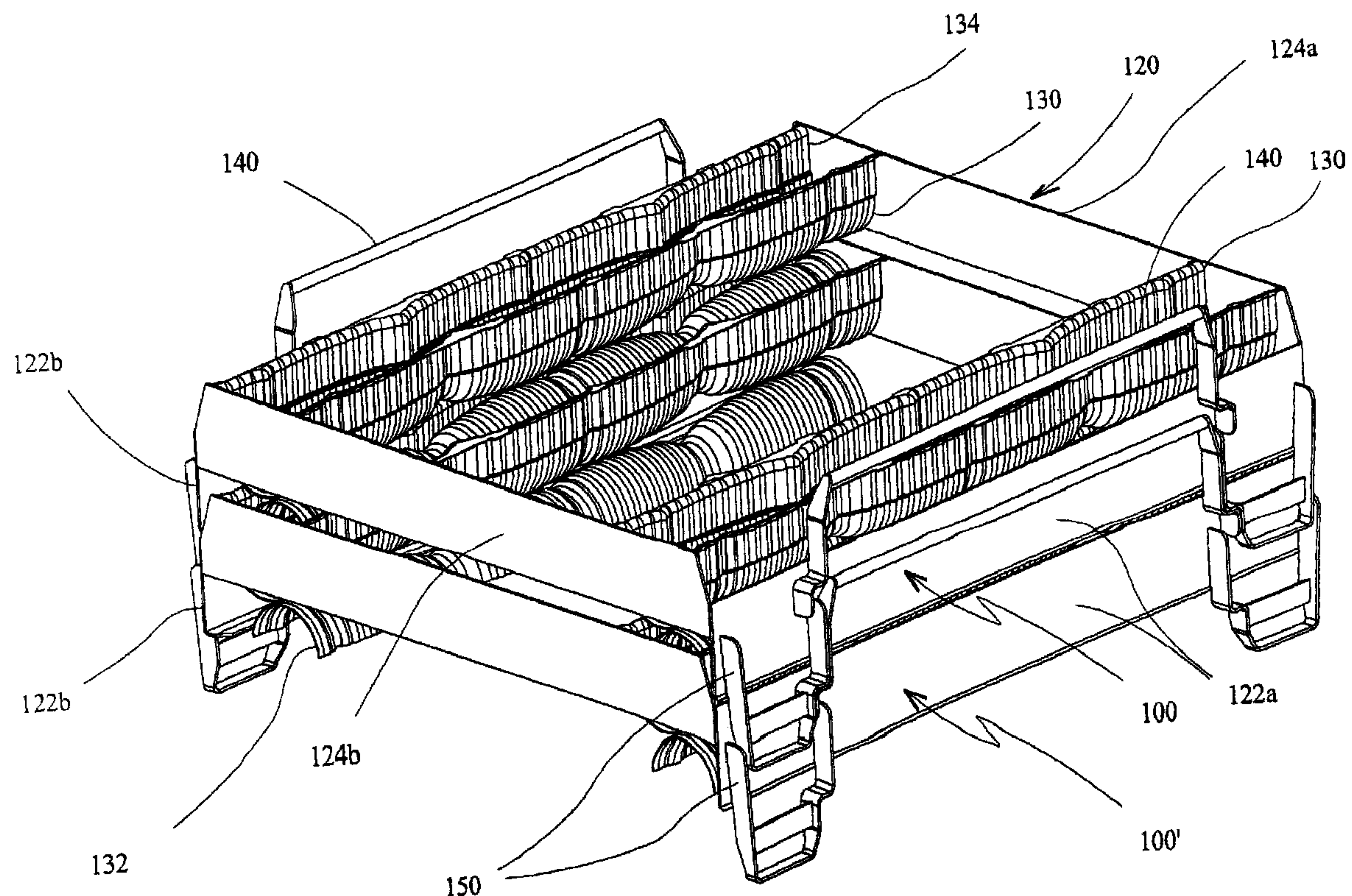




(86) Date de dépôt PCT/PCT Filing Date: 2003/02/13  
(87) Date publication PCT/PCT Publication Date: 2003/08/21  
(45) Date de délivrance/Issue Date: 2009/05/05  
(85) Entrée phase nationale/National Entry: 2004/07/20  
(86) N° demande PCT/PCT Application No.: FR 2003/000472  
(87) N° publication PCT/PCT Publication No.: 2003/067993  
(30) Priorités/Priorities: 2002/02/14 (FR02/02050);  
2002/07/22 (FR02/09405)

(51) Cl.Int./Int.Cl. *A22C 7/00* (2006.01),  
*A23L 1/01* (2006.01), *A23P 1/10* (2006.01),  
*B65D 21/02* (2006.01)  
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(54) Titre : UNITE EMPILABLE COMPRENANT AU MOINS UNE ALVEOLE DESTINEE A CONTENIR UN PRODUIT ALIMENTAIRE TEL QUE DU JAMBON  
(54) Title: STACKING UNIT COMPRISING AT LEAST ONE CHAMBER FOR HOUSING A FOOD PRODUCT SUCH AS HAM



(57) Abrégé/Abstract:

The invention concerns a stackable unit (100) comprising at least one cell (130) intended to contain a foodstuff such as ham during its cooking, said or each cell (130) being equipped with a pressing means (132) provided for allowing the pressing of a foodstuff

**(57) Abrégé(suite)/Abstract(continued):**

contained in a corresponding cell (130) of another identical stackable unit (100') of a lower rank, the stackable unit (100) being equipped with support means (160, 170) intended to allow the seating of the stackable unit (100) on another identical stackable unit (100'), and centring means (154a, 154b; 171a, 171b, 146; 159) intended to allow the lateral positioning of the stackable unit (100) during its stacking on another identical stackable unit (100') in such a way that the stackable unit (100, 100v) can be disposed vertically in line with said other stackable unit (100'). According to the invention, it comprises guidance means (157a, 157b; 172a, 172b; 148, 162) provided for allowing, during the stacking of said stackable unit (100) on another identical stackable unit (100'), the guidance of the stackable unit (100) in at least one plane containing the vertical stacking direction (T).

5

**ABSTRACT**

The invention concerns a stackable unit (100) comprising at least one cell (130) intended to contain a foodstuff such as ham during its cooking, said or each cell (130) being equipped with a pressing means (132) provided for allowing the pressing of a foodstuff  
10 contained in a corresponding cell (130) of another identical stackable unit (100') of a lower rank, the stackable unit (100) being equipped with support means (160, 170) intended to allow the seating of the stackable unit (100) on another identical stackable unit (100'), and centring means (154a, 154b; 171a, 171b, 146; 159) intended to allow the lateral positioning of the stackable unit (100) during its stacking on another identical stackable unit (100') in  
15 such a way that the stackable unit (100, 100v) can be disposed vertically in line with said other stackable unit (100').

According to the invention, it comprises guidance means (157a, 157b; 172a, 172b; 148, 162) provided for allowing, during the stacking of said stackable unit (100) on another identical stackable unit (100'), the guidance of the stackable unit (100) in at least one plane  
20 containing the vertical stacking direction (T).

## STACKING UNIT COMPRISING AT LEAST ONE CHAMBER FOR HOUSING A FOOD PRODUCT SUCH AS HAM

The present invention concerns a stackable unit comprising at least one cell intended to contain a foodstuff such as ham during its cooking.

5 In order to carry out the industrial cooking of ham, cooking it in a cooking chamber of relatively large volume is known. The hams are wrapped respectively in cooking bags which should be disposed in cells forming a cooking mould of a stackable unit.

When this first stackable unit is full, it serves as a support for other stackable units which in that case should be filled and then stacked successively one upon another in order to  
10 form a stack which is next transferred into a cooking chamber. In certain cases when, for example, the cooking is carried out in a cooking chamber containing a heat-conducting fluid, the stacking is performed inside the cooking chamber by means of a manipulator robot.

In order to allow the shaping of the ham during its cooking, each cell comprises on its bottom a pressing means intended to press a ham disposed in a cell of another stackable unit  
15 of a lower rank. This pressing means consists for example of a plate mounted fixed on the bottom of a cell. The last stackable unit stacked is generally empty and serves only as a pressing means for the stackable unit of the lower rank.

In view of the large mass of a stack of stackable units, it is important to position a stackable unit accurately with respect to another stackable unit of a lower rank so that the  
20 pressing means of said stackable unit can press properly, that is to say repetitively, the hams of the stackable unit of a lower rank.

Furthermore, in order to obtain gains in productivity, the manipulator robots responsible for performing the transfer of the stackable units, and in particular their stacking, work at high speed and therefore cause swaying of the stackable units which still persists at  
25 the time of their stacking.

Although equipped with positioning means, the known stackable units do not allow sufficient positioning accuracy to be obtained between them during their stacking.

The aim of the invention is therefore to propose in particular a stackable unit whose novel construction makes it possible to overcome these drawbacks.

30 More particularly, the invention proposes a stackable unit of the type which comprises at least one cell intended to contain a foodstuff such as ham during its cooking, said or each cell being equipped with a pressing means provided for allowing the pressing of a foodstuff contained in a corresponding cell of another identical stackable unit of a lower rank, the stackable unit being equipped with support means intended to allow the seating of the

stackable unit on another identical stackable unit, and centring means intended to allow the lateral positioning of the stackable unit during its stacking on another identical stackable unit in such a way that the stackable unit can be disposed vertically in line with said other stackable unit.

