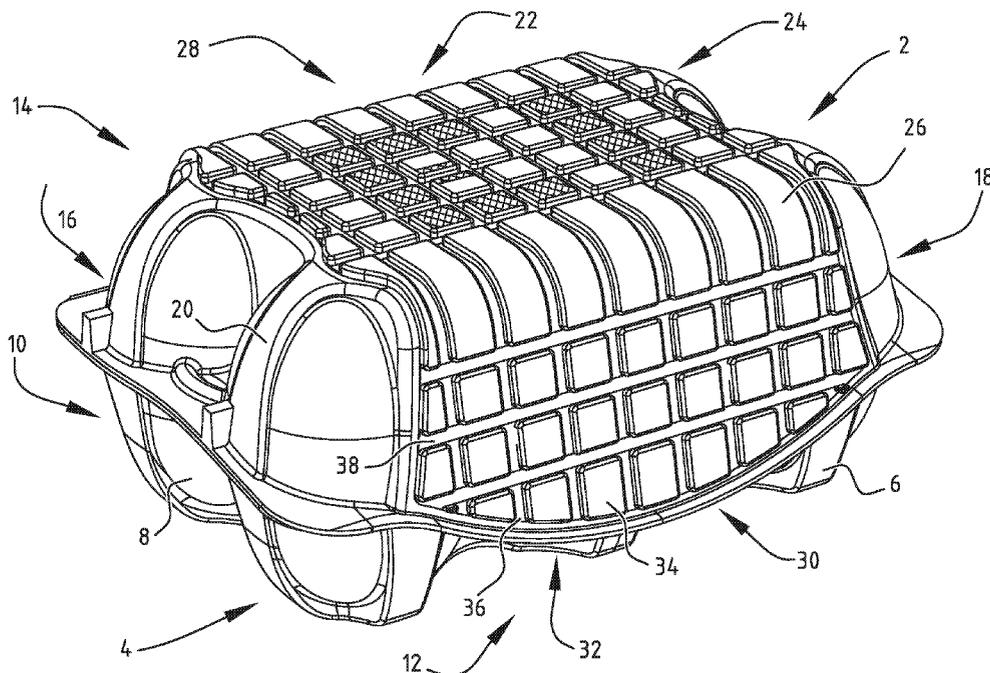




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 (54) Title: PACKAGING UNIT AND METHOD FOR PACKING PRODUCTS



(57) Abrégé/Abstract:

The present invention relates to a packaging unit for products like eggs, and a method for packing products. The packaging unit according the present invention comprises: - a container made of moulded pulp with a bottom part for holding a product; and - a label made of moulded pulp comprising an embossing with the label being attached to the container.

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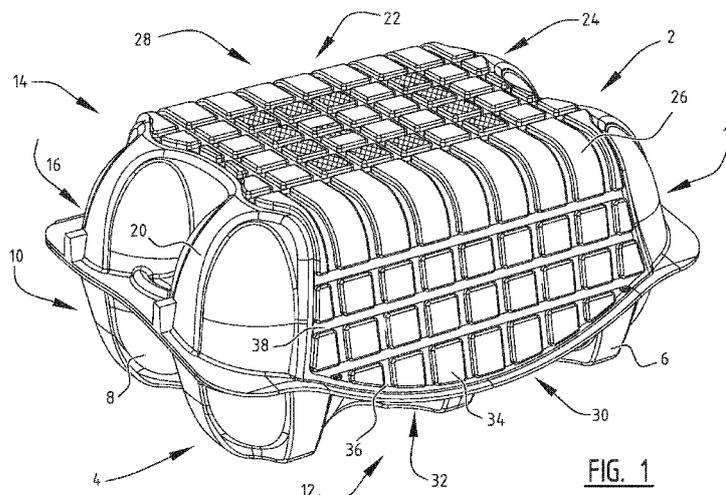
(54) **Title:** PACKAGING UNIT AND METHOD FOR PACKING PRODUCTS

FIG. 1

(57) **Abstract:** The present invention relates to a packaging unit for products like eggs, and a method for packing products. The packaging unit according to the present invention comprises: - a container made of moulded pulp with a bottom part for holding a product; and - a label made of moulded pulp comprising an embossing with the label being attached to the container.

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Packaging unit and method for packing products

The present invention relates to a packaging unit for products like eggs and similar products like kiwis and tomatoes, for example.

5 Egg cases, containers or cartons known in practice are generally fabricated from carton made of moulded pulp from paper material. Such units comprise a bottom part provided with compartments for individual products, and a cover part that is often hingedly connected to the bottom part. Products like eggs are transported in these units and displayed on shelves in supermarkets, for example. Packaging units are often provided with labels that are often made of
10 paper provided with a print and glued to the carton of the packaging unit. One of the problems associated with providing a paper label with a carton is the restriction for recycling possibilities.

The present invention has for its object to obviate or at least reduce the above stated problems with known packaging units, for example packaging units for products like eggs, such as egg cases or egg cartons.

