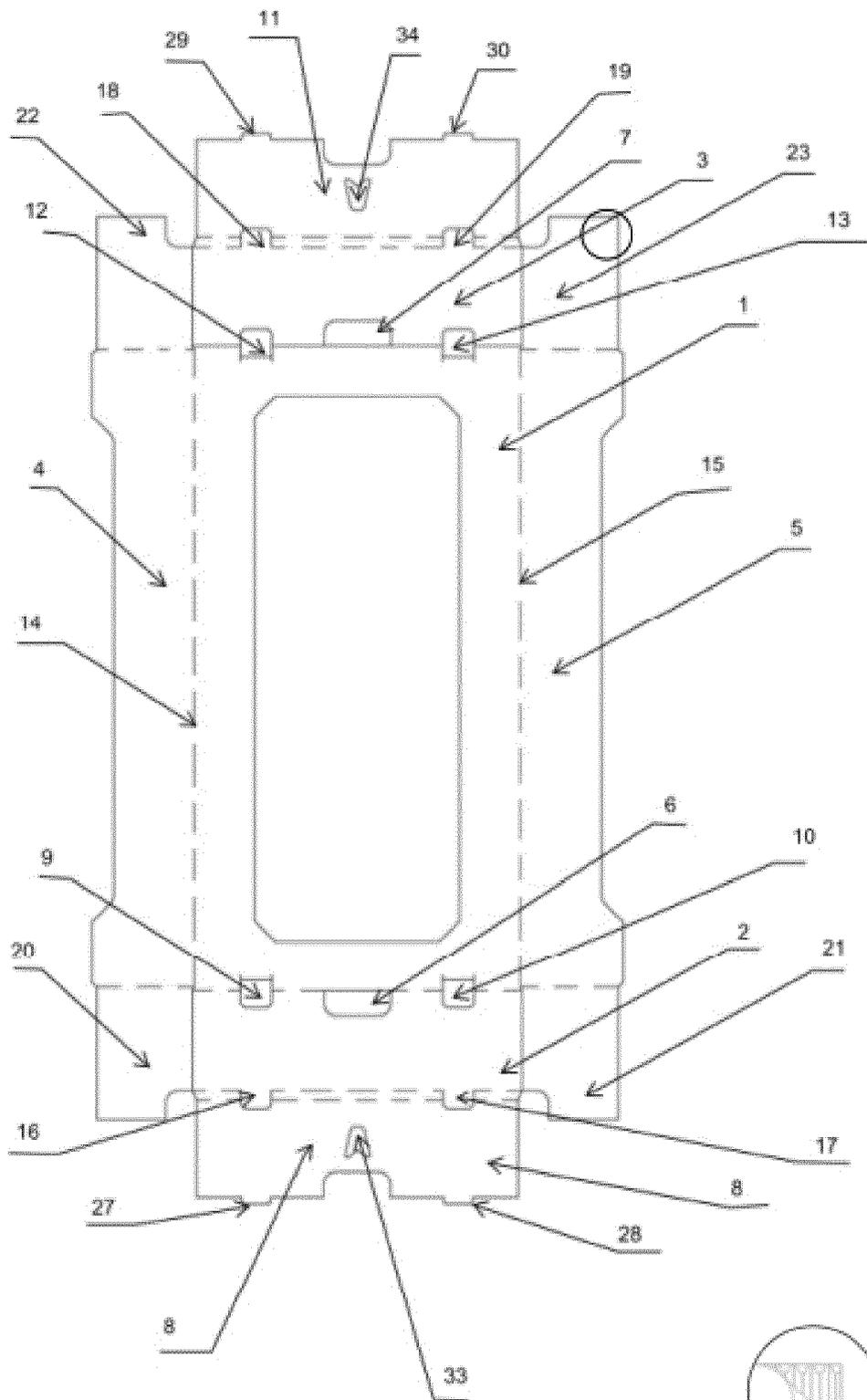


Fig. 18



EUROPEAN SEARCH REPORT

Application Number  
EP 17 15 7689

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A	FR 1 154 306 A (LEVKOFF DAVID) 4 April 1958 (1958-04-04) * the whole document * -----	1-13	B65D5/42 B65D5/468 B65D5/50
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A	EP 1 671 887 A1 (KARTON SPA [IT]) 21 June 2006 (2006-06-21) * figure 3 * -----	1	
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SEARCHED (IPC)

B65D

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The present search report has been drawn up for all claims

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Place of search <b>Munich</b>	Date of completion of the search <b>21 June 2017</b>	Examiner <b>Leijten, René</b>
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