5           In order to achieve the above-mentioned aim, this stackable unit is characterised in that it comprises guidance means provided for allowing, during the stacking of said stackable unit on another identical stackable unit, the guidance of the stackable unit in at least one plane containing the vertical stacking direction.

10           According to another characteristic of the invention, said guidance means are provided for guiding said unit in two planes perpendicular to each other and containing said stacking direction.

            According to another characteristic of the invention, the centring means are provided for acting in two directions perpendicular to each other and perpendicular to said stacking direction.

15           According to another characteristic of the invention, said guidance means consist of at least one wall of each foot, said or each wall extending in a direction parallel to the stacking direction and being capable of cooperating with at least one guidance element of said unit.

            According to another characteristic of the invention, each guidance element is formed on gripping means which said stackable unit comprises.

20           According to another characteristic of the invention, each guidance element is formed by a pin which said stackable unit comprises.

            According to another characteristic of the invention, the guidance means are constituted by the rear faces of each foot, said faces being provided for cooperating respectively with plates of another stackable unit of lower rank.

25           According to another characteristic of the invention, the guidance means are constituted by the rear faces of arms of gripping means which said stackable unit comprises, said faces being intended to cooperate respectively with plates of another stackable unit of higher rank.

30           The characteristics of the invention mentioned above, as well as others, will emerge more clearly from a reading of the following description of an example implementation, said description being given in connection with the accompanying drawings, amongst which:

            Figure 1a depicts a perspective view of a stackable unit of a first type according to the invention;

Figure 1b depicts a perspective view of a stackable unit of a second type according to the invention;

Figure 2 depicts a schematic front view of a stackable unit in the process of being stacked on another stackable unit of a lower rank;

5 Figure 3 depicts a front view of a stackable unit according to the invention, the left-hand part being a partial section at cell level;

Figure 4a depicts a front view of a stackable unit in the phase of centring on a stackable unit of a lower rank according to the invention;

10 Figure 4b depicts a front view of a stackable unit at the beginning of the phase of guidance onto a stackable unit of a lower rank according to the invention;

Figure 4c depicts a front view of a stackable unit in the position of abutment on a stackable unit of a lower rank according to the invention;

Figure 5 depicts a partial side view of a stackable unit in the process of being stacked on another stackable unit of a lower rank according to the invention;

15 Figure 6 depicts a partial front view of a stackable unit equipped with a variant implementation of guidance means;

Figure 7a depicts a partial front view of a stackable unit at the beginning of the guidance phase according to another embodiment of the invention; and

20 Figure 7b depicts a partial front view of the same stackable unit in the abutment position.

The invention which is described below is in connection with the cooking of ham. It should be understood that it can apply to other types of foodstuff.

25 Figure 1a depicts two stackable units 100 and 100', according to a first embodiment, stacked one upon the other. As for Figure 1b, this also depicts two stackable units 100 and 100' but according to a second embodiment.

Each of the stackable units 100 and 100' depicted in Figures 1a and 1b comprises a frame 120 whose sides consist of two transverse plates 122a and 122b disposed facing each other. In the embodiment of Figure 1a, the plates 122a and 122b are joined together at their ends by two longitudinal side pieces 124a and 124b. At least one cell 130 is mounted inside 30 the frame 120 in such a way that its longitudinal axis is parallel to the transverse plates 122a and 122b in the example implementation of Figure 1a, or perpendicular to the plates 122a and 122b in the example implementation depicted in Figure 1b. Figure 1a depicts, for the sake of clarity of the figure, only two cells 130, whereas Figure 1b depicts six of them.

Each cell 130 is intended to receive a foodstuff, in particular ham, which in general, but not necessarily, is first wrapped in a cooking bag, for its cooking in a cooking chamber. Each cell 130 also comprises on its bottom a pressing means 132 consisting, for example, of a cover provided for entering another corresponding cell of a stackable unit of lower rank so as to be able to press, during its cooking, the foodstuff situated therein.

It should be noted that several stackable units 100 which are stacked one upon another are introduced into a cooking chamber.

In view of the large mass of a set of stackable units 100 (a stack of stackable units 100 can weigh several thousand kg), it is important to position a stackable unit 100 accurately during its stacking on another stackable unit 100' of a lower rank. This positioning accuracy must be such that, during the stacking of the stackable unit 100, the pressing means 132 of a cell 130 of the stackable unit 100 can uniformly press the foodstuffs J disposed in the corresponding cell 130 of the other stackable unit 100' of a lower rank.

The object of the invention is to propose means which make it possible to obtain this accurate positioning.

Figure 2 depicts a schematic front view of a stackable unit 100 in the process of being stacked on another stackable unit 100' of a lower rank, each of said units 100 and 100' having the means of the invention. Each stackable unit 100 comprises support means 160 and 170 provided for allowing its positioning height-wise on the stackable unit 100'. The support means 160 and 170 are separate components and respectively consist of abutment means 160, here shown schematically by horizontal lines 160, and holding-up means 170, here shown schematically by other horizontal lines 170. Advantageously, four abutment means 160 and four corresponding holding-up means 170 are disposed respectively in pairs distributed over two opposite sides 122 (or 124) of the frame 120 of each stackable unit 100. Only two abutment means 160 and two holding-up means 170 are visible in Figure 2.

It should be understood that each abutment means 160 of a stackable unit 100 is intended to cooperate with a holding-up means 170 of another stackable unit 100' of a lower rank.

The stackable unit 100 also comprises centring means intended to correct, if necessary, its lateral positioning with regard to the other stackable unit 100' during its stacking, so that the frames 120 and 120' of the stackable units 100 and 100' can be disposed in line with each other.

As can be seen in Figure 2, the centring means consist of at least two centring ramps 154a and 154b forming respectively an acute angle C with the vertical stacking direction T

and which are intended to cooperate, during a centring phase of the stacking, respectively with centring elements 175a and 175b, depicted here by simple points, of a stackable unit 100' of lower rank identical to the unit 100.

5 The stackable unit 100 also comprises guidance means allowing the movement in a vertical stacking direction T of the stackable unit 100 during its stacking on a stackable unit 100' in order in particular to allow said or each pressing means 132 to enter its respective cell 130 without touching it.

10 As can be seen in Figure 2, these guidance means consist, on the one hand, of first guidance elements 157a and 157b and, on the other hand, of second guidance elements 172a and 172b. The first guidance elements 157a and 157b are intended to respectively slide, during a guidance phase of the stacking of the stackable unit 100 on the stackable unit 100', over the second guidance elements 172a and 172b of the stackable unit 100' of lower rank.

15 A description will now be given of specific embodiments of the support means, the centring means and the guidance means of the invention advantageously adapted not only to the stacking of the stackable units with one another but also to their manipulation.

In general terms, in order to allow its manipulation, for example by a manipulator robot, with a view, before cooking, to its placing on another stackable unit or, after cooking, to its withdrawal from this other stackable unit, each stackable unit 100 comprises, as depicted in Figures 1a and 1b, at least two gripping means 140 which are disposed  
20 respectively above the cells 130 and which are for example intended to be coupled to a lifting means, not depicted, of a manipulator robot. These gripping means 140 are for example disposed symmetrically with respect to said stackable unit 100 and are fixed respectively to two opposite sides of the frame 120, in this case to the transverse plates 122a and 122b and on the outside of the frame 120.

25 Figure 3 shows an example implementation of a gripping means 140 according to an advantageous embodiment of the invention. It consists of a bar 142 fixed at its free ends to two arms 144a and 144b consisting respectively of metal strips which are formed by folding and which are themselves fixed by welding to said opposite sides of the frame 120, in this case to the transverse plates 122a and 122b. Each arm 144a or 144b is bent so as to have a  
30 substantially horizontal part 170 which will constitute the holding-up means mentioned above in connection with Figure 2. The horizontal part 170 of each arm 144a and 144b is continued upwards by a part 172a or 172b disposed parallel to the vertical stacking direction T which will constitute, as will be understood subsequently, guidance elements as mentioned above in connection with Figure 2. The guidance part 172a or 172b is itself continued by an inclined

part 171a or 171b which forms an acute angle  $C'$  with the vertical stacking direction T and will constitute other guidance elements as mentioned above in connection with Figure 2. In addition, the horizontal part 170 of each arm 144a, 144b is continued downwards by a wall 174a, 174b, the bend 175 of which, formed with the part 170, will constitute, as will be understood subsequently, a centring element as mentioned above in connection with Figure 2.

In general terms also, in order to raise a stackable unit 100 when it is resting on the ground so as to allow the passage of a lifting means, such as the forks of a lift-truck, this stackable unit 100 also comprises feet 150, as can be seen in Figures 1a and 1b. In reality, each stackable unit 100 comprises four feet 150 which are disposed symmetrically on the stackable unit 100 and which are fixed in pairs respectively to the same two opposite sides of the frame 120 to which the two gripping means 140 are fixed.

