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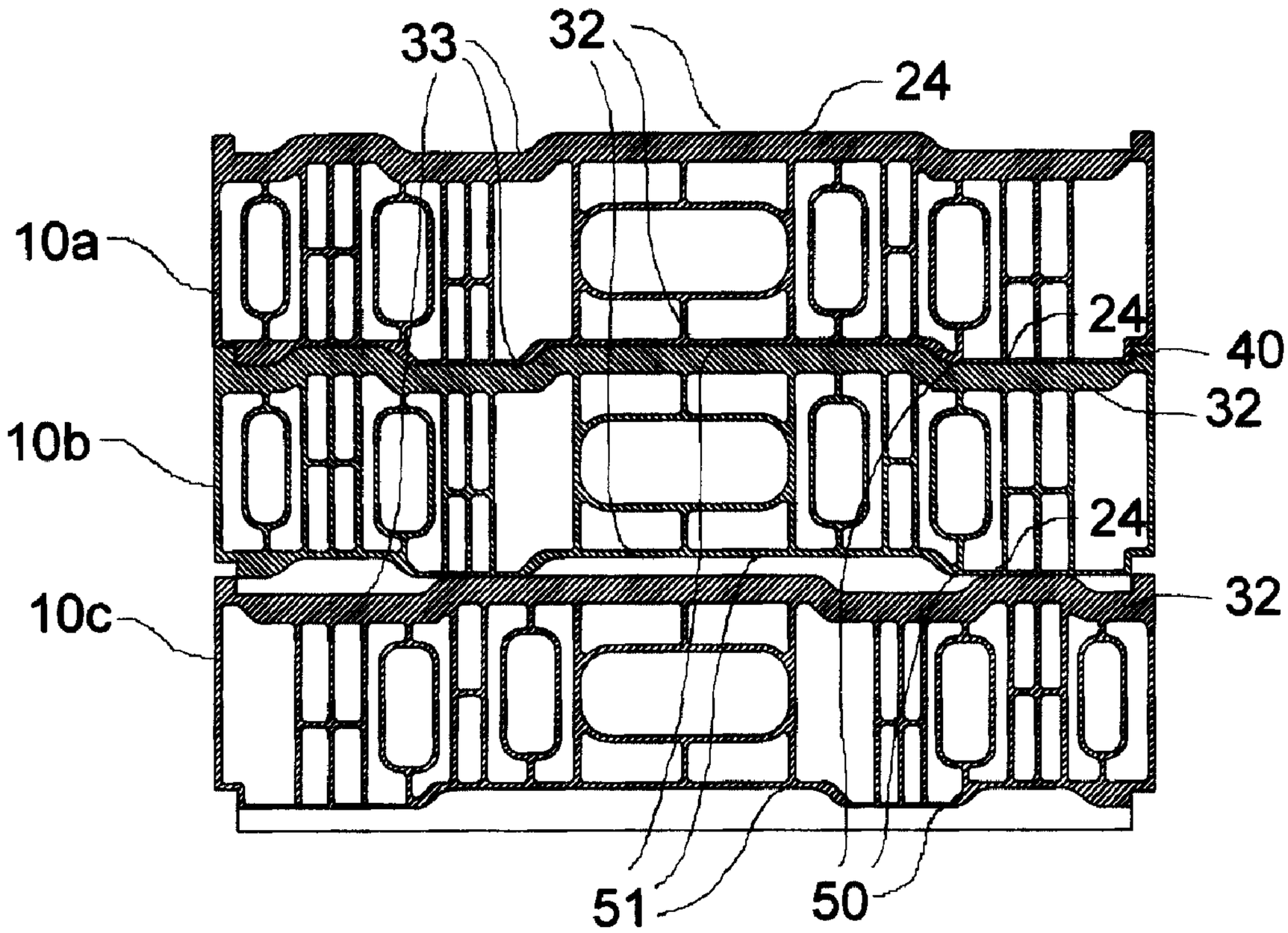
(54) Titre : PLATEAU DE SORTIE EMPILABLE
(54) Title: STACKING DELIVERY TRAY



(57) Abrégé/Abstract:
A two position stacking delivery tray is provided which is capable of stacking with itself, and also stacking with existing single position stacking delivery trays. A single uneven upstanding tongue is positioned along a top edge of each of a first side wall and a second side wall. The uneven upstanding tongue defines a first engagement with peaks and valleys. Tongue receivers are positioned in the bottom defining an uneven groove adapted to mate with a single upstanding tongue of an underlying tray having a single stacking product height position. The uneven groove defines a second engagement with peaks and valleys. The peaks and valleys of the first engagement and the second engagement are asymmetrically positioned, so as to provide two stacking product height positions by relative rotation of stacking trays by 180 degrees.

ABSTRACT OF THE DISCLOSURE

A two position stacking delivery tray is provided which is capable of stacking with itself, and also stacking with existing single position stacking delivery trays. A single uneven upstanding tongue is positioned along a top edge of each of a first side wall and a second side wall. The uneven upstanding tongue defines a first engagement with peaks and valleys. Tongue receivers are positioned in the bottom defining an uneven groove adapted to mate with a single upstanding tongue of an underlying tray having a single stacking product height position. The uneven groove defines a second engagement with peaks and valleys. The peaks and valleys of the first engagement and the second engagement are asymmetrically positioned, so as to provide two stacking product height positions by relative rotation of stacking trays by 180 degrees.

TITLE OF THE INVENTION:

Stacking Delivery Tray

FIELD OF THE INVENTION

The present invention relates to stacking delivery trays, such as are used by bakeries.

BACKGROUND OF THE INVENTION

United States Patents 3,387,740 (Bockenstette 1968); 3,675,815 (Rehig 1972) and 3,780,905 (Heroizer 1973) are examples of delivery trays that have a single stacking product height position and a nesting position. United States Patents 4,000,817 (Sanders et al 1977); 5,035,326 (Stahl 1991); 5,287,966 (Stahl 1994); 6,273,259 (Stahl 2001) and 6,394,274 (Cheeseman 2002) are examples of delivery trays that have two stacking product height positions and a nesting position. Trays with two stacking product height positions are slowly replacing trays that have a single stacking product height position, as two stacking product height positions offer greater flexibility for production facilities. Trays with a single stacking product height position are not used with trays having two stacking product height positions, as the stacking engagements used on the trays are incompatible.

SUMMARY OF THE INVENTION

According to the present invention there is provided a stacking delivery tray, which includes a body having a bottom with a first side wall and a second side wall extending upwardly from the bottom in parallel spaced relation. A single planar vertically uneven upstanding tongue positioned along a top edge of each of the first side wall and the second side wall. The upstanding tongue is adapted to mate with a bottom groove on an overlying tray having a single stacking product height position. The uneven upstanding tongue defines a first engagement with peaks and valleys. Tongue receivers are positioned in the bottom along each of the first side wall and the second side wall. Each of the tongue receivers includes an inside retainer and an outside retainer positioned in parallel spaced relation along the bottom of the body to define lateral boundaries of a vertically uneven groove adapted to mate with a single upstanding tongue of an underlying tray having a single stacking product height position. Each outside retainer is co-terminous with an outer face of one of the first side wall and the second side wall, thereby maintaining the same outer dimension. The

uneven groove defines a second engagement with peaks and valleys adapted to engage the first engagement on the uneven upstanding tongue. The peaks and valleys of the first engagement and the peaks and valleys of the second engagement are asymmetrically positioned. When two trays are in one relative orientation the peaks of the first engagement are in register with the valleys of the second engagement to provide a first stacking product height position. When the relative orientation of the two trays is changed by 180 degrees the peaks of the first engagement are out of register with the valleys of the second engagement resulting in the peaks of the first engagement engaging the peaks of the second engagement to provide a second stacking product height position.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings, the drawings are for the purpose of illustration only and are not intended to in any way limit the scope of the invention to the particular embodiment or embodiments shown, wherein:

FIG. 1 is a perspective view of a stacking delivery tray constructed in accordance with the teachings of the present invention.

FIG. 2 is a side elevation view of the stacking delivery tray in **FIG. 1**.

FIG. 3 is a side elevation view in section of a side wall.

FIG. 4 is a perspective view of a delivery tray in the prior art.

FIG. 5 is a side elevation view of a stack of trays constructed in accordance with the teachings of the present invention stacked with a prior art tray.

FIG. 6 is a side elevation view, in section, of a stack of trays, all of which are constructed in accordance with the teachings of the present invention.

FIG. 7 is a side elevation view of a variation of the stacking delivery tray in **FIG. 1**.

FIG. 8 is a side elevation view of a variation of the stacking delivery tray in **FIG. 1**.

FIG. 9 is a side elevation view of a variation of the stacking delivery tray in **FIG. 1**.

FIG. 10 is a side elevation view of a variation of the stacking delivery tray in **FIG. 1**.

FIG. 11 is a side elevation view of a variation of the stacking delivery tray in **FIG. 1**.

FIG. 12 is a side perspective view of a variation of the stacking delivery tray in **FIG. 1**.

FIG. 13 is an end elevation view of the stacking delivery tray in **FIG. 1.**

FIG. 14 is an end elevation view of a stack of trays, constructed in accordance with the teachings of the present invention stacked with a prior art tray.

FIG. 15 is a side elevation view of two trays in a position to slide relative to each other.

FIG. 16 is a side elevation view of two trays sliding relative to each other.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment, a stacking delivery tray generally identified by reference numeral 10, will now be described with reference to **FIG. 1** through **16**.