15 The present invention provides for this purpose a packaging unit according to the invention, the packaging unit comprising:

- a container made of moulded pulp with a bottom part for holding a product; and
- a label made of moulded pulp comprising an embossing with the label being attached to the container.

20 By providing a packaging unit comprising a container, preferably a carton, made of moulded pulp together with a label that is made of moulded pulp a full fibre packaging unit is achieved. Such full fibre packaging unit can be recycled favourably. In addition, the packaging unit according to the present invention can be provided free of addition or chemical substances that are required for units with conventional paper labels. This achieves a significant effect on
25 sustainability. This effect can be improved further by having the label shaped in the form of a rectangle such that no production waste is created.

As a further advantage of the packaging unit according to the present invention the freedom for designing such a packaging unit is significantly increased. So it would be possible to present brand and/or product specific designed features possibly presenting the brand or product
30 identity using the embossed label for the packaging unit according to the present invention. This provides additional possibilities in the design process. For example, one container or carton design can be used for a range of products for different brands as the specific design features and identifications are provided on the label. This significantly reduces of change-overs related to the containers or cartons such that the cost can be carried by a (large) number of products if the
35 designed features for which the change-over is done. Laborious adaptations to the production process can be kept to a minimum while improving the design options for the packaging unit.

The moulded pulp is manufactured from so-called mouldable paper relating to paper that has been compacted in the wet phase. This compacting of the wet pulp improves the flexibility of the label material when the paper is dried such that it can be stretched plastically without breaking the surface of the paper. This enables the provision of embossing on the label. For example, with a
5 10-20% elongation of the fibres without breaking the surface of the label it is possible to impose an embossing on the flat surface with a depth of about 1 mm. This enables the generation of strong and surprising visual and optic effects, for example.

As a further advantage of a full fibre packaging unit comprising a container, such as a carton, made of moulded pulp and a label made of moulded pulp is over all visual appearance
10 providing a unitary look or visual associated with the packaging unit. Furthermore, providing the container and a label of the packaging unit according to the present invention of similar material improves the haptic perception of someone handling the packaging unit. In fact, someone is provided with a unitary product when touching the product. Such tactile feedback of the unitary material packaging unit according to the present invention to the user and/or person handling the
15 packaging unit provides this user and/or person with a unitary and association with sustainability.

The haptic effect described earlier that is associated with the packaging unit according to the present invention is further enhanced by providing the label with an embossing such that the optic effect is approved and/or the visual appearance of the packaging unit is strengthened due to the three-dimensional effect of such embossing on a label.

As a further advantage the label optionally is printed as a matt surface combined with a
20 relatively soft touch. These properties are similar to the properties of the container such that a unitary visual appearance is achieved strengthening the sustainable effect of the packaging unit according to the present invention.

Furthermore, the combination of the container, such as a carton, and label according to the
25 invention further reduces any ridging effects that may occur when handling the packaging unit.

In a presently preferred embodiment a container that is made of moulded pulp can be made of recycled fibres. In a presently preferred embodiment the label that is also made of moulded pulp is made of so-called virgin fibres that are better equipped to deal with the embossing of the label.

Preferably, the embossing has a depth in the range of 0.1 – 1.5 mm, and more preferably in
30 a range 0.5 – 1.0 mm. Especially an embossing in the range of 0.5 – 1.0 mm has shown an optimal visual appearance without putting too much restrictions on the manufacturing equipment for producing the packaging units according to the present invention.

In a presently preferred embodiment of the packaging unit according to the invention the container further comprises a cover part with a top, front and rear surface with a label being
35 attached to at least the top surface.

By providing a cover part the products are amongst other things protected by the packaging units according to the present invention. By providing a label that is attached to at least the top surface a visual and haptic effect is achieved wherein the packaging unit remains the full fibre such that the packaging unit is a sustainable packaging unit that can be recycled relatively
5 easily. Preferably, the top surface of the label also comprises an embossing. Besides the visual and haptic effect thereof, this embossing increases the friction resistance between two packaging units according to the present invention that are stapled on top of each other. This improves the stability of a stack of packaging units according to the present invention. This reduces damages to the packaging units and the products contained thereby during transport and handling thereof.

10 In a presently preferred embodiment the friction coefficient of the mouldable label is about 0.53, and above 0,45. Additional measures, such as providing an embossing, may further increase the friction resistance.

Preferably the bottom part of the packaging unit is provided with friction resistance increasing elements. Such elements may comprise ridges, grooves, pins, notches etcetera. This
15 further improves the stability of a stack of packaging units, according to the present invention. Preferably, the friction resistance increasing elements provided on the bottom part of the packaging unit engage the embossing that is provided on the label provided on the cover part of the packaging unit to further improve the stability of a stack of packaging units.