More specifically, as can be seen in Figure 3, each foot 150 consists of a metallic support advantageously consisting of a metal strip folded so as to form a seating wall 155 intended to rest on the ground, and a first and a second post 151 and 152. The free ends of the first post 151 and of the second post 152 are fixed, for example by welding, to one of the sides of the frame 120. The post 152 comprises, from the seating face 155, an inclined wall 154a, 154b forming an acute angle C with the stacking direction T. This wall 154a, 154b will constitute a centring ramp as mentioned above in connection with Figure 2. This wall 154a, 154b is continued by a vertical wall 156a, 156b (constituting a guidance element), and then by an abutment wall 160 (constituting abutment means) disposed in a horizontal plane. This abutment face 160 is also continued upwards by a guidance wall 157a, 157b disposed parallel to the vertical stacking direction T and which will constitute a guidance element as mentioned above in connection with Figure 2. At the intersection of the wall 156a, 156b with the wall 160, there is a bend 158a, 158b which, as will be understood subsequently, will constitute a centring element like that mentioned above in connection with Figure 2.

Advantageously, in order to improve the mechanical strength of the feet 150 during stacking of the stackable units 100, the two posts 151 and 152 are not parallel to each other. The posts 151 and 152 of a foot 150 are also joined together by a reinforcing bar 153 welded by its ends to said posts 151 and 152.

The operation of a stackable unit 100, during its stacking on another stackable unit 100', is now described.

A first stackable unit 100' filled with ham ready to be cooked is available. A second stackable unit 100, also filled with ham ready to be cooked, is next stacked on the stackable unit of lower rank 100'.

As the stacking proceeds, the centring means come into operation, as depicted in Figure 4a. As can be noted, the inclined walls 154a or 154b can cooperate respectively with the centring bends 175a or 175b so as to bring the stackable unit 100 back into a position where it hangs over the unit 100' of lower rank. Similarly, the inclined walls 171a or 171b can cooperate with the bends 158a or 158b of the feet 150. Thus, this makes it possible to position and centre the frame 120 of the stackable unit 100 in line with the frame 120' of the stackable unit 100'. In this way, the risks of incorrect positioning of the stackable unit 100 on the stackable unit 100' of lower rank are removed or at the very least considerably reduced.

Once this centring phase has been carried out, the guidance means come into operation, as depicted in Figure 4b. As can be noted, the walls 157a and 157b of the feet 150 slide respectively along the walls 172a and 172b of the gripping means 140. Similarly, the walls 156a and 156b of the feet 150 slide along the walls 174a and 174b of the gripping means 140. The guidance means thus allow an accurate movement in a vertical stacking direction T of the stackable unit 100 during its stacking on the stackable unit 100'. Therefore, the pressing means 132 of the stackable unit 100 can be guided at the moment of their introduction into the corresponding cells 130 of the stackable unit 100' without catching the rims of said cells 130.

At the end of the guidance phase, as can be seen in Figure 4c, the abutment means 160 of the stackable unit 100 settle on the holding-up means 170 of the stackable unit 100' of lower rank. There, in this position, the pressing means 132 press the hams contained in the stackable unit 100'.

It should be noted that the distance d separating a plane passing through the abutment surface defined by the abutment means 160 and a plane passing through the holding-up surface defined by the holding-up means 170 is equal to the height  $h_{132}$  of a cover 132 added to the height  $h_j$  of the foodstuff when the latter is pressed, with the thickness of the metal sheet constituting the bottom of the cell 130 added to it, as can be seen in Figure 4c. It should be noted that the height  $h_{132}$  of the cover 132 is the name given to the distance which separates its active face and the bottom of the corresponding cell 130.

So as to provide an accurate positioning of a stackable unit 100 on another stackable unit 100', these units 100 and 100' must advantageously be able, during their stacking, to be centred and guided with respect to each another, both in a plane parallel to the walls 122a and 122b (see Figures 1a and 1b), and also in a plane perpendicular to these walls 122a and 122b.

The invention provides such centring means and such guidance means, these means being described in connection with Figure 5.

Figure 5 depicts, seen from another angle, a stackable unit 100 during the phase of stacking on another stackable unit 100' of a lower rank.

5        The centring means consist, on the one hand, of bevelled walls 146 implemented respectively on the faces turned towards the frame 120 of the arms 144a and 144b of the gripping means 140 and, on the other hand, of bevelled walls 159 implemented respectively on the faces turned towards the frame 120 of the feet 150. The walls 146 and 159 are intended to cooperate respectively with the lower edges of the sides of the frame of a  
10       stackable unit of higher rank and with the upper edges of the sides of the frame 120' of a stackable unit 100' of lower rank.

      As for the guidance means, these are constituted, on the one hand, by the rear faces 148 of the arms 144a, 144b of each gripping means 140 and, on the other hand, by the rear faces 162 of each foot 150. The rear faces 148 and 162 are intended to cooperate respectively  
15       with sides of the frame 120 of a stackable unit of higher rank and sides of the frame 120 of a stackable unit 100' of lower rank.

      The rear faces 148 and 162 thus make it possible to guide the stackable unit 100 during its stacking on a stackable unit 100' of lower rank. The rear faces 148 and 162 are also offset from the faces of the sides of the frame 120 to which they are welded in order to  
20       lead to play necessary for the guidance and also avoid the jamming of the arms 144a and 144b and the posts 151 and 152 on fixing welds for the arms 144a and 144b and posts 151 and 152 of another stackable unit of higher rank or of lower rank.

      So as to allow an accurate relative positioning of the gripping means 140 and the feet 150 on the stackable unit 100 before welding them thereto, the arms 144a and 144b and the  
25       posts 151 and 152 comprise respectively, as can be seen in Figure 5, centring studs 240 and 250 which are intended to be positioned respectively in corresponding positioning holes 242, 252, implemented in sides of the frame 120. These centring studs 240 and 250 are advantageously implemented in the metal strips which constitute the feet 150 and the gripping means 140 by a laser cutting method.

30       Figure 6 depicts a variant implementation of a stackable unit 100 not comprising gripping means as in the preceding embodiment. In this embodiment, the holding-up means 170 are embodied by a generator of a pin 180, this generator being intended to receive the wall 160 of a foot 150 of a stackable unit of higher rank. There has been depicted in dotted lines the pin 180' of a stackable unit 100' (not depicted) on which the wall 160 rests. It

therefore constitutes, with the wall 160, holding-up means according to the present invention. Similarly, a generator 172 of the pin 180 is provided in order to be able to slide along the wall 156a, 156b of a foot 150 (as shown schematically by the pin 180'' in dotted lines). It then constitutes guidance means according to the invention. This same pin 180 is also intended to  
5 slide along the wall 154 of a foot 150, as shown schematically by the pin 180''' in dotted lines. It therefore also constitutes centring means according to the invention.

Figures 7a and 7b depict another embodiment of a stackable unit (here two units 100 and 100' in the process of being stacked in Figure 7a and stacked in Figure 7b) according to the present invention. Each unit comprises feet 150 which have the shape of a U with the  
10 corners slightly truncated. They comprise in particular a guidance element 157. These feet 150 have the advantage of having a symmetrical shape so that a right foot can also be suitable for a left foot and vice versa.

Each stackable unit also comprises gripping means 140 which comprise an inclined wall 171 which constitutes means of centring the unit in order to provide its lateral  
15 positioning with respect to another lower stackable unit during its stacking thereon.

The gripping means 140 also comprise a guidance element 172 which is intended to cooperate with the guidance element 157 so as to slide with respect to each other during a phase of guidance of the stackable unit 100 during its stacking on the stackable unit 100', as can be seen in Figure 7a. It should be noted that this guidance phase takes place after the  
20 centring phase and before the seating of the unit 100 on the unit 100' and that it allows each pressing means 132 to enter its respective cell 130 without touching it.

Each foot 150 also comprises a seating wall 155 which, as will be understood, also constitutes an abutment means 160 in the sense of the preceding embodiments (this explains its dual reference).

25 Inside each foot 150 there is provided a pillar 180 substantially parallel to the stacking direction whose lower end is fixed to the seating wall 155 and whose upper end 181 constitutes the holding-up means 170 in the sense of the preceding embodiments (this explains its dual reference).

As can be noted in Figure 7b, the lower face of the seating wall 155 of the stackable  
30 unit 100 rests on the upper end 181 of the pillar 180. The one and the other therefore clearly respectively constitute abutment means and holding-up means.

The advantages resulting from this embodiment are as follows. The double bends which characterise the feet 150 and the gripping means 140 of the preceding embodiments can prove difficult to implement if accuracy in the positioning of a stackable unit with respect

to the one situated below it is sought, an accuracy which, for example, can be of the order of a tenth of a millimetre. However, this embodiment does not have these double bends.

Moreover, the positioning accuracy is provided by the fact that it is relatively easy to implement the pillar 180 with great accuracy, of the order of 1/10 mm, in particular its height.

5 Now, it is this height which determines the positioning between two stackable units: the distance which separates two stackable units which are stacked one upon the other is equal to the height of the pillar 180 added to the thickness of the metal sheet which constitutes the seating wall 155.

10 According to an advantageous embodiment of a pillar 180, the latter has a cross-shaped section which has the effect of increasing its inertia and its resistance to bending. Furthermore, its end resting on the seating wall 155 is tapered so as to make its lower end accessible for cleaning.

15 In a variant implementation of the pillar 180, depicted in the inset of Figure 7aa, it has a U-shaped section for the same reasons as those mentioned above. Similarly, the lower ends of the wings of the U are tapered.