Structure and Relationship of Parts:

Referring now to **FIG. 1**, there is shown stacking delivery tray 10, including a body 12 that has a bottom 14 with a first side wall 16 and a second side wall 18 extending upwardly from bottom 14 in parallel spaced relation. Body 12 also has a front wall 20 and a back wall 22. Referring to **FIG. 2,** there is a single planar vertically uneven upstanding tongue 24 positioned along a top edge 26 of each of first side wall 16 and second side wall 18. Single uneven upstanding tongue 24 is adapted to mate with a bottom groove 28 on a tray 30 that has a single stacking product height position when it is overlying stacking delivery tray 10. Tray 30 and bottom groove 28 are shown in **FIG. 4** labelled prior art. Referring again to **FIG. 2,** uneven upstanding tongue 24 defines a first engagement with peaks 32 and valleys 33. Referring to **FIG. 1,** tongue receivers 34 are positioned in bottom 14 along each of first side wall 16 and second side wall 18. Referring to **FIG. 3**, each tongue receiver 34 includes an inside retainer 36 and an outside retainer 38 positioned in parallel spaced relation along bottom 14 of body 12 to define lateral boundaries of a vertically uneven groove 40. The profile of uneven groove 40 is shown in dotted lines in **FIG. 2** and is shown in the section view of **FIG. 6.** Referring to **FIG. 4,** uneven groove 40 is adapted to mate with a single upstanding tongue 42 of tray 30 when it is underlying stacking delivery tray 10. Referring to **FIG. 5,** tray 30 is shown with a stacking delivery tray 10 positioned above and below, with single uneven upstanding tongue 24 engaging a bottom groove 28 and uneven groove 40 engaging single upstanding tongue 42. Referring to **FIG. 6**, the trays have been labeled 10a, 10b, and 10c to differentiate between their relative positions. Uneven groove 40 defines a second engagement with peaks 50 and valleys 51 adapted to engage peaks 32 and valleys 33

of the first engagement on uneven upstanding tongue 24. Peaks 32 and valleys 33 of the first engagement and peaks 50 and valleys 51 of the second engagement 50 are asymmetrically positioned. When two trays 10 are in one relative orientation, peaks 32 of the first engagement 32 are in register with valleys 51 of the second engagement, to provide a first stacking product height position. This position is demonstrated by trays 10a and 10b of **FIG. 6**. When the relative orientation of the trays 10 is changed by 180 degrees, peaks 32 of the first engagement are out of register with valleys 51 of the second engagement resulting in the peaks 32 of the first engagement engaging the peaks 50 of the second engagement to provide a second stacking product height position. This position is demonstrated by trays 10b and 10c of **FIG. 6**.

Referring to **FIG. 3,** each outside retainer 38 is co-terminous with an outer face 46 of one of first side wall 16 and second side wall 18, thereby maintaining the same outer dimension. In this particular embodiment, outside retainer 38 has a remote end 48 which is co-terminous with bottom 14; although as will be seen with subsequent embodiments this need not be the case. As shown in **FIG. 9,** outside retainer 38 need not extend down the same distance as inside retainer 36. As shown in **FIG. 12,** both inside retainer 36 and outside retainer 38 may extend below bottom 14.

The actual profile of the peaks and the valleys is not of critical importance. As shown in **FIG. 2**, peaks 32 and valleys 33 can be symmetrically tapered. As shown in **FIG. 8,** peaks 32 and valleys 33 can be rounded. As shown in **FIG. 11,** peaks 32 and valleys 33 can be tapered with radiused corners. The number and spacing of peaks and valleys is not of critical importance, as long as the mating relationship is maintained. As shown in **FIG. 7** through **11,** the number and configuration of peaks 32 and valleys 33 may be varied. In the illustrated embodiments side wall 16 and the first engagement profile and the second engagement profile will be a mirror image of side wall 18. This is convenient for purposes of manufacture, but is not essential, as long as the mating can take place.

Referring now to **FIG. 1** and **13,** first side wall 16 and second side wall 18 each have bottom contact shoulders 54 positioned adjacent to front wall 20 and back wall 22. Referring to **FIG. 14,** bottom contact shoulders 54 are adapted to engage an inner face 56 of a side wall

58 of tray 30. Referring again to **FIG. 13** first side wall 16 and second side wall 18 each have upper contact shoulder receptacles 60 adapted to receive bottom contact shoulders 54 of an overlying tray. Referring now to **FIG. 15** and **16**, when trays are stacked or removed, it is preferred that top tray 10 be lifted at an angle to bottom tray 10 as shown, to release the locking action of shoulders 54. **FIG. 15** shows trays 10 at a sufficient angle to be removed, and **FIG 16** shows top tray 10 sliding along bottom tray 10.

Operation:

The use of stacking delivery tray 10 will now be discussed with reference to **FIGS. 1 through 16**. Referring to **FIGS. 1 through 3**, stacking delivery trays 10 as described above are provided for use. It is expected that trays 30 with only one stacking product height position that are commonly used in the industry will also be present. Referring to **FIG. 5,** if stacking delivery trays 10 are used with trays 30, single uneven tongue 24 is adapted to mate with bottom groove 28 on tray 30, and uneven groove 40 is adapted to mate with single upstanding tongue 42 of tray 30. Since both trays 10 and 30 may be used together, an inventory of trays 30 may gradually be replaced with stacking delivery trays 10. Referring to **FIGS. 15** and **16,** when contact shoulder 54 is engaged, trays 10 are precluded from moving forward or backward. However, when trays 10 are tilted to release contact shoulder 54, trays 10 may be freely slid onto and off of each other at an angle. Tray 10 will slide equally well with prior art tray 30, as with another tray 10. Referring to **FIG. 6**, stacking delivery trays 10 may be stacking using two different stacking product height positions. For the purpose of differentiation the trays have been identified as 10a, 10b, 10c. The first position is obtained by engaging uneven upstanding tongue 24 of tray 10b with uneven groove 40 of tray 10a. In this position, peaks 32 of the first engagement of tray 10b are in register with valleys 51 of the second engagement of tray 10a. This provides a relatively low stacking product height position. The second position is obtained by changing the orientation of the trays by 180 degrees. Uneven upstanding tongue 24 of tray 10c engages uneven groove 40 of tray 10b, as with the engagement between trays 10a and 10b. However, in this orientation valleys 51 of the second engagement of tray 10b are out of register with peaks 32 of the first engagement of tray 10b, resulting in peaks 32 of the first engagement of tray 10c engaging the peaks 50 of the second engagement of tray 10b. This results in a relatively higher stacking product height position. The lower stack is convenient for stacking and transporting shorter goods, such as

buns, rolls, cakes, etc. The higher stack is more convenient for stacking taller goods, such as bread.

In the present application, bakery goods have been used as examples only. It will be apparent to one skilled in the art that the delivery trays may be used with an infinite variety of products. It is important to note that the present invention can stack with trays having a single stacking product height position, while maintaining the same outer dimensions and the same inner dimensions. This is extremely important. If there were a difference in outer dimensions, it would require automated handling equipment that was capable of handling differing outer dimensions. It could also result in the need for a complete change over of equipment. The outer dimensions of the trays are chosen to fit standard shipping containers. If the engagement were to result in an increased outer dimension, they would no longer fit as intended within the shipping containers. If there were a difference in inner dimensions it would require changes to the product to fit within the smaller of the two inner dimensions.

In this patent document, the word "comprising" is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not excluded. A reference to an element by the indefinite article "a" does not exclude the possibility that more than one of the element is present, unless the context clearly requires that there be one and only one of the elements.

It will be apparent to one skilled in the art that modifications may be made to the illustrated embodiment without departing from the spirit and scope of the invention as hereinafter defined in the Claims.

What is claimed is:

1. A stacking delivery tray, comprising:

a body having a bottom with a first side wall and a second side wall extending upwardly from the bottom in parallel spaced relation;

a single planar vertically uneven upstanding tongue positioned along a top edge of each of the first side wall and the second side wall, the upstanding tongue being adapted to mate with a bottom groove on an overlying tray having a single stacking product height position, the uneven upstanding tongue defining a first engagement with peaks and valleys;

tongue receivers positioned in the bottom along each of the first side wall and the second side wall, each of the tongue receivers including an inside retainer and an outside retainer positioned in parallel spaced relation along the bottom of the body to define lateral boundaries of a vertically uneven groove adapted to mate with a single upstanding tongue of an underlying tray having a single stacking product height position, each outside retainer being co-terminous with an outer face of one of the first side wall and the second side wall, thereby maintaining the same outer dimension, the uneven groove defining a second engagement with peaks and valleys adapted to engage the first engagement on the uneven upstanding tongue, the peaks and valleys of the first engagement and the peaks and valleys of the second engagement being asymmetrically positioned such that when two trays are in one relative orientation the peaks of the first engagement are in register with the valleys of the second engagement to provide a first stacking product height position, and when the relative orientation of the two trays is changed by 180 degrees the peaks of the first engagement are out of register with the valleys of the second engagement resulting in the peaks of the first engagement engaging the peaks of the second engagement to provide a second stacking product height position.

2. The stacking delivery tray as defined in Claim 1, wherein the body has a front wall and a back wall.

3. The stacking delivery tray as defined in Claim 1, wherein the valleys of the first engagement are symmetrically tapered downwardly and inwardly from an upper peripheral

edge of the single uneven tongue.

4. The stacking delivery tray as defined in Claim 1, wherein the valleys of the first engagement are radiused.

5. The stacking delivery tray as defined in Claim 2, wherein each of the first side wall and the second side wall has bottom contact shoulders positioned adjacent to the front wall and the back wall, the bottom contact shoulders being adapted to engage an inner face of a side wall of an underlying tray having a single stacking product height position, each of the first side wall and the second side wall having upper contact shoulder receptacles adapted to receive the bottom contact shoulders of an overlying tray.