As a further advantage of providing cover part with an embossed label is that an impact of
20 a packaging unit that is stacked on another packaging unit will not result in impact effects, such as indentation that significantly affects the overall visual appearance of the packaging unit according to the present invention. Such indentation will not change the overall appearance of the embossed label.

The shape of the embossing may also contribute to the an impact resistance. For example,
25 walls and elements, preferably substantially oriented in the direction of the impact force, may improve the impact resistance.

In a presently preferred embodiment according to the present invention the label is attached to the top surface such that air cushions are formed between the label and the cover part.

By providing air cushions the impact resistance of the label against loads put thereon is
30 greatly increased. This reduces the risk of products held by the packaging unit according to the present invention being damaged. Also, the overall visual appearances being maintained more easily. By providing an embossing a type of relief or a topography or engraved surface is provided such that small air rooms or air cushions are defined between the top surface of the cover part and the label that is attached thereto.

35 As a further effect, the air cushions provide an insulating effect. For example, this improves handling the container or packaging unit containing heated products.

In a presently preferred embodiment of the present invention the label of the packaging unit is provided with a visual appearance substantially similar to that of the container.

Providing the label and container with a substantial similar visual appearance contributes to the effect on sustainability. This visual appearance may involve roughness, hardness etc.

5 Preferably, the label comprises an average surface roughness between 0.1 and 100 μm , more preferably between 0.5 and 10 μm , and most preferably between 1 and 4 μm .

Preferably, the label further comprises a number of glue edges. These edges are glued when attaching the label to the container. This assures that the edges of the label are strongly attached to the container. In addition, this minimizes the amount of glue that is required when
10 attaching the label to the container. Furthermore, this maintains the effect the air cushions may have on the impact resistance that is described earlier. Alternatively, or in addition thereto, the contact areas of the embossing with the container or packaging unit are glued to the container of packaging unit. This increases the impact resistance. In addition, this contributes to an anti-ridging effect.

15 In a presently preferred embodiment according to the present invention the front surface of the bottom part of the packaging unit comprises a protrusion and the cover part comprises a front surface provided with a corresponding opening together defining a lock, and further the label comprises a surface provided with an embossing at the location of the opening in the cover front surface to enhance the locking function of the lock.

20 By locking the cover part and the bottom part at the front surface the packaging unit can be closed. In a presently preferred embodiment the rear surfaces of the cover part and the bottom part are hingedly connected. Preferably, the bottom part is provided with a protrusion shaped as an edge or a notch, and cover part is provided with a corresponding opening. As the protrusion fits in the opening a lock is achieved. The protrusion can be provided directly on the bottom part or on a
25 closing flap that is hingedly connected to the bottom part. Optionally, the lock is kept out of sight in the closed position due to the provision of the label over the opening, preferably by providing in the label an embossing at the location of the opening in the cover part. This provides an additional room or cavern for receiving the locking edge. This is especially advantageous for a packing unit with a concealed lock. For example, the label can be embossed with a depth of 1 mm, such that the
30 protrusion in the bottom part can be 1 mm larger or be manoeuvred 1 mm further into the opening in the cover part. This enhances the locking function of the lock such that the packaging unit according to the present invention is firmly closed. In a presently preferred embodiment the locking edge connected to the bottom part of the packaging unit protrudes outwards through the opening in the cover part at a slightly downward angle. This improves the locking function.

35 In a further embodiment according to the invention the label further comprises a groove through which an end of the protrusion protrudes in a closed position of the packaging unit. This

further enhances the locking function. Furthermore, extending an end of the protrusion of the locking member slightly through the groove in the label provides a consumer with an indication where to find the lock and how to open the packaging unit from a closed position.

In a presently preferred embodiment according to the present invention the label comprises
5 an embossing with a shape such that the embossed label behaves as a stacking element.

Often packaging units are provided with so-called denesting or stacking nocks that function as a type of spacer maintaining a distance between individual packaging units when they are stacked in an open position awaiting for the products to be put inside the packaging unit, for example. The label is provided with an embossing with a shape such that the embossed label
10 behaves as a stacking element. For example, this shape relates to an embossing with a sufficient depth. This may obviate the need for separate stacking nocks or other denesting/stacking elements such that the overall design of the packaging unit according to the present invention can be made simpler and possibly less costly.

In a presently preferred embodiment according to the present invention the label comprises
15 a two-sided print.

By providing the label with a two-sided print it is possible to provide information with both sides of the label. Therefore, the two-sided print preferably is combined with a container having an opening that corresponds to the label print or at least one side thereof. This achieves that one side of the label is in plain sight and the other (back) side of the label is visible through the
20 opening of the carton. For example, the top surface of the label can be provided with the general markings indicating the type of product as a branch information. The back side of the label can be provided with specific product information that would be visible when the cover part is lifted from the bottom part and the specific product information is made visible through an opening provided in the cover part of the packaging unit. This prevents the need for a separate print on the inside of
25 the cover part of the packaging unit thereby making the manufacturing process of such packaging unit more simple. In addition, the manufacturing process with the method according to the invention is more cost effective. For example, this is achieved by reducing the amount of MF material and/or omitting the inside print on the MF material. In addition, the MF product does not necessarily require a MF printer and can be handled on the labelling equipment.