As can be noted in the insets accompanying Figure 7a, the feet 150 comprise centring studs 240 going into positioning holes 242 whose dimensions are such that there is a relatively large amount of play in the direction parallel to the stacking direction. As for the pillar 180, it comprises a centring stud 182 going into a positioning hole 183 with no play. It is therefore the pillar 180 which provides the accurate positioning of the seating wall 155 relative to the frame of the stackable unit under consideration.

25 In order that each foot 150 which is disposed on the frame 120 obstructs none of the ends of the pressing means 132, which would make their cleaning difficult, for example, with a high-pressure washing appliance, the distance separating the first post 151 from the second post 152 of a foot 150 is greater than the width of a pressing means 132 (see Figures 3 and 6).

For the same reasons, the arms 144a and 144b of the gripping means 140 as well as the posts 151 and 152 of the feet 150 are mounted on edge on the frame 120 and are for example welded thereto.

30 The stackable unit 100 also comprises holes 126 (see in particular Figure 3) implemented through the sides of the frame 120, and in this case the transverse plates 122, so as to allow the passage of a sensor into the cells 130 in order to measure, in particular, the cooking temperature inside the ham J.

The presence of projections 128 which are formed on sides of the frame 120 towards the outside of the stackable unit 100 should also be noted. These projections 128 make it possible to house the sealed ends of some cooking bags P1.

Furthermore, and in order to meet the wishes of consumers, it seemed advantageous to offer hams of different sizes which should be cooked in stackable units of different types whose cells 130 have a shape and dimensions which are different from one type of stackable unit to another.

Thus, the stackable units 100 depicted in Figure 1a are of a first type, in which each cell 130 has a bottom of rounded section, and each pressing means 132 has an abutment face also of rounded section. Each cell 130 of this stackable unit 100 has a very high rim 134, which forces guidance of the pressing means 132 for longer. On the other hand, the stackable units 100 depicted in Figure 1b are of a second type, in which each cell 130 has a prismatic section, and each pressing means 132 has a flat abutment face.

The stackable unit of the invention consists essentially of standard elements common to the different types of stackable unit.

Its manufacturing cost is lower than that of a known stackable unit.

It makes it possible to obtain great accuracy of pressing of hams during their cooking.

**WHAT IS CLAIMED IS:**

1. Stackable unit comprising at least one cell intended to contain a foodstuff such as ham during its cooking, said or each cell being equipped with a pressing means provided for allowing the pressing of a foodstuff contained in a corresponding cell of another identical stackable unit of a lower rank, the stackable unit being equipped with support means intended to allow the seating of the stable unit on another identical stackable unit, and centering means intended to allow the lateral positioning of the stackable unit during its stacking on another identical stackable unit in such a way that the stackable unit can be disposed vertically in line with said other stackable unit, characterized in that it comprises guidance means provided for allowing, during the stacking of said stackable unit on another identical stackable unit, the guidance of the stackable unit in at least one plane containing the vertical stacking direction.

2. Stackable unit according to claim 1, characterized in that said guidance means are provided for guiding said unit in two planes perpendicular to each other and containing said stacking direction.

3. Stackable unit according to claim 1 or 2, characterised in that the centering means are provided for acting in two directions perpendicular to each other and perpendicular to said stacking direction.

4. Stackable unit according to any of claims 1 to 3, of the type which also comprises feet, characterised in that said guidance means consist of at least one wall of each foot, said or each wall extending in a direction parallel to the stacking direction and being capable of cooperating with at least one guidance element of said unit.

5. Stackable unit according to claim 4, characterised in that each guidance element is formed on gripping means which said stackable unit comprises.

6. Stackable unit according to claim 4, characterised in that each guidance element

is formed by a pin which said stackable unit comprises.

7. Stackable unit according to any one of claims 1 to 6, characterised in that the guidance means are constituted by the rear faces of each foot, said faces being provided for cooperating respectively with plates of another stackable unit of lower rank.

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8. Stackable unit according to any one of claims 1 to 7, characterised in that the guidance means are constituted by the rear faces of arms of gripping means which said stackable unit comprises, said faces being intended to cooperate respectively with plates of another stackable unit of higher rank.

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9. Stackable unit according to any one of claims 1 to 8, characterised in that the centering means consist of at least two walls forming an acute angle with the vertical stacking direction, said walls being provided to be able respectively to cooperate with centering elements.

15

10. Stackable unit according to claim 9, characterised in that said centering elements are constituted by bends which gripping means of said unit comprises.

20

11. Stackable unit according to claim 9, characterised in that said centering elements are constituted by bends which feet of said unit comprises.

12. Stackable unit according to claim 10 or 11, characterised in that said centering elements are constituted by pins which said unit comprises.

25

13. Stackable unit according to claim 10 or 11, characterised in that said walls are formed in feet of said unit.

30

14. Stackable unit according to one of claims 9 to 13, characterised in that the centering means consist of at least two walls of the gripping means which said unit comprises.

15. Stackable unit according to any one of claims 1 to 14, characterised in that the centering means are constituted by bevelled walls implemented respectively on the faces turned towards the frame of feet and which are intended to cooperate respectively with the upper edges of the sides of the frame of the other stackable unit.

5

16. Stackable unit according to any one of claims 1 to 15, characterised in that the centering means are constituted by bevelled walls implemented respectively on the faces turned towards the frame gripping means which said unit comprises, and intended to cooperate respectively with the lower edges of the sides of the frame of another stackable unit of higher rank.

10

17. Stackable unit according to any one of claims 1 to 16, characterised in that the support means consist of a seating wall and a pillar substantially parallel to the stacking direction resting on said seating wall and with a height equal to the distance between two stackable units when the latter are stacked minus the thickness of the seating wall, the seating wall of a stackable unit being provided in order to be able to rest on the free end of the pillar of another stackable unit on which it then rests.

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18. Stackable unit according to claim 17, characterised in that said pillar has a cross-shaped section.

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19. Stackable unit according to claim 17, characterised in that said pillar has a U-shaped section.

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20. Stackable unit according to one of claims 16, 17 or 18, characterised in that the seating wall is a wall of a foot having the shape of a U.

21. Stackable unit according to one of claims 17 to 20, characterised in that said pillar comprises a centering stud going with no play into a positioning hole which the frame forming said stackable unit comprises.

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22. Stackable unit according to claim 21 when the stackable unit thereof is according to claim 19, characterized in that said foot comprises a centering stud centered with play parallel to the stacking direction in a positioning hole which the frame forming said stackable unit comprises.

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23. Stackable unit according to any one of claims 1 to 22, characterised in that the distance separating a plane passing through the abutment means and a plane passing through the holding-up means is equal to the height of a cover added to the height of the foodstuff pressed by said cover which is situated in the corresponding cell, with the thickness of the metal sheet constituting the bottom of said cell added to it.

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24. Stackable unit according to any one of claims 1 to 23, characterised in that each arm of the gripping means and each foot consist respectively of metal strips formed by folding and which are themselves fixed by welding to opposite sides of the frame.

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25. Stackable unit according to claim 24, characterised in that the posts are joined together by a reinforcing bar welded by its ends to said posts.

26. Stackable unit according to claim 24 or 25, characterised in that said metal strips constituting said arms and each foot are fixed on edge on the frame.

20

27. Stackable unit according to any one of claims 1 to 26, characterised in that it comprises holes implemented through the sides of the frame of said unit so as to allow the passage of a sensor into the cells.

25

28. Stackable unit according to any one of claims 1 to 27, characterised in that it comprises projections formed on sides of the frame of said unit towards the outside of the stackable unit, the projections making it possible to house the sealed ends of some cooking bags.

30

29. Stackable unit according to any one of claims 1 to 28, characterised in that the posts of each foot are not parallel to each other.

30. Stackable unit according to any one of claims 1 to 29, characterised in that the distance separating the first post from the second post of a foot is greater than the width of a pressing means.