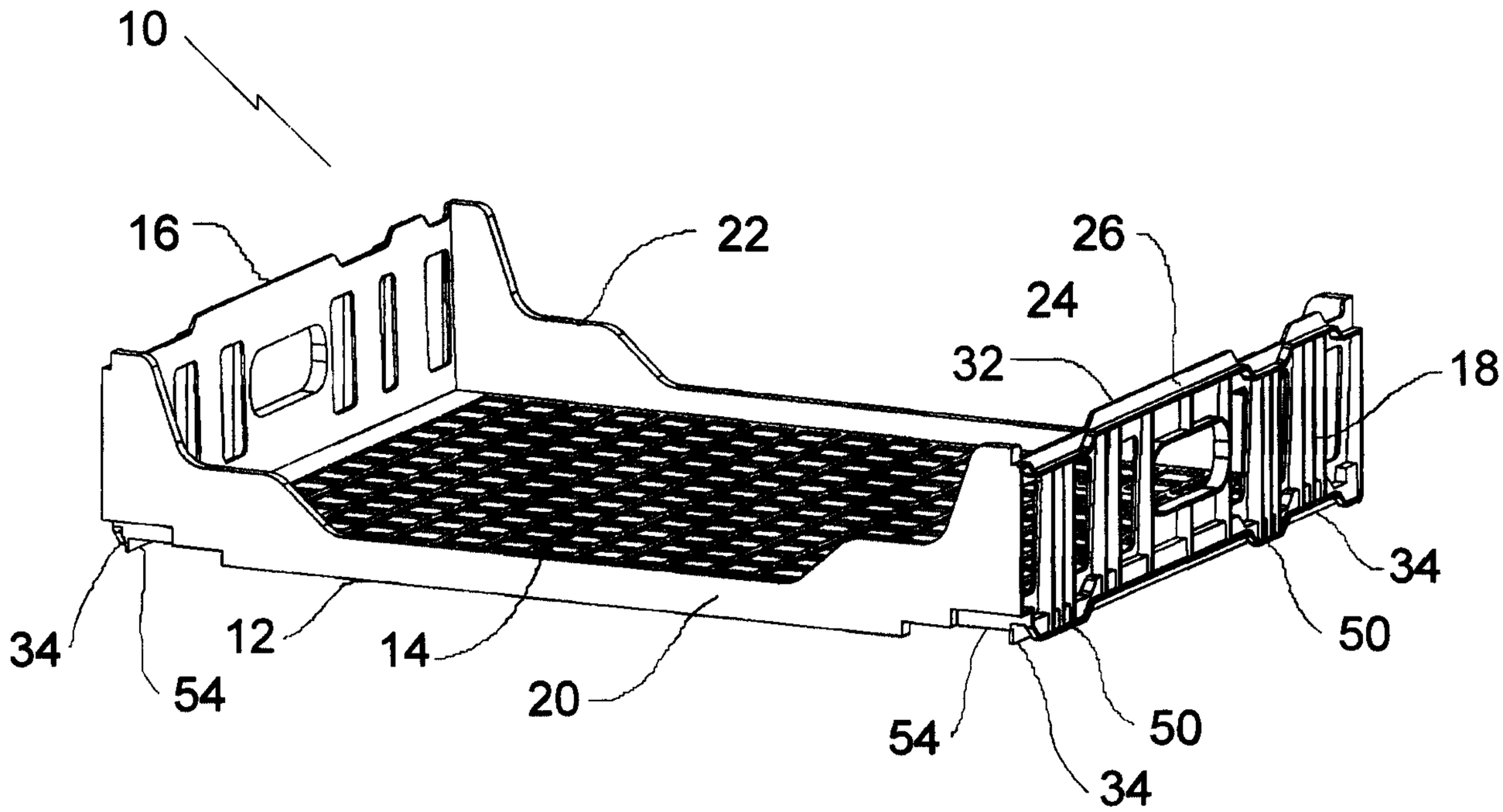

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FIG. 1

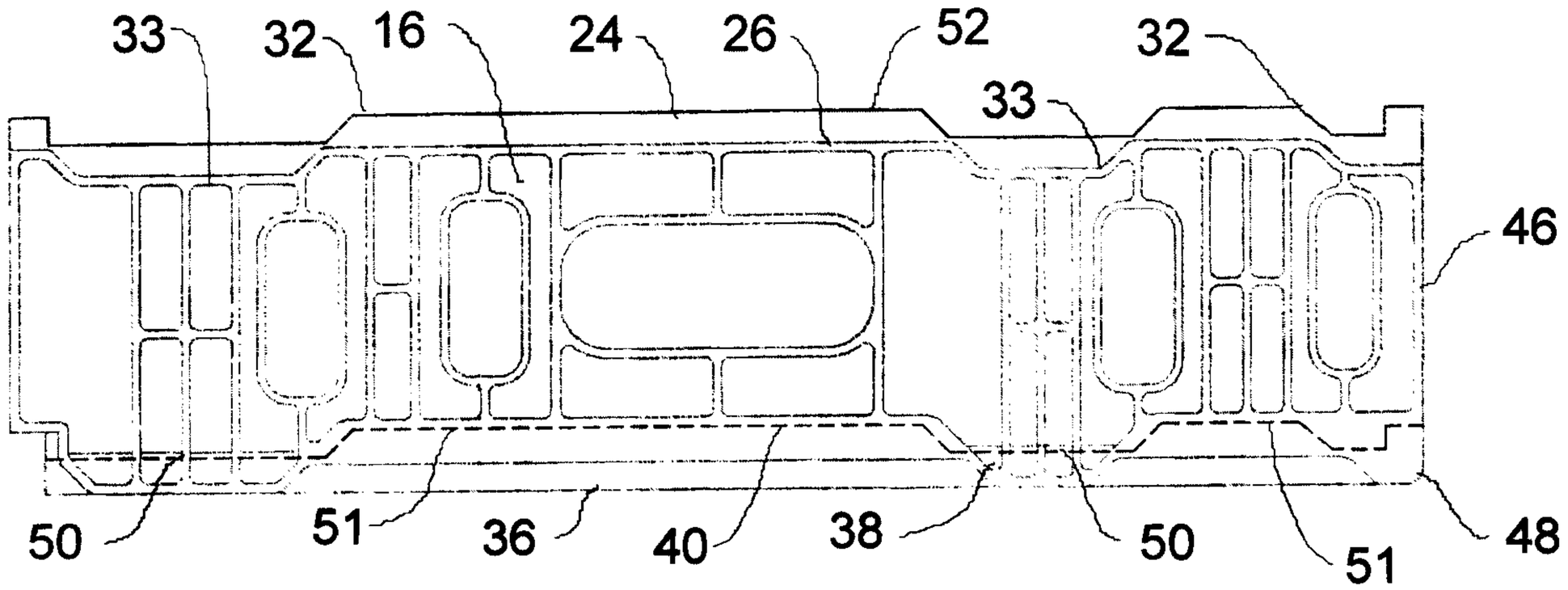
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FIG. 2