30 The present invention further relates to a method for packing products comprising the step of providing a packaging unit as described above and placing therein one or more of the products.

Such method provides the same effects and advantages as described in respect of the packaging unit. In fact, the method can be used on a large number of different embodiments of the packaging unit according to the invention.

Further advantages, features and details of the invention are elucidated on the basis of preferred embodiments thereof, wherein reference is made to the accompanying drawings, in which:

- 5 - figure 1 shows an embodiment of the packaging unit according to the invention in a closed position;
- figure 2 shows a front view of the packaging unit of figure 1;
- figure 3 shows a side view of the packaging unit of figure 1;
- figure 4 shows a top view of the packaging unit of figure 1;
- figure 5 shows a cross section of the packaging unit of figure 4;
- 10 - figure 6 show the packaging unit without label; and
- figures 7, 8 and 9 show alternative embodiments of the packaging unit according to the invention.

A packaging unit 2 (Figures 1-4) comprises a bottom part 4 with a front surface 6, two side surfaces 8, a back side 10, and a bottom side 12. In the illustrated embodiment, a cover part 14 is hingedly connected with hinge 16 to bottom part 4 to allow cover part 14 to move relatively to bottom part 4 between an open and a closed position. Cover part 14 further comprises front surface 18, two side surfaces 20, a back side surface 22 and a top surface 24.

Label 26 is provided with top surface 28 on which text and/or images are printed. In the illustrated embodiment, for illustrative purposes, label 28 is provided with embossed wording "ei" (egg). In the illustrated embodiment label 28 is provided with front surface 30. Label 26 comprises an embossing 32 with "peaks" 34 and "valleys" 36, and glue edges 38.

On the inside of bottom part 4 (Figure 5) product receiving compartments 40 are provided having contours matching at least partially the outer contours of products, like eggs, kiwis and tomatoes, for example. Support cones 42 are provided to add stability and strength to packaging unit 2.

In the illustrated embodiment of packaging unit 2 front surfaces 6, 18 of bottom part 4 and top part 14 are locked with lock 44 in the closed position of packaging unit 2. In figure 6 packaging unit 2 is illustrated without label for illustrative purposes. In the illustrated embodiment bottom part 4 is provided with front edge 46 comprising connecting end 48 connecting to the front surface. From connecting end 48 edge 46 comprises first edge part 50, which extends in a slightly inclined downwards direction from connecting end 48. At first transition 50 second edge part 52 starts to extend in a downward direction at an increased angle as compared to first edge part 50. Second transition 54 connects second edge part 52 to free end 56 of locking edge 46.

In the illustrated closed position of packaging unit 2 (Figure 5) free end 56 extends through opening 58 in front surface 18 of cover part 14 into hollow part or cavern 60 at the location of the inside of a peak 34 of embossing 32 provided in label 26.

In the illustrated embodiment (Figure 5), in the closed position, connecting end 48 is preferably positioned above opening 58 and first transition 50 preferably engages the upper edge of opening 58. Furthermore, in the illustrated embodiment locking edge 46 protrudes outwardly through opening 50 at a slightly downward angle to increase the locking function. It will be understood that according to the invention other locks may also be applied, preferably using the hollow embossing part 60 for receiving a locking part. In the illustrated embodiment this results in a concealed lock 44. Lock 44 enhances the locking friction as the edge, protrusion or projection can be dimensioned larger or can be pushed further into opening in a closed position of packaging unit 2 as compared to conventional packaging units with flat labels.

Alternative packaging units 62, 94 (figures 7, 8 and 9) are provided with an alternative lock 64. Lock 64 comprises first edge part 66 that is connected to edge 68 of front surface 70 of bottom part 72. In the illustrated embodiment first edge part 66 extends in a slightly inclined downwards direction from edge 68. At first transition 74 second edge part 76 starts to extend in a downward direction at an increased angle as compared to first edge part 66. In the illustrated embodiment (figure 7) there is provided second transition 78 that connects second edge part 80 to free end 82 that protrudes through groove or slit 84 in label 86 of cover part 88 of locking edge 46. In the illustrated embodiment two grooves 84 (figure 8) are provided. Preferably, free end 82 only slightly protrudes through groove 84 (figure 8), for example 1 mm. In the illustrated embodiment second edge part 76 extends through opening 90 in cover part 88 into cavern or room 92 in label 86. Free end 82 extends through groove 84. This improves the locking function. In addition, free end 82 extending through groove 84 provides an indication to a consumer of where to find lock 64 for opening packaging unit 62. Free end 82 may extend, in first alternative embodiment 62, through label 86 as a protruding part (figure 7). In a second presently preferred embodiment 94, free end 82 also (slightly) extends through the label material, however, in this second alternative embodiment 94 free end 82 remains in a recessed part 96 of label 86 (figures 8, 9) as illustrated with groove or opening 84 (figure 8). Free end 82 may be provided at an angle with the second edge part to improve the locking function, for example similar to the first alternative embodiment 62, and/or with an additional edge (not shown) on free end 82.