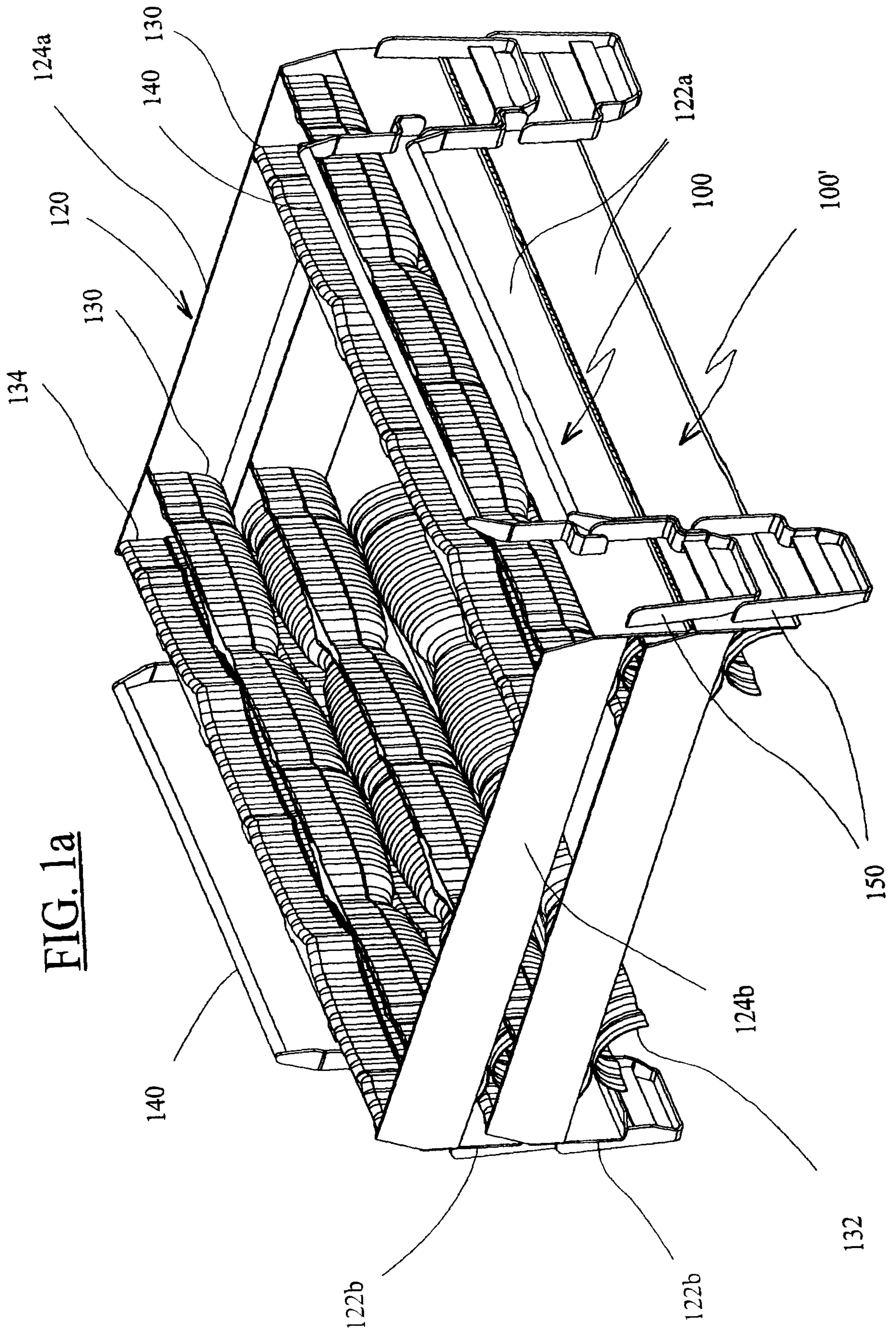
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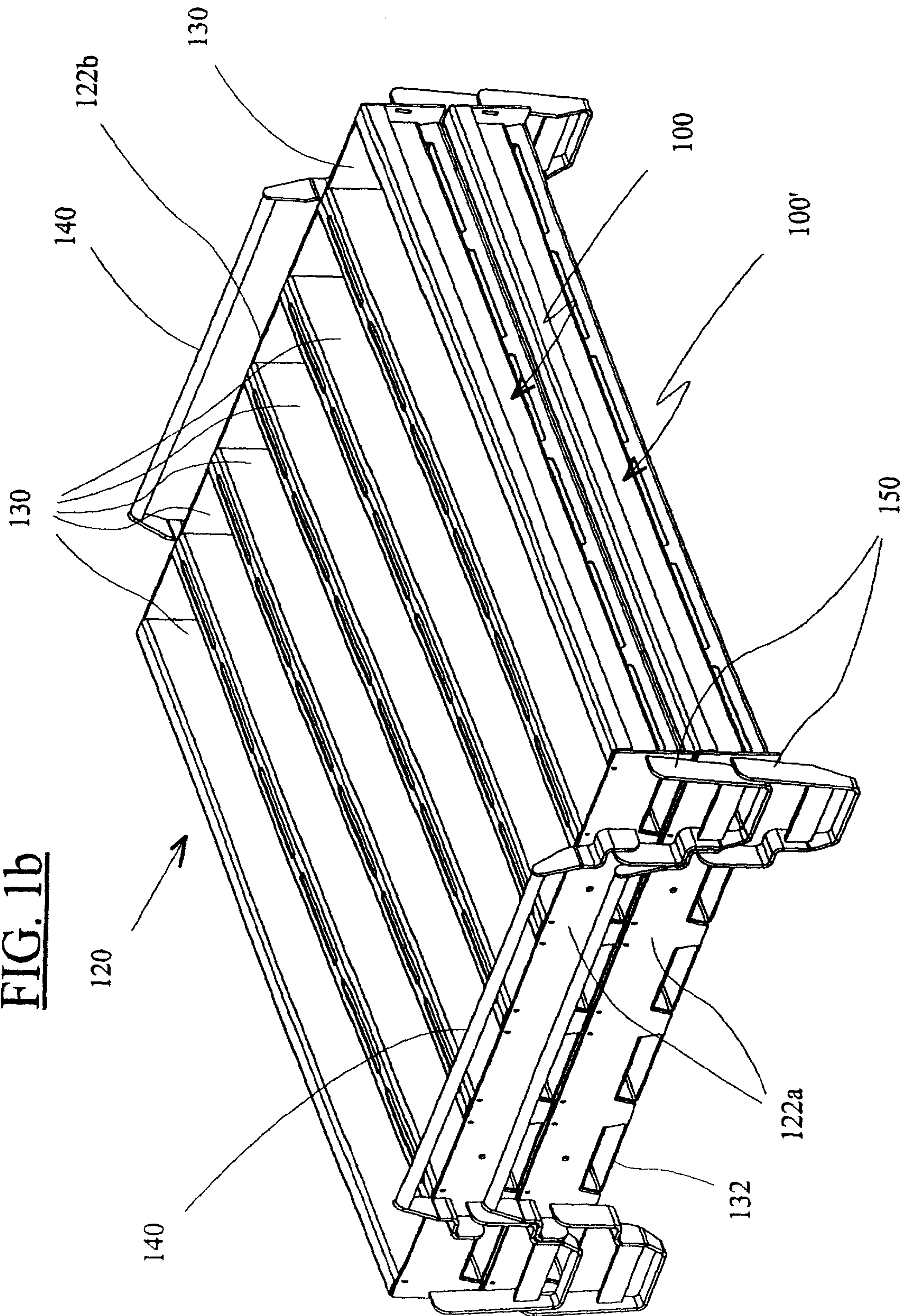
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PL. 1/11