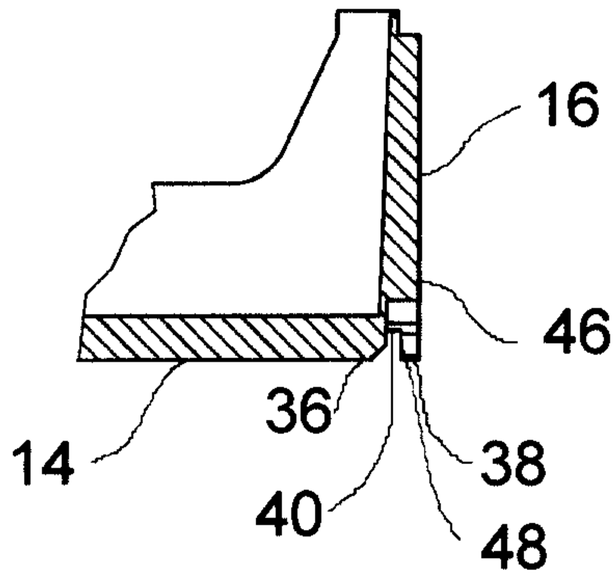


FIG. 3

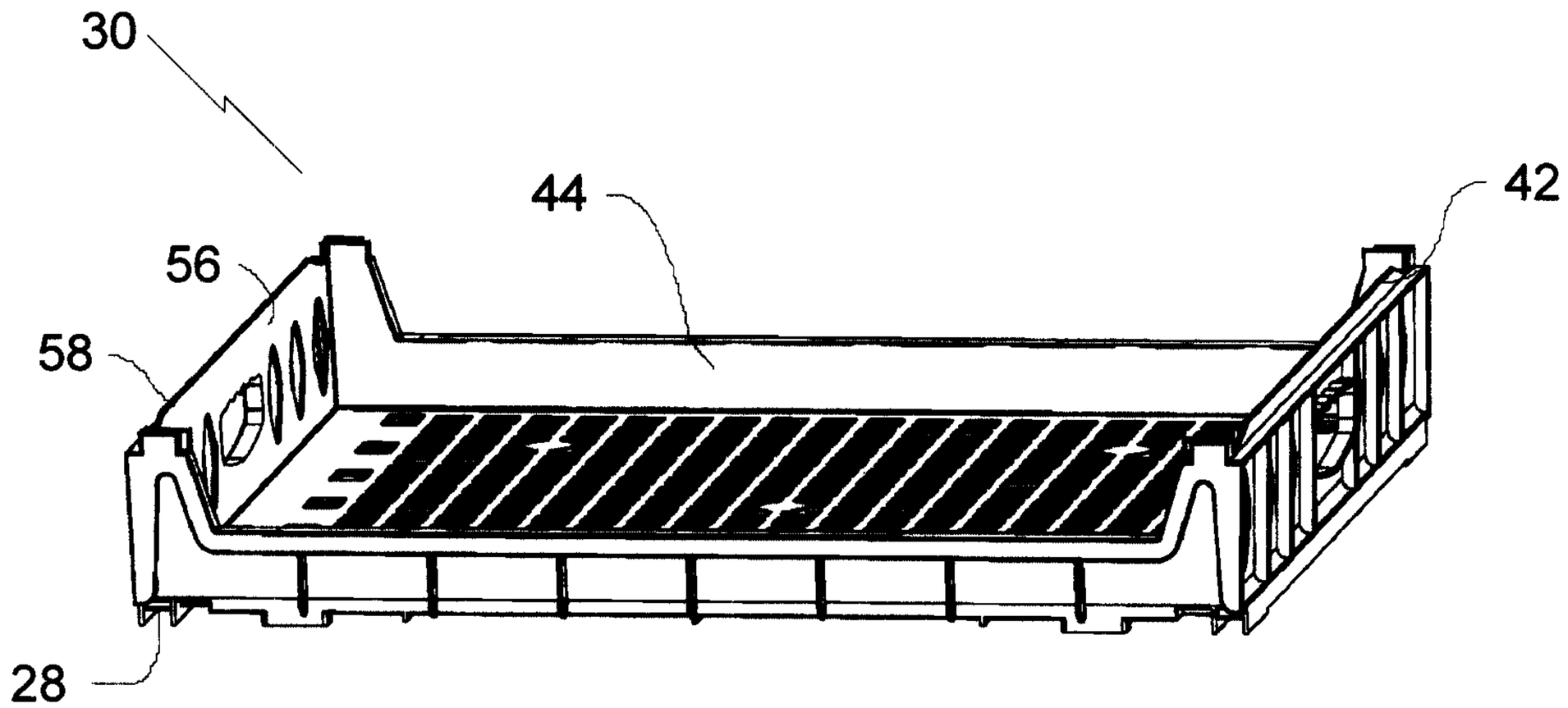


FIG. 4 (PRIOR ART)