In the illustrated embodiment, the cover part is provided with an optional window opening (not shown) through which the back side of the label is visible. This back side of the label is optionally provided with text and/or images.

The weight of the label material in a presently preferred embodiment is in the range of 90-200 g/m², preferably about 120-150 g/m². This maintains a relatively low weight of the entire packaging unit according to the present invention. In addition, when applied to a container, such as a carton, having a bottom and a cover part, especially the cover part can be provided with small

dimensions, more specifically having a reduced thickness thereof, such that the overall weight of the packaging unit according to the present invention is maintained or even slightly reduced.

Alternative packaging units according to the invention may hold other products, like a hamburger, salad etc.

5 When packing products like kiwi's, eggs etc. the products are placed in compartments 40. In the illustrated embodiment cover part 14 is closed and engages bottom part 4. Lock 44 locks packaging unit 2. In the illustrated embodiment, when locking packaging unit 2, free end 56 protrudes through opening 50 of front surface 18 of cover part 14 into hollow part/room or cavern 60 thereby enhancing the locking function.

10 The present invention is by no means limited to the above described, preferred embodiments thereof. The rights sought are defined by the following claims, within the scope of which many modifications are possible. For example, second edge part 54, 76 and first edge part 50, 66 can be integrated into one edge part.

Claims

1. Packaging unit comprising:
 - a container made of moulded pulp with a bottom part for holding a product; and
 - 5 - a label made of moulded pulp comprising an embossing with the label being attached to the container.
2. Packaging unit according to claim 1, wherein the embossing has a depth in the range of 0.1 – 1.5 mm.
- 10 3. Packaging unit according to claim 1, wherein the embossing has a depth in the range of 0.5 – 1.0 mm.
4. Packaging unit according to claim 1, 2 or 3, wherein the container further comprises a
15 cover part with a top, front and rear surface with the label being attached to at least the top surface.
5. Packaging unit according to any one of claims 1 to 4, wherein the bottom part is provided with friction resistance increasing elements.
- 20 6. Packaging unit according to claim 4 or 5, wherein the label is attached to the top surface such that air cushions are formed between the label and the cover part.
7. Packaging unit according to any one of claims 1 to 6, wherein the label is provided with a
25 visual appearance substantially similar to that of the container.
8. Packaging unit according to claim 7, wherein the label comprises an average surface roughness between 0.1 and 100 μm .
- 30 9. Packaging unit according to claim 7, wherein the label comprises an average surface roughness between 0.5 and 10 μm .
10. Packaging unit according to claim 7, wherein the label comprises an average surface
35 roughness between 1 and 4 μm .

11. Packaging unit according to any one of claims 1 to 10, wherein the label further comprises a number of glue edges.
- 5 12. Packaging unit according to any one of claims 1 to 8, wherein the front surface of the bottom part comprises a protrusion, and the cover part comprises a front surface provided with a corresponding opening together defining a lock, and wherein the label comprises a surface provided with an embossing at the location of the opening in the cover front surface to enhance the locking function of the lock.
- 10 13. Packaging unit according to claim 12, wherein the label further comprises a groove through which an end of the protrusion protrudes in a closed position of the packaging unit.
14. Packaging unit according to any one of claims 1 to 13, wherein the label comprises an embossing shape such that the embossed label behaves as a stacking element.
- 15 15. Packaging unit according to any one of claims 1 to 14, wherein the label comprises a two-sided print.
16. Packaging unit according to claim 15, wherein the container comprises an opening
20 corresponding to the label print.
17. Method for packing products, comprising the step of providing a packaging unit according to any one of claims 1 to 16 and placing therein one or more of the products.