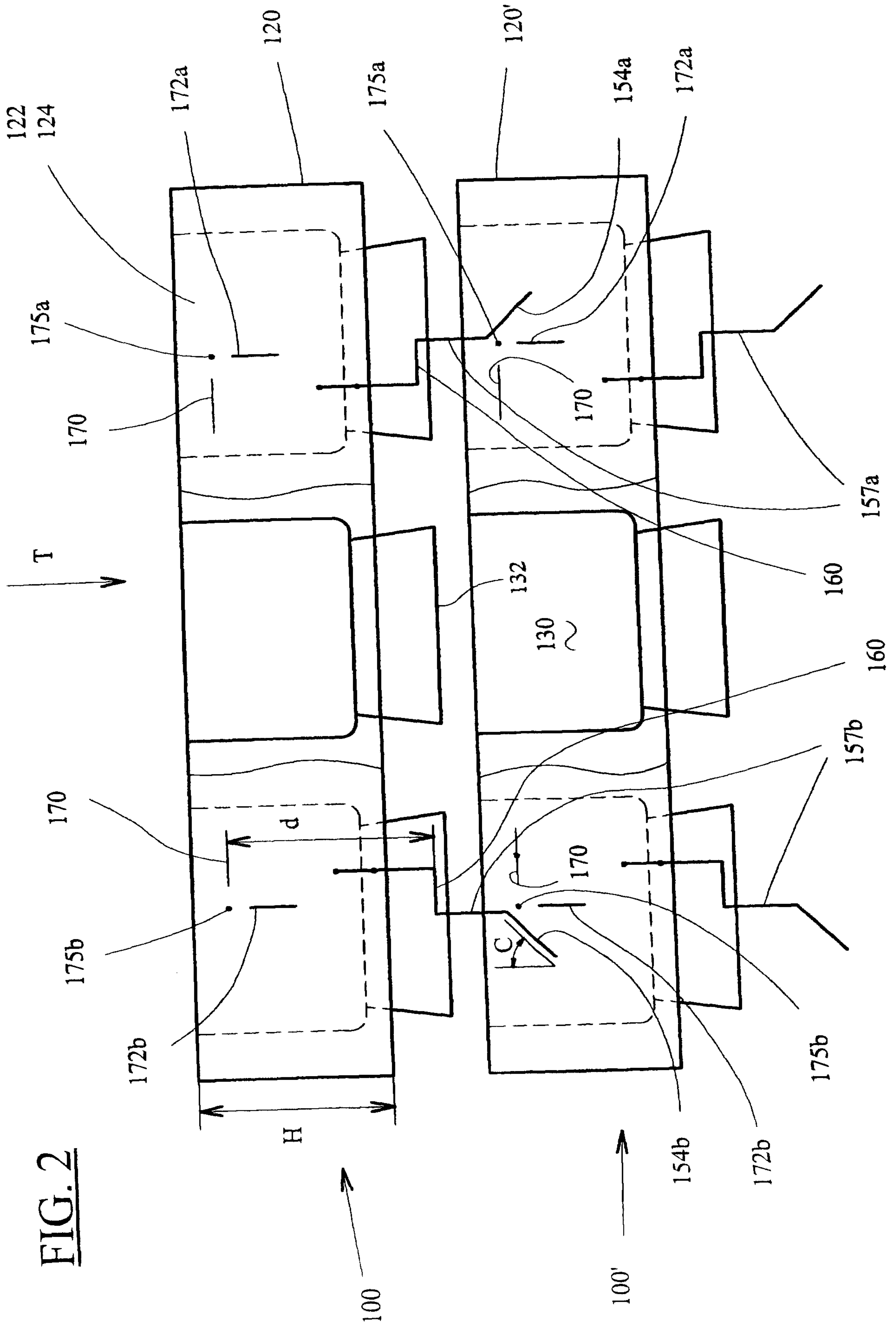


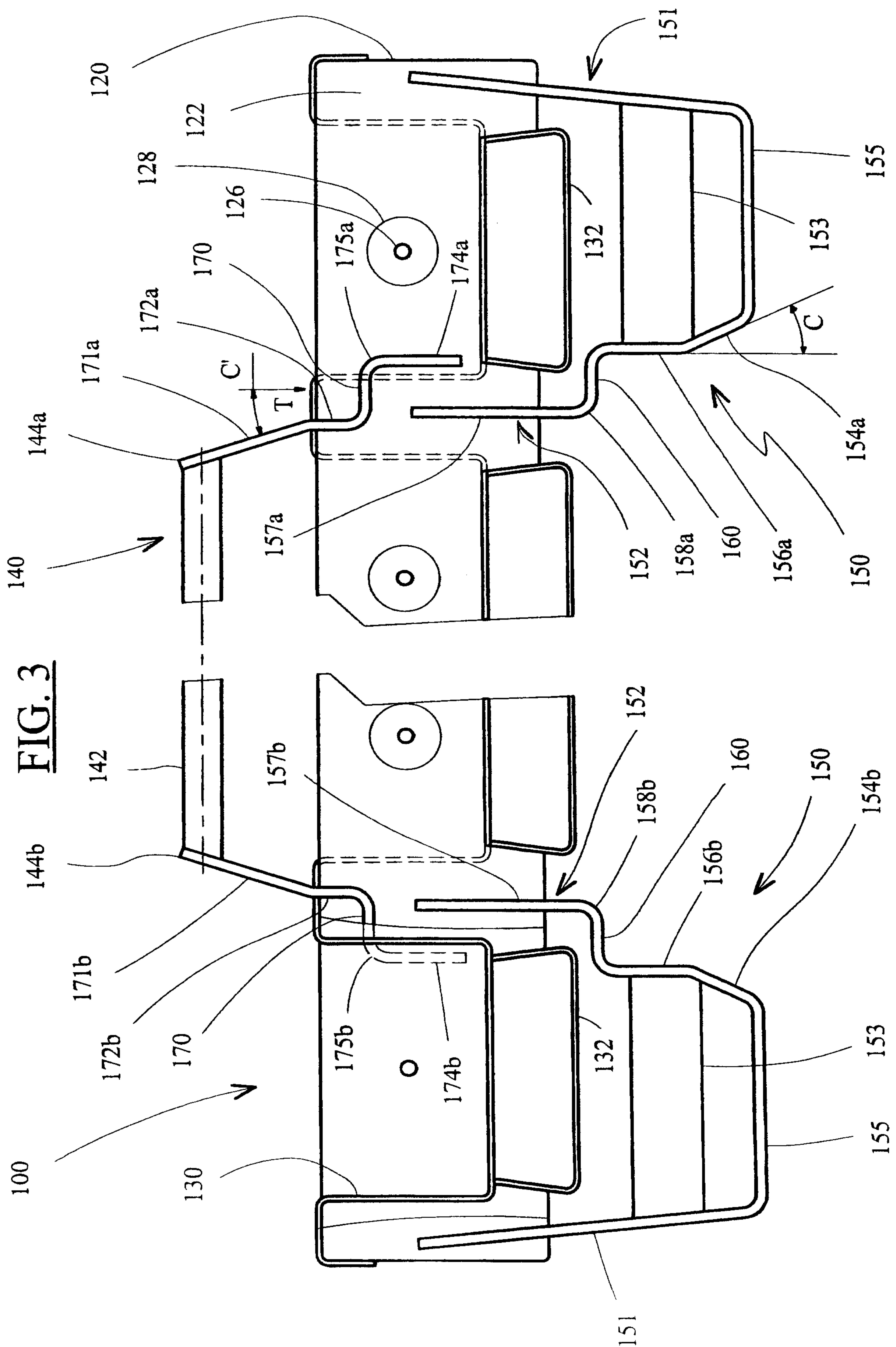
PL. 2/11

**FIG. 1b**



PL. 3/11





PL. 5/11

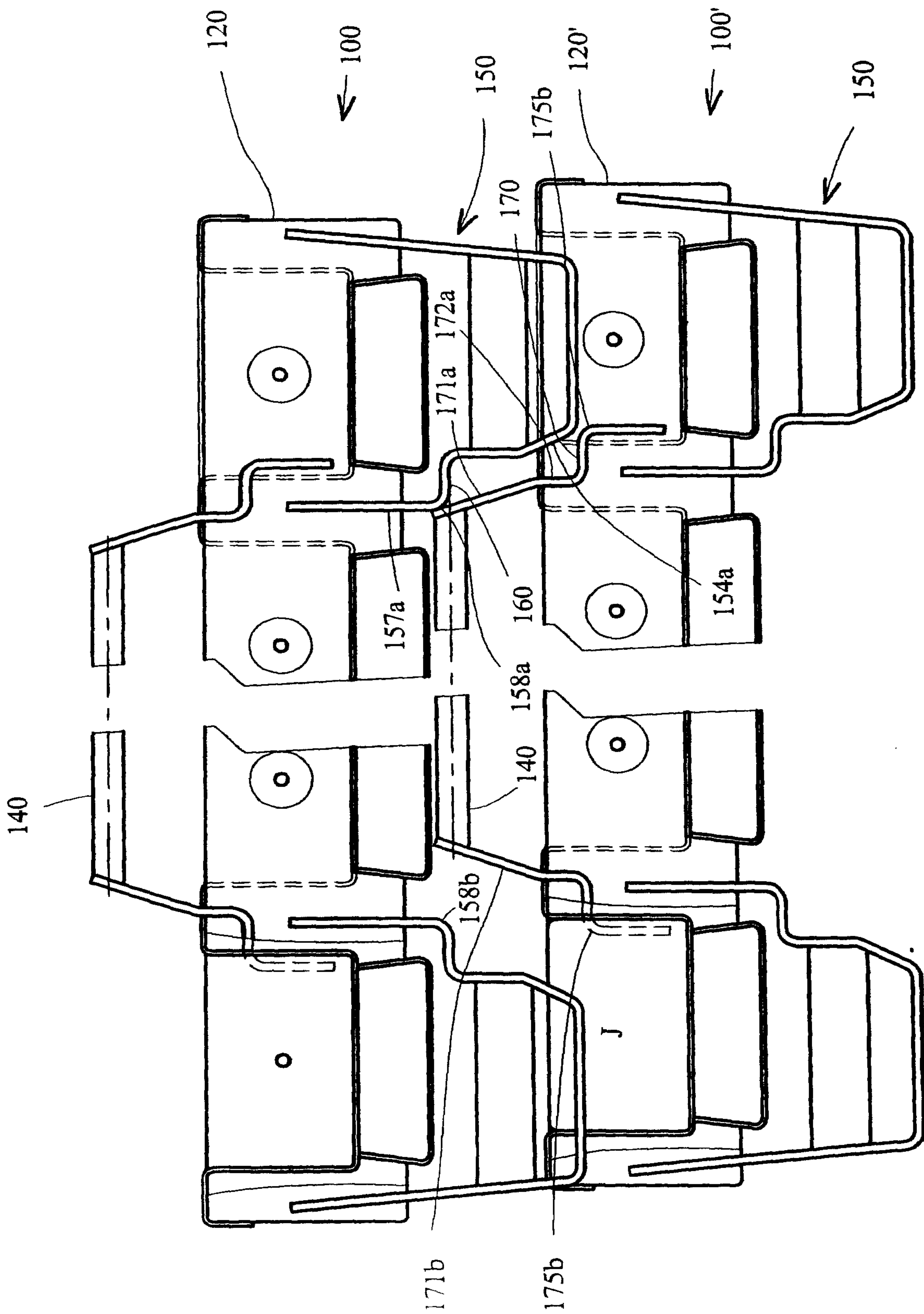