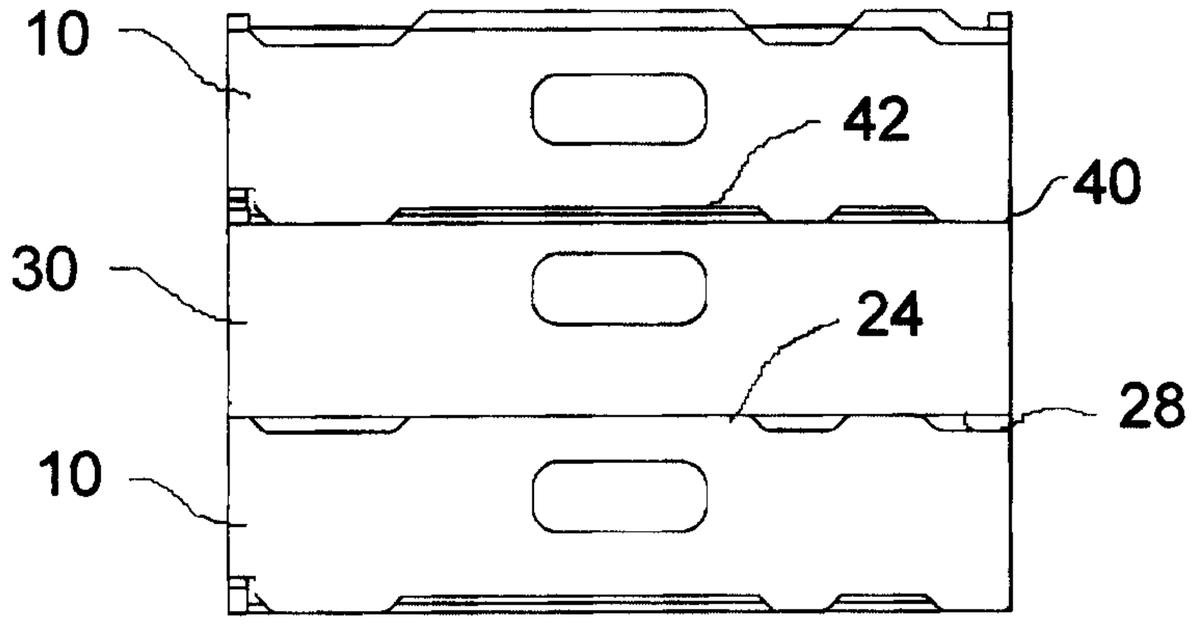


FIG. 5

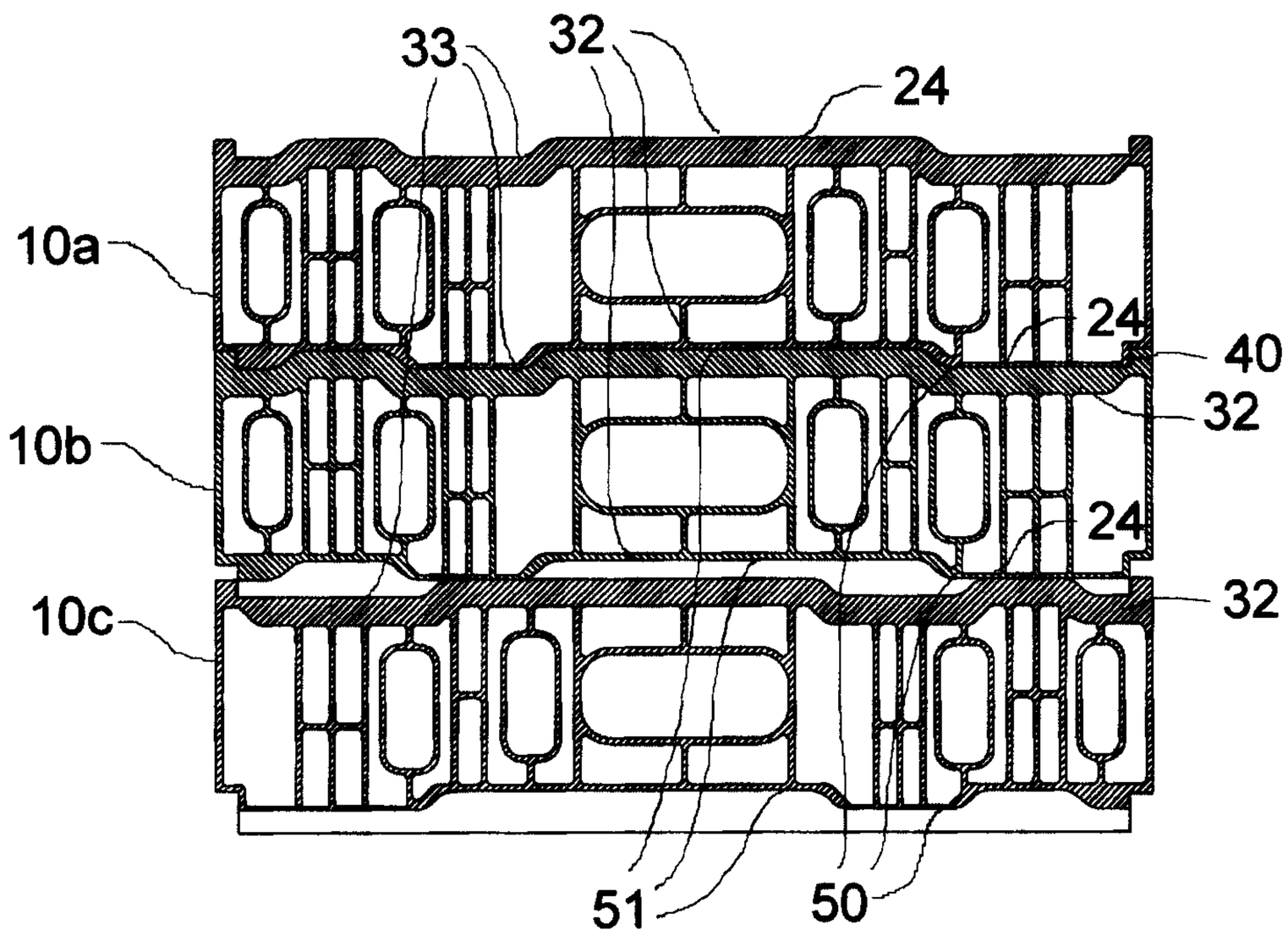


FIG. 6

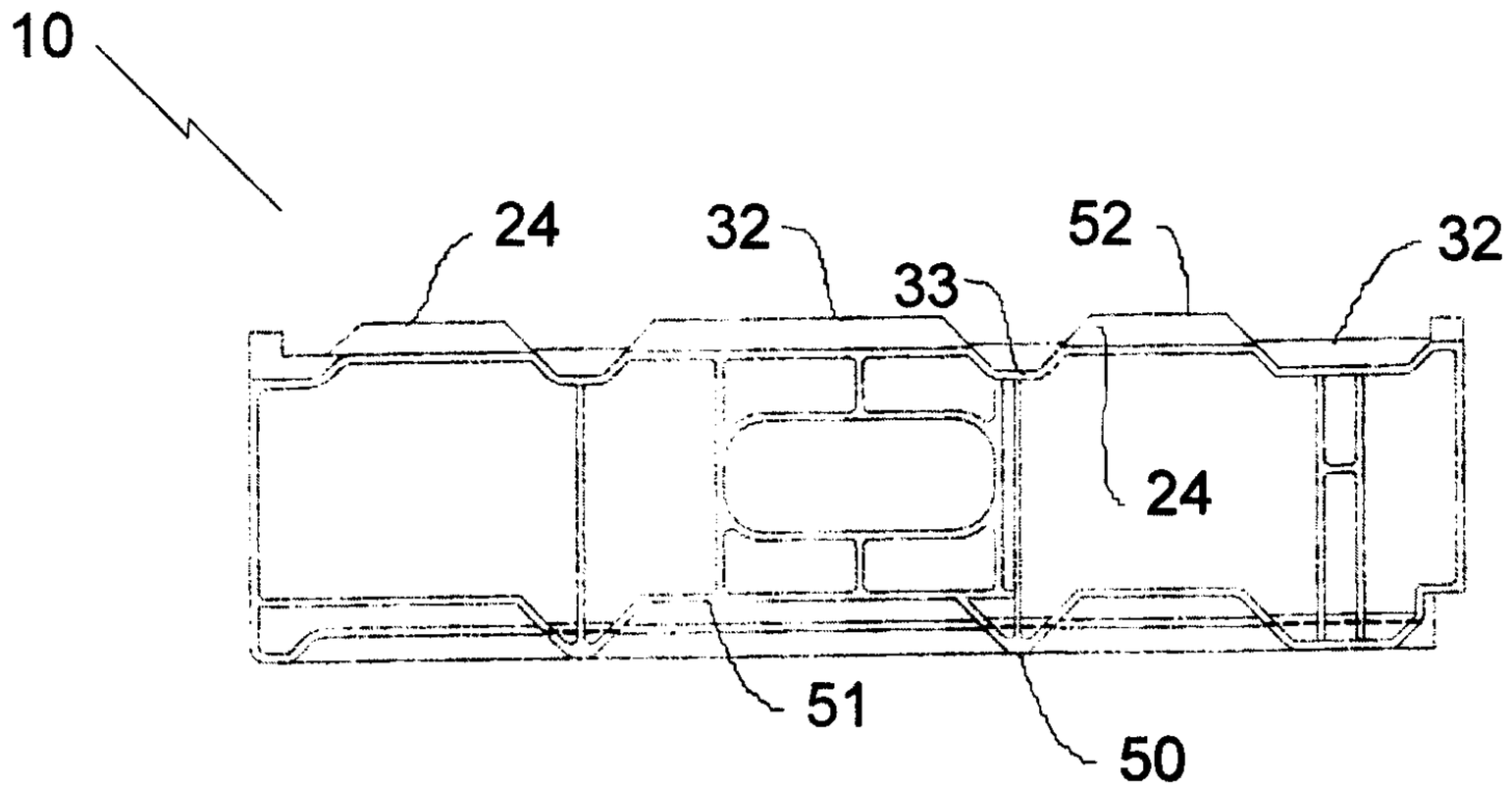


FIG. 7

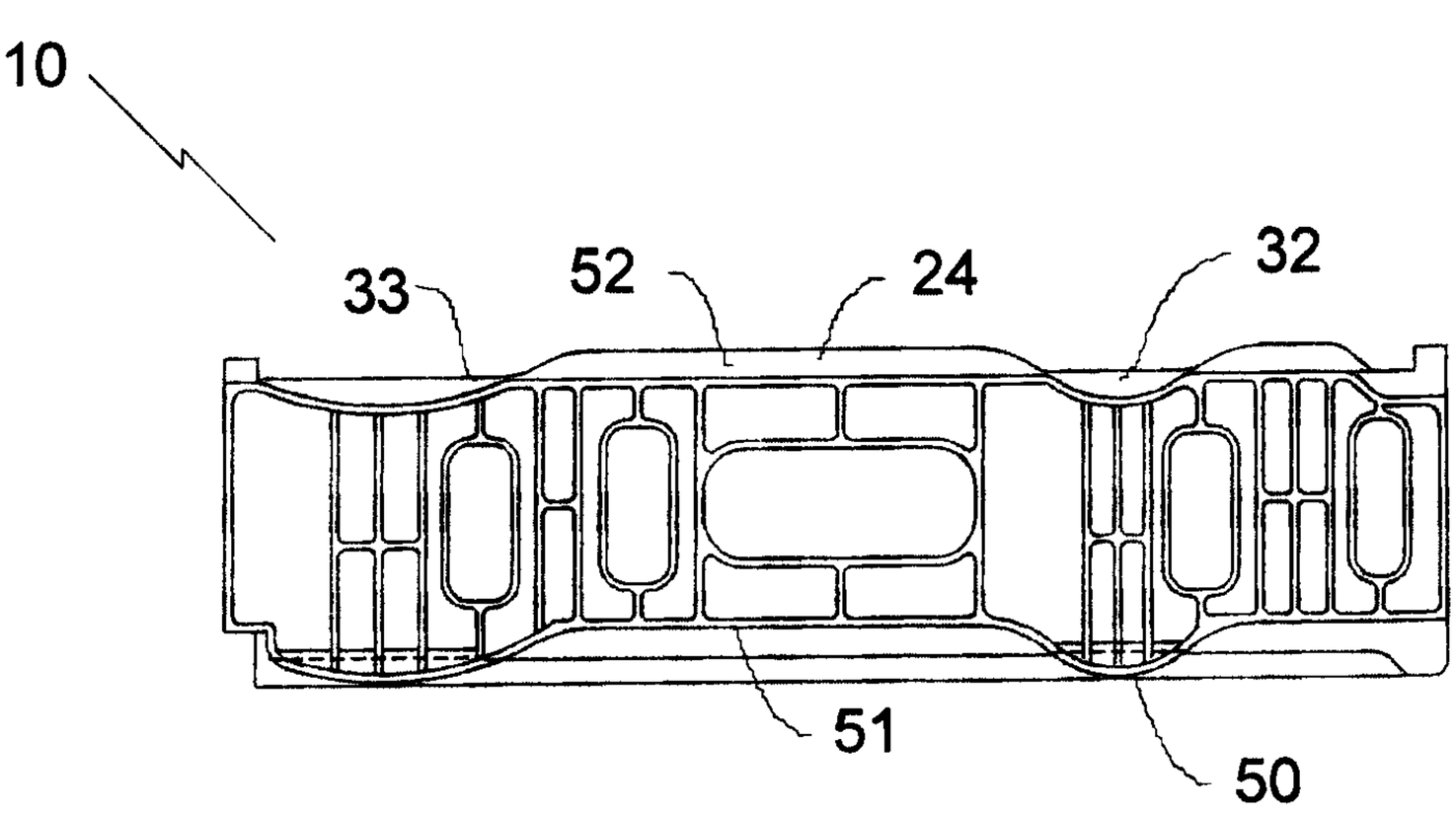