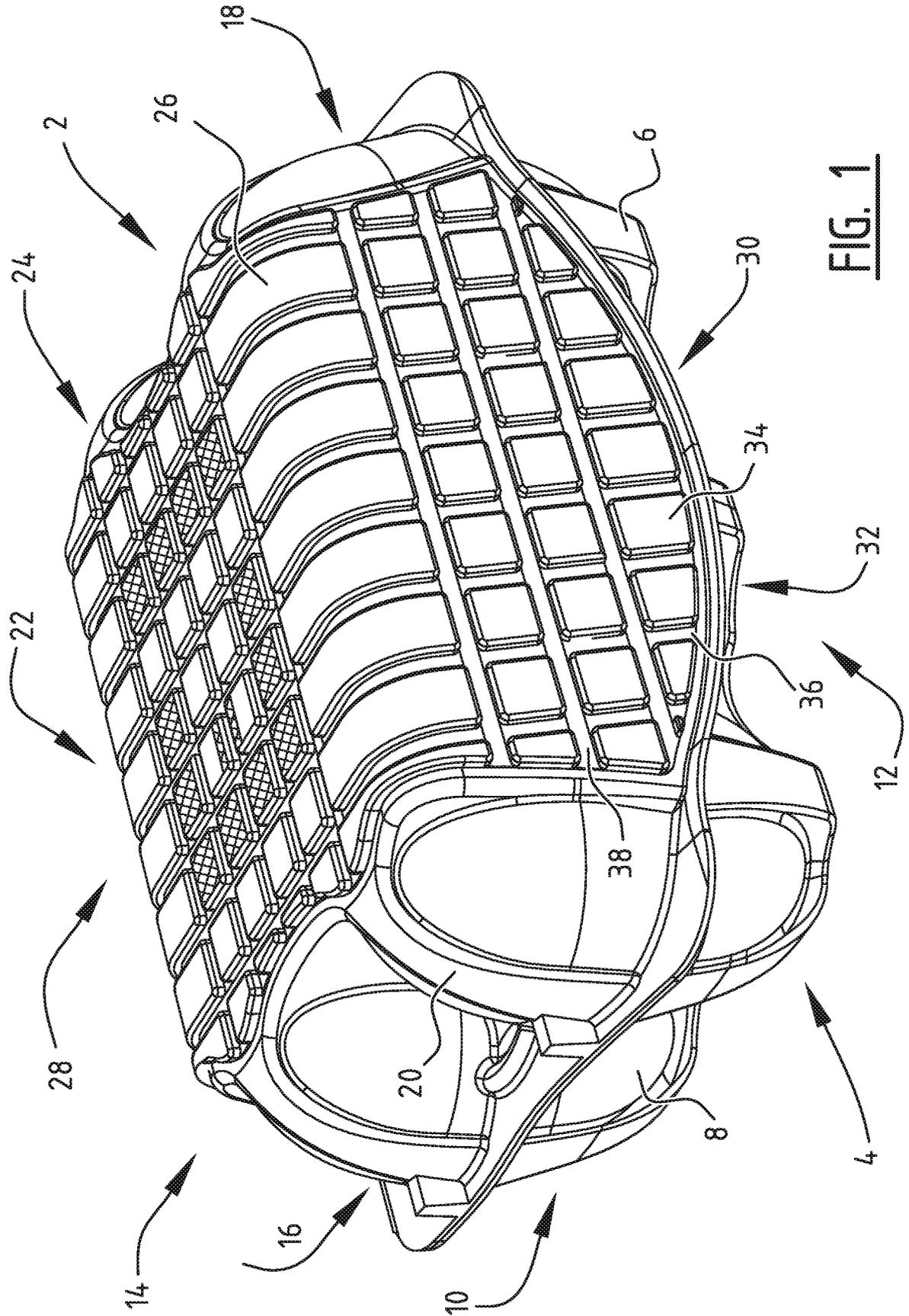


FIG. 1

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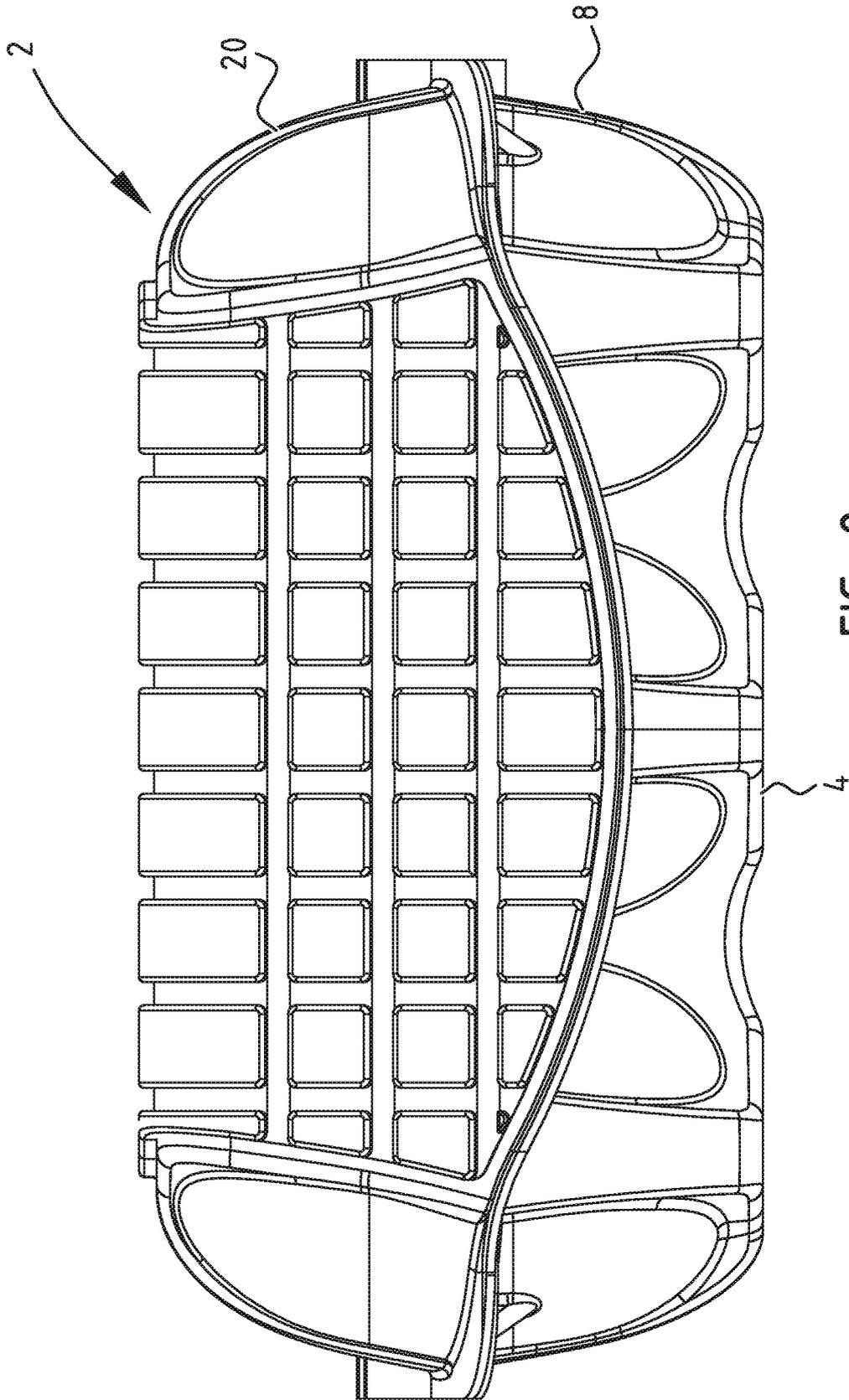