FIG. 4a

PL. 6/11

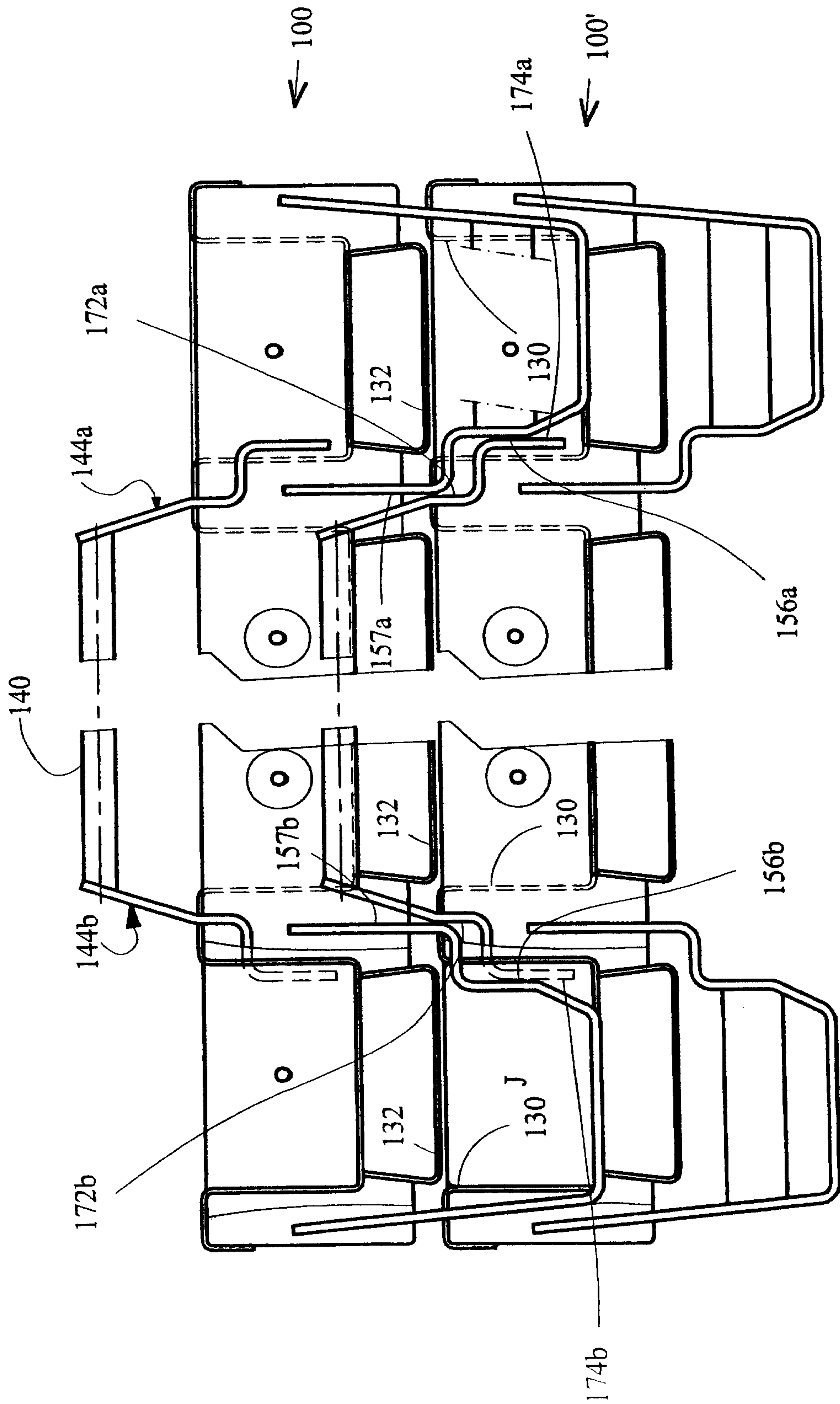


FIG. 4b

PL. 7/11

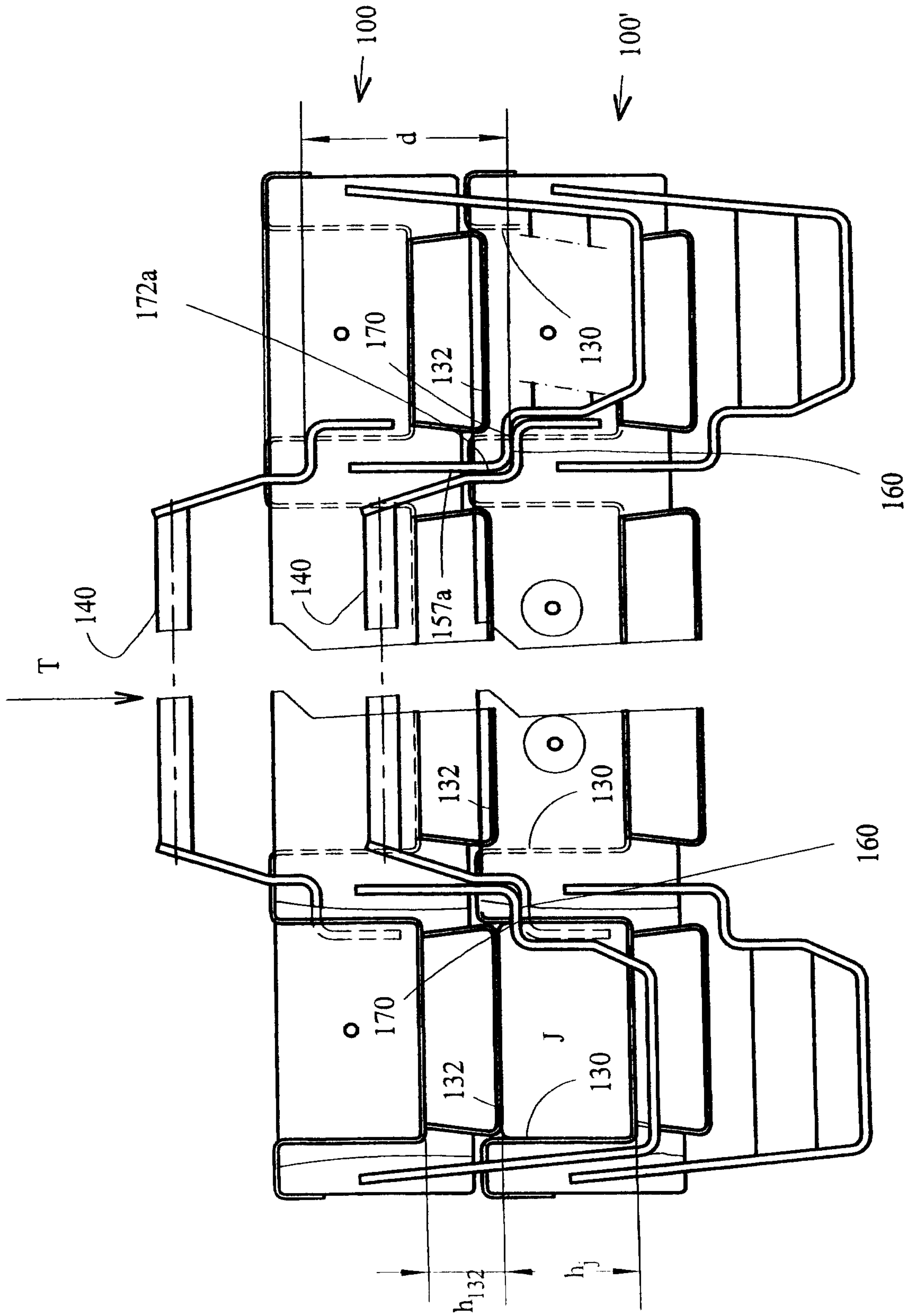


FIG. 4c

PL. 8/11

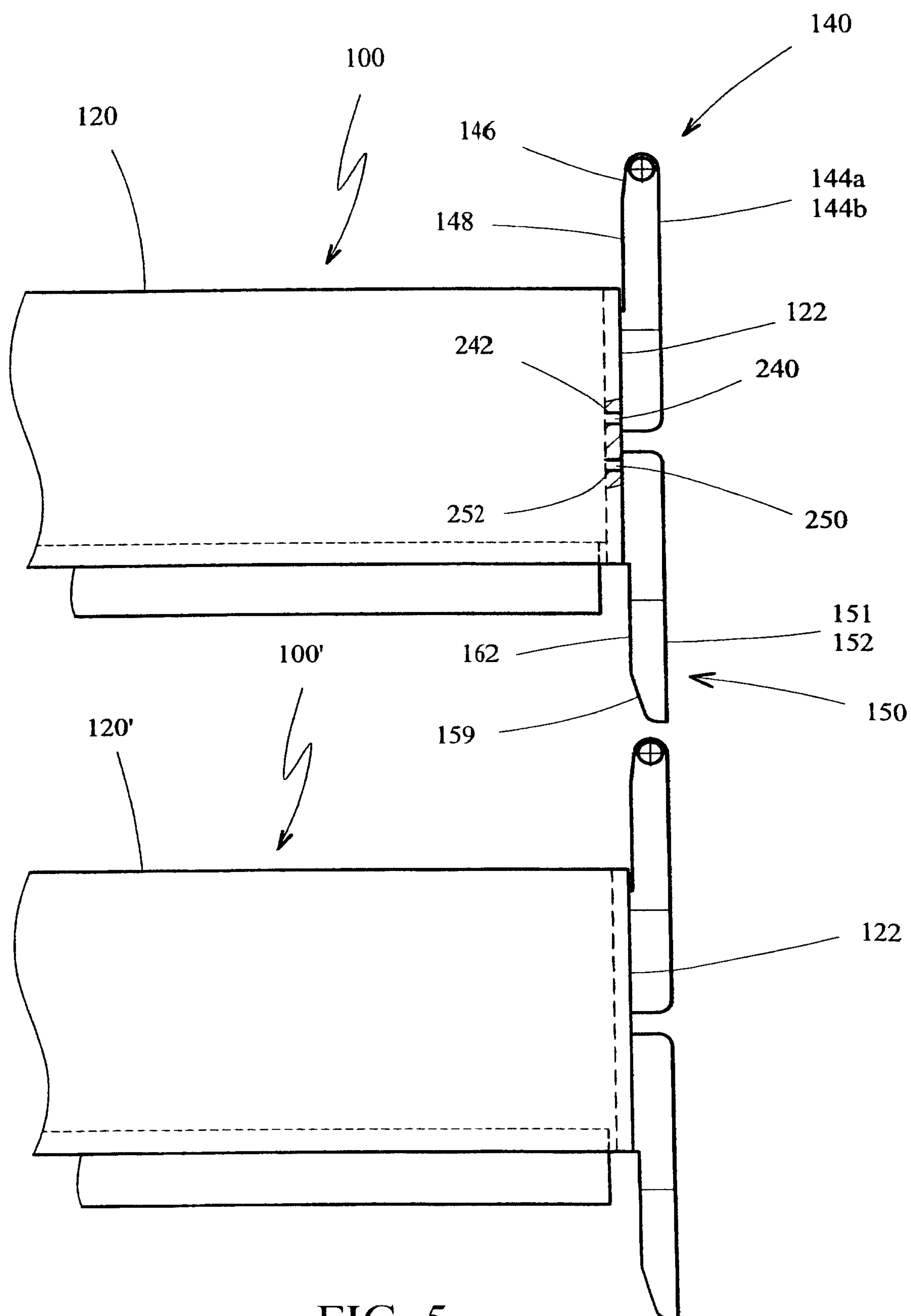