FIG. 8

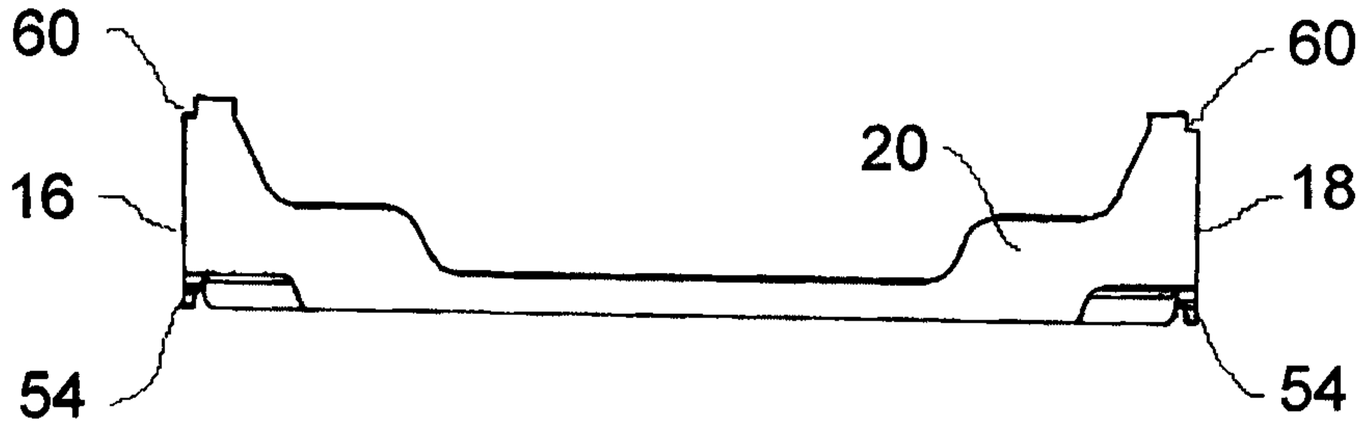


FIG. 13

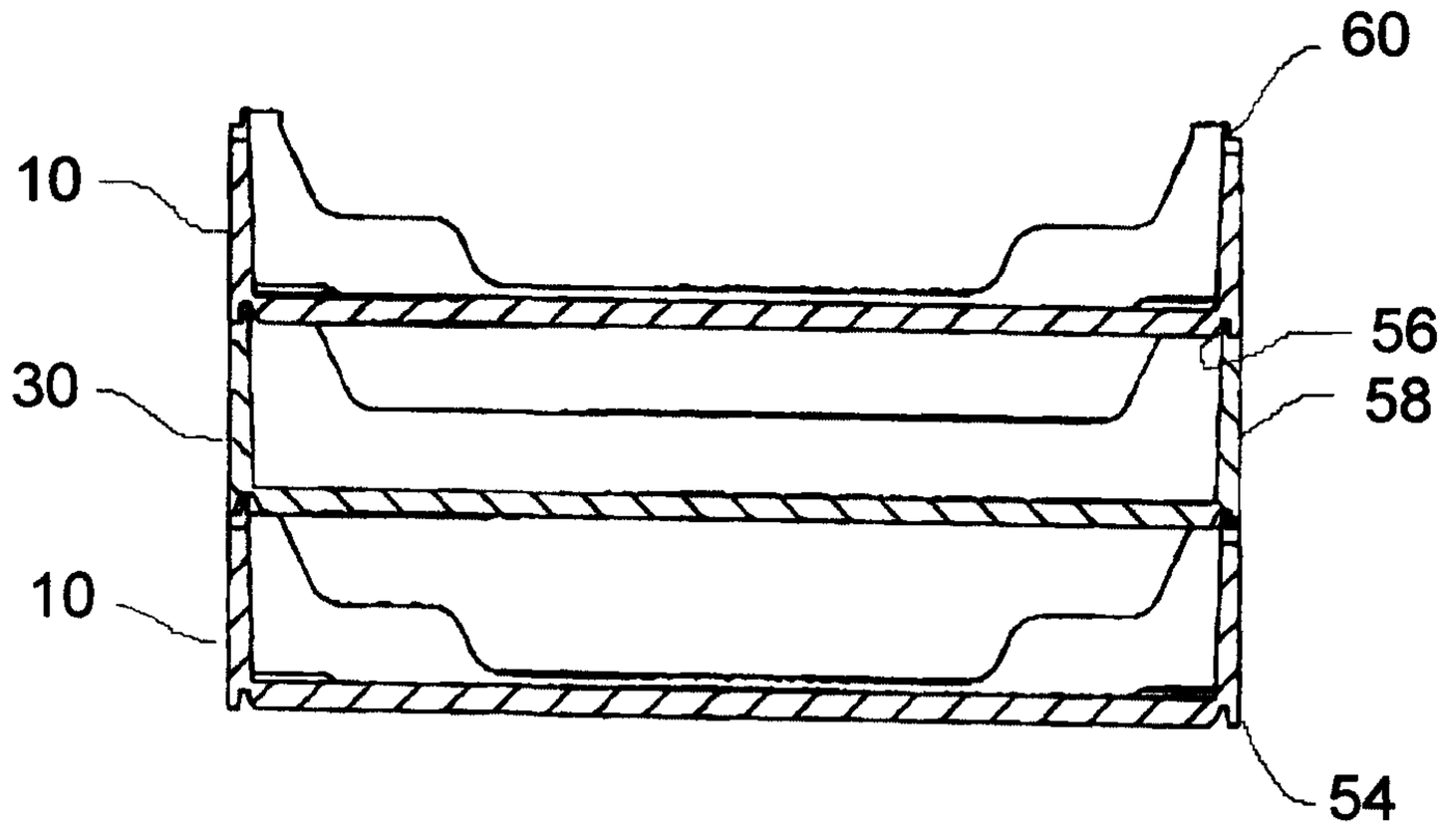


FIG. 14

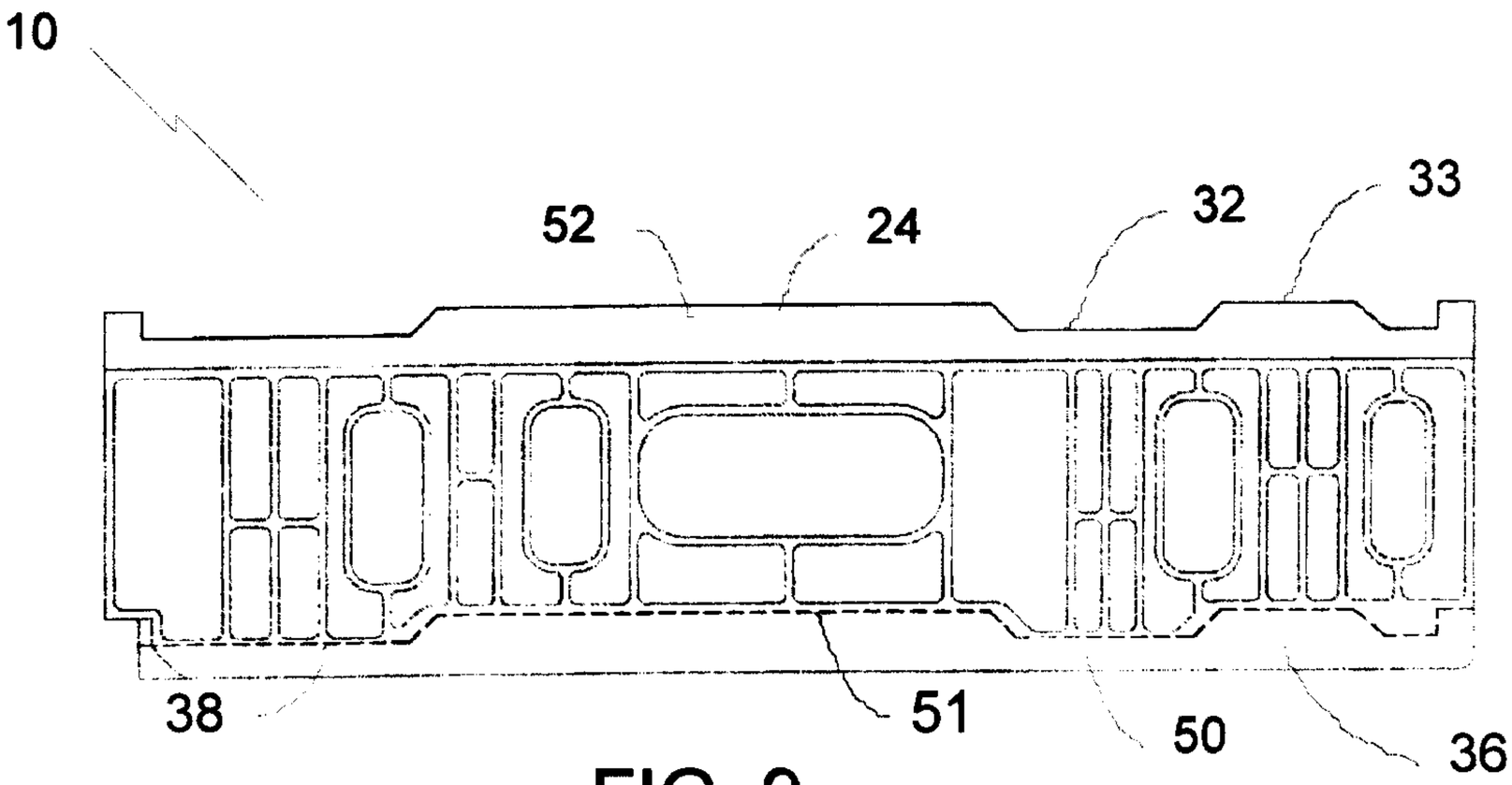


FIG. 9