FIG. 2

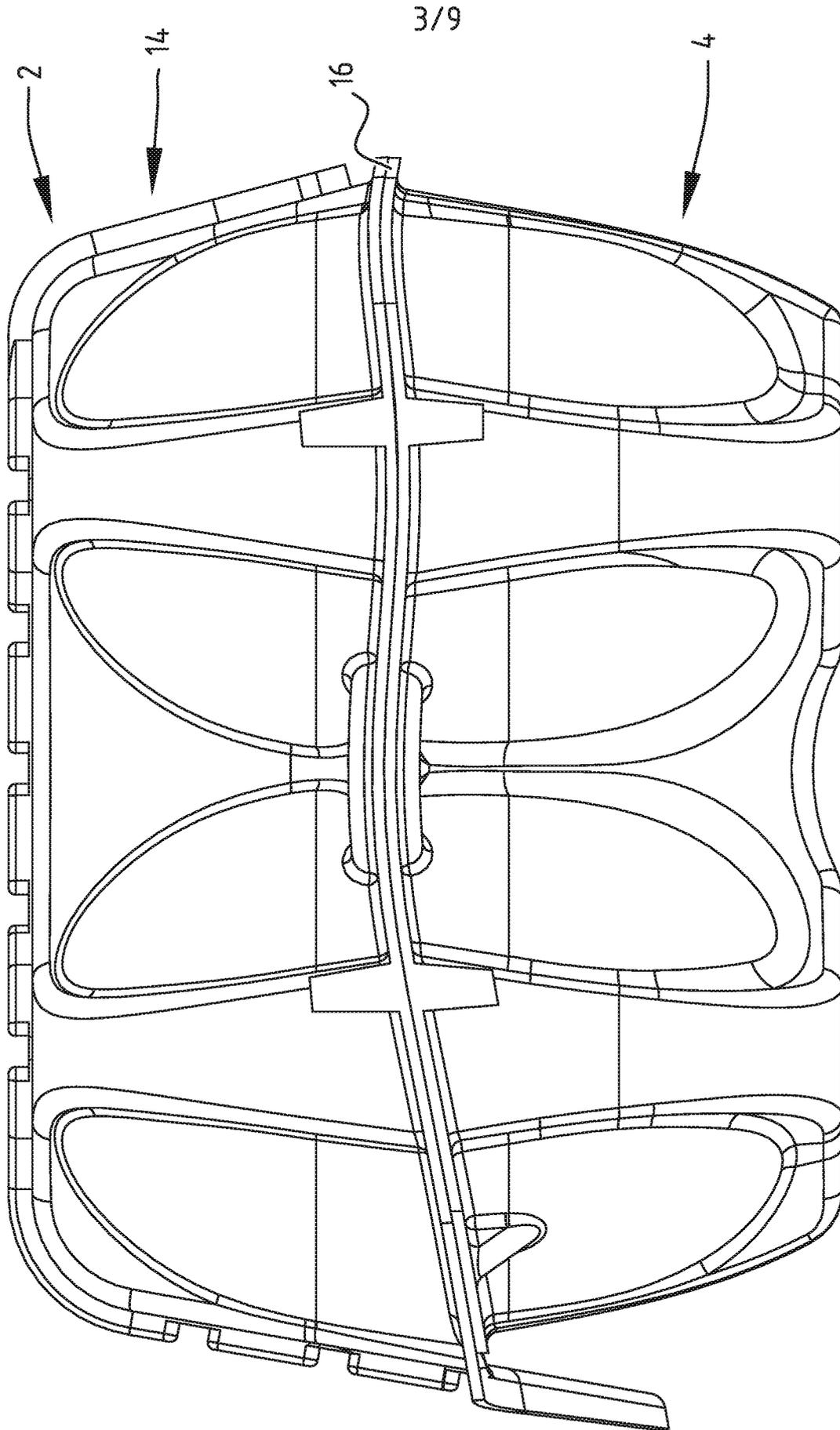