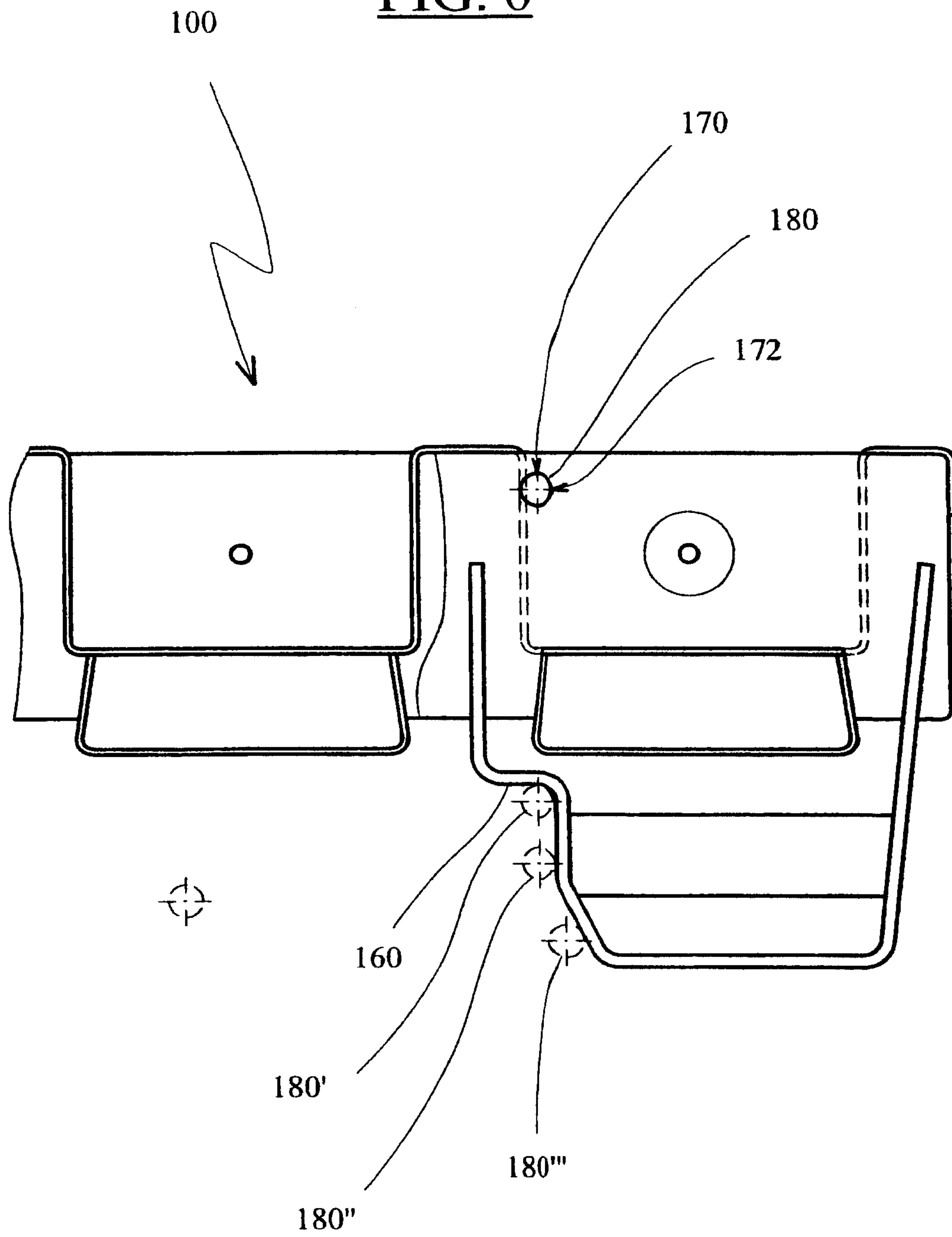


FIG. 5

PL. 9/11

**FIG. 6**



PL. 10/11

FIG. 7a

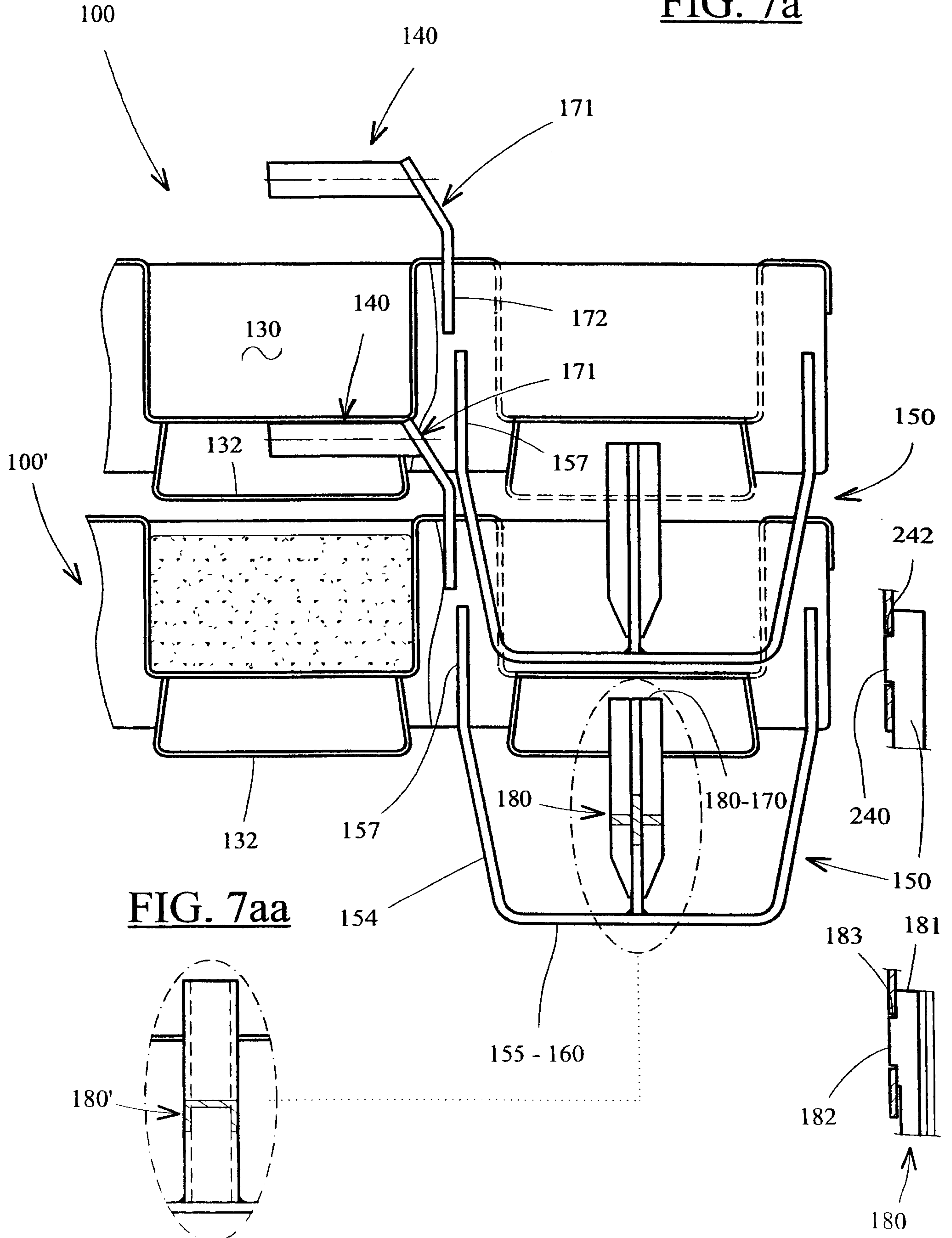


FIG. 7aa

PL. 11/11

FIG. 7b