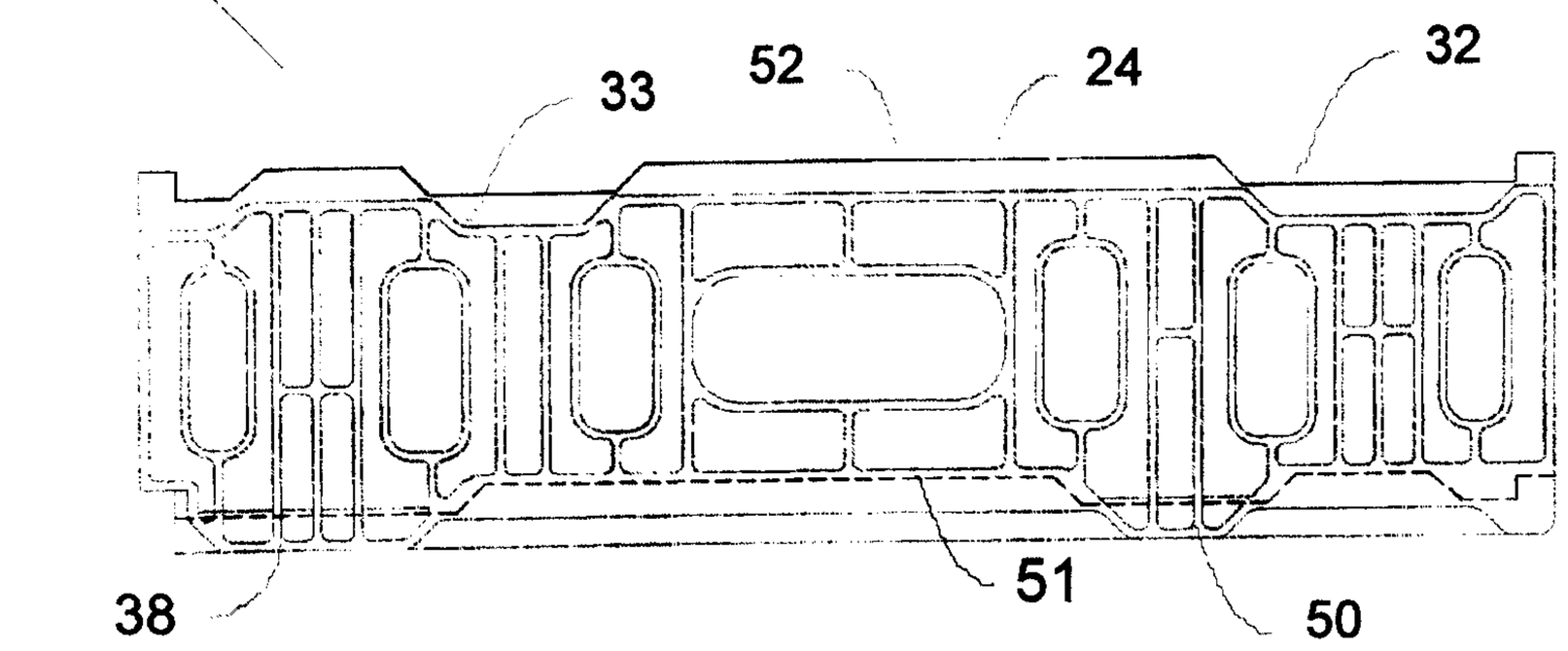


FIG. 10

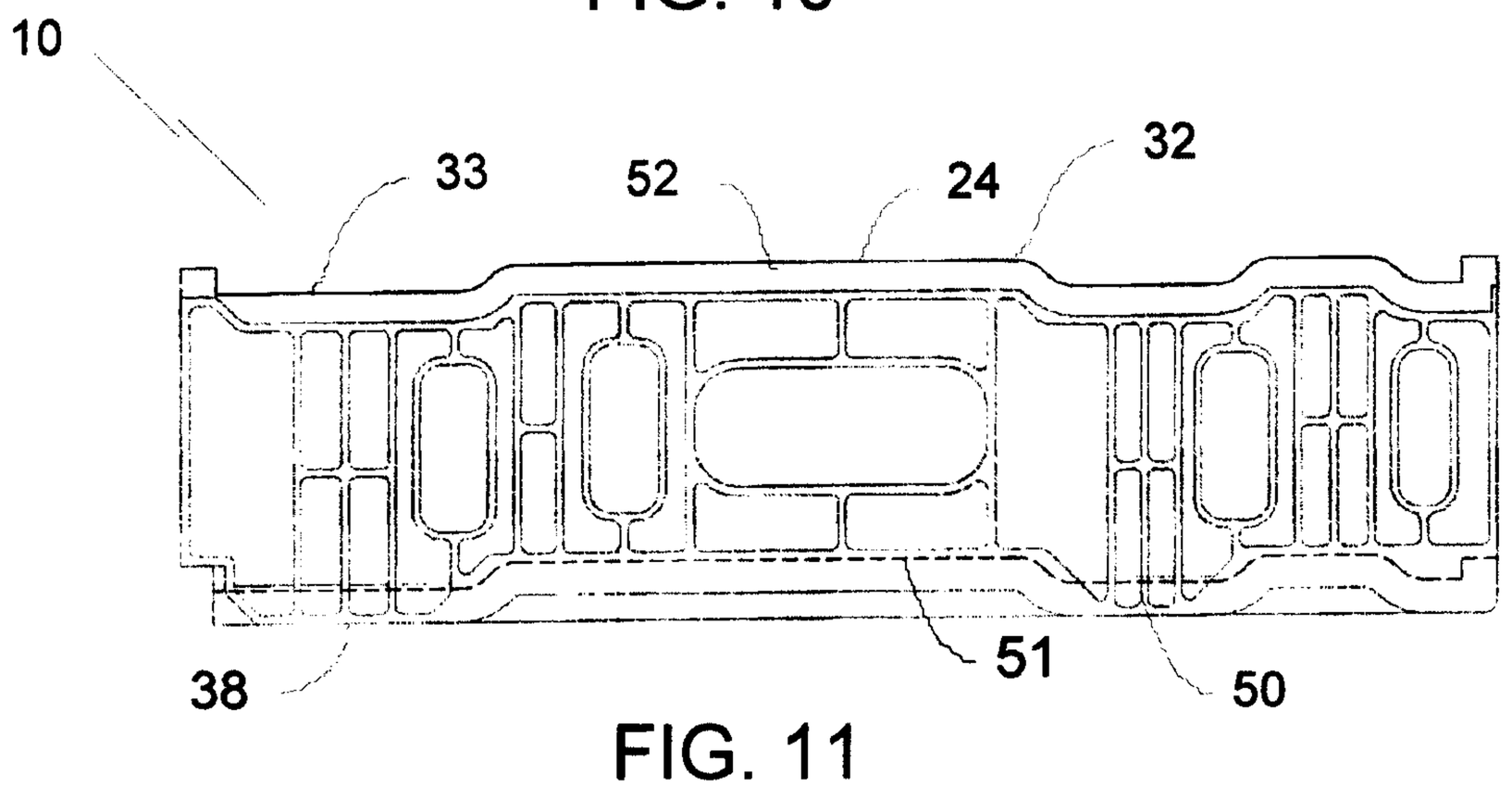


FIG. 11

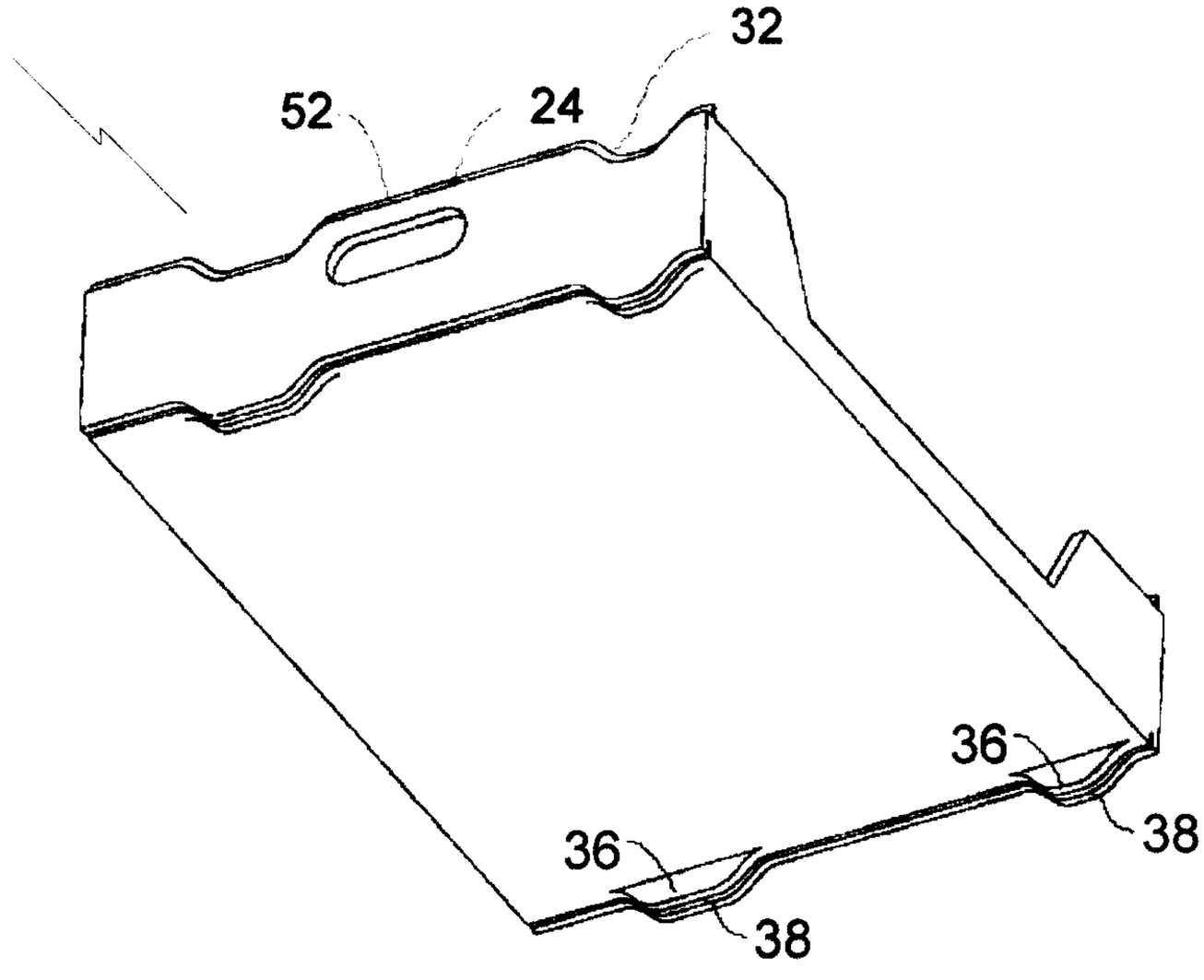
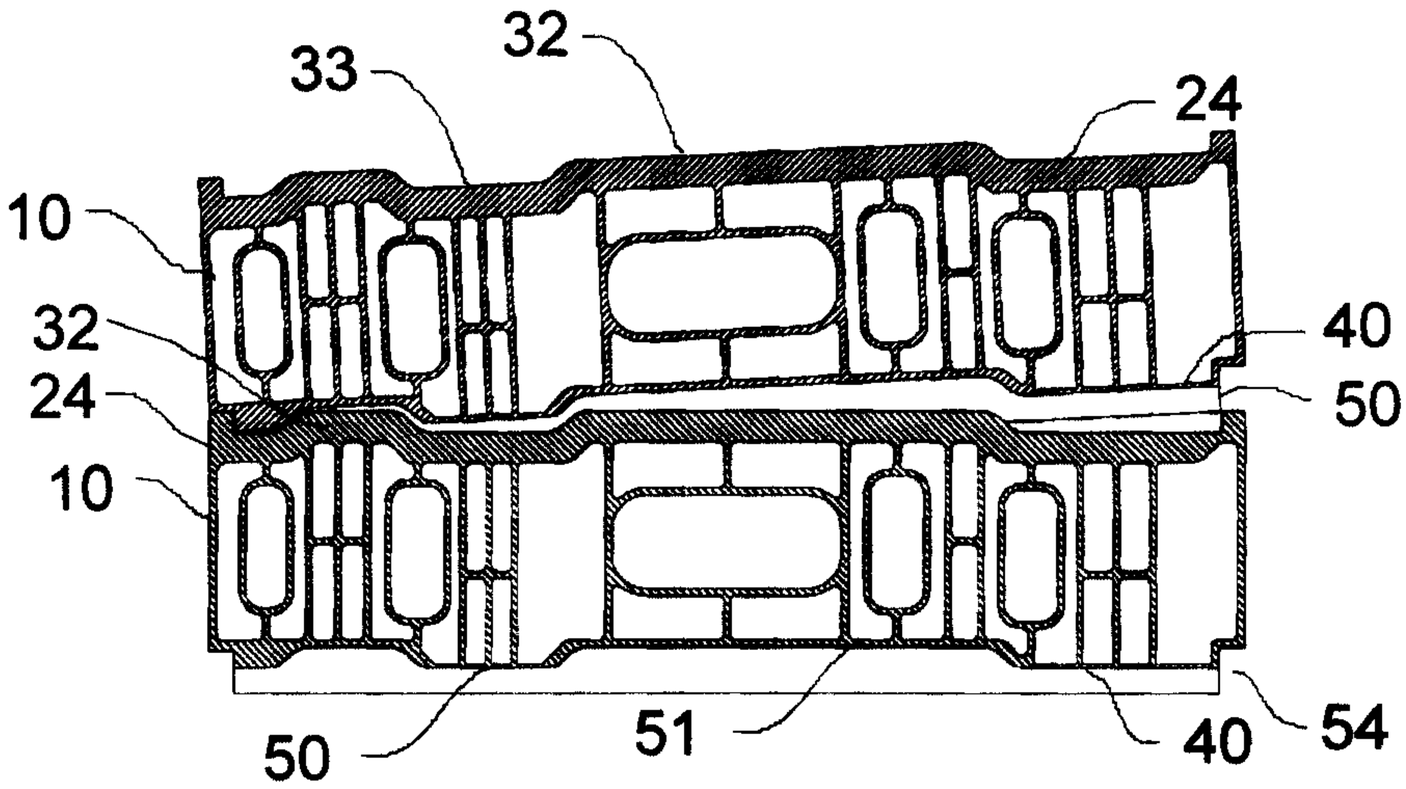


FIG. 12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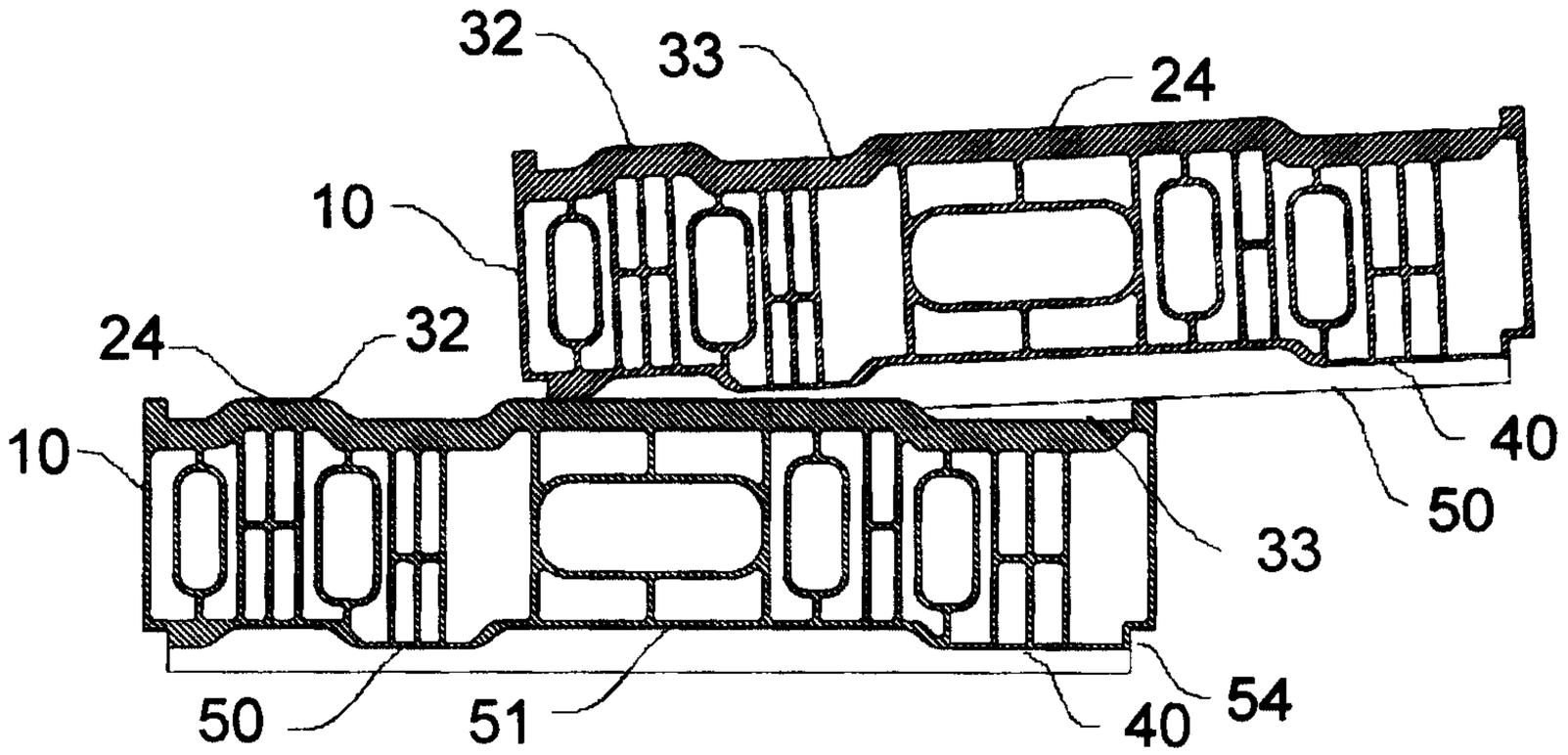
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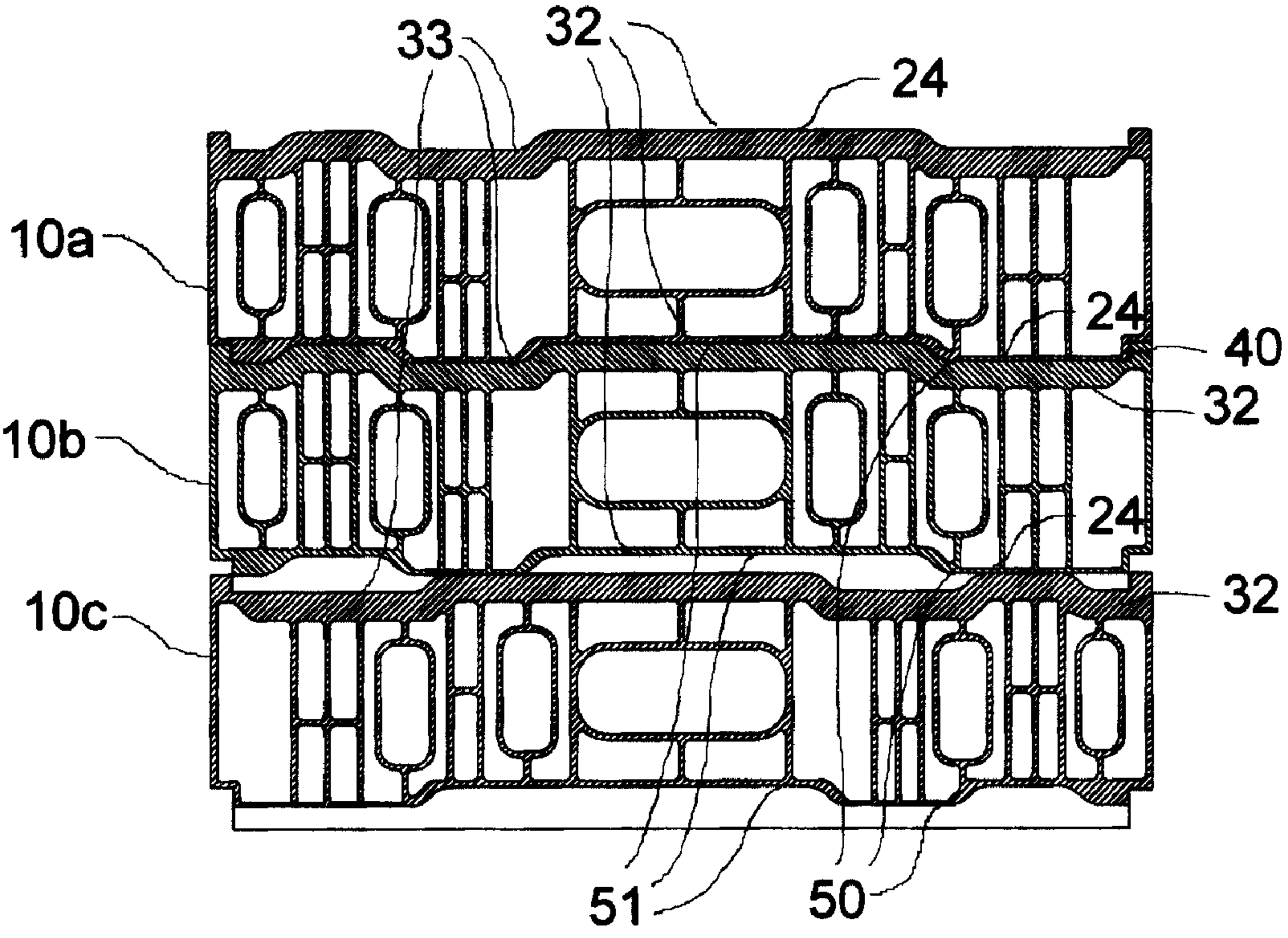
FIG. 16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