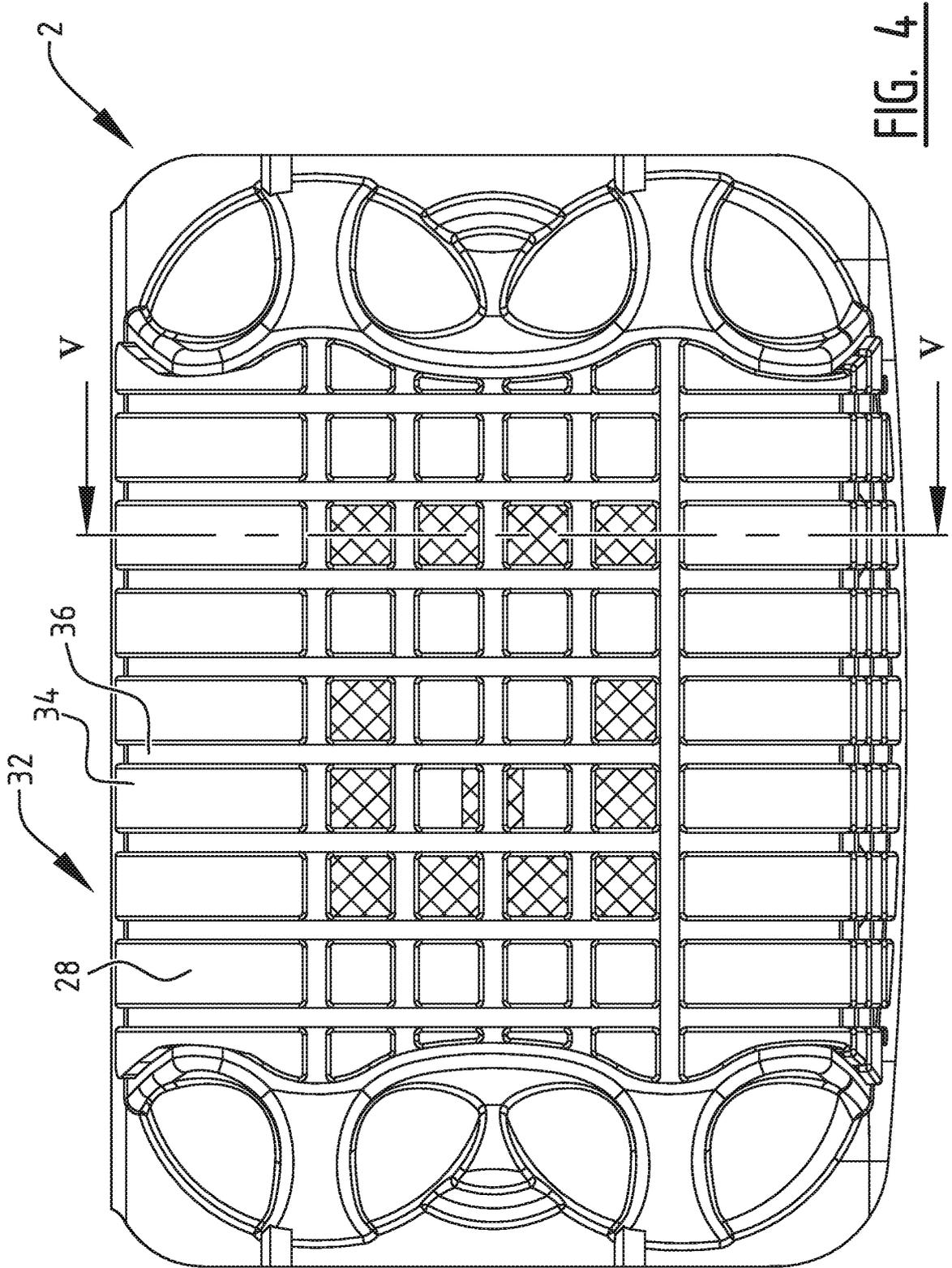


FIG. 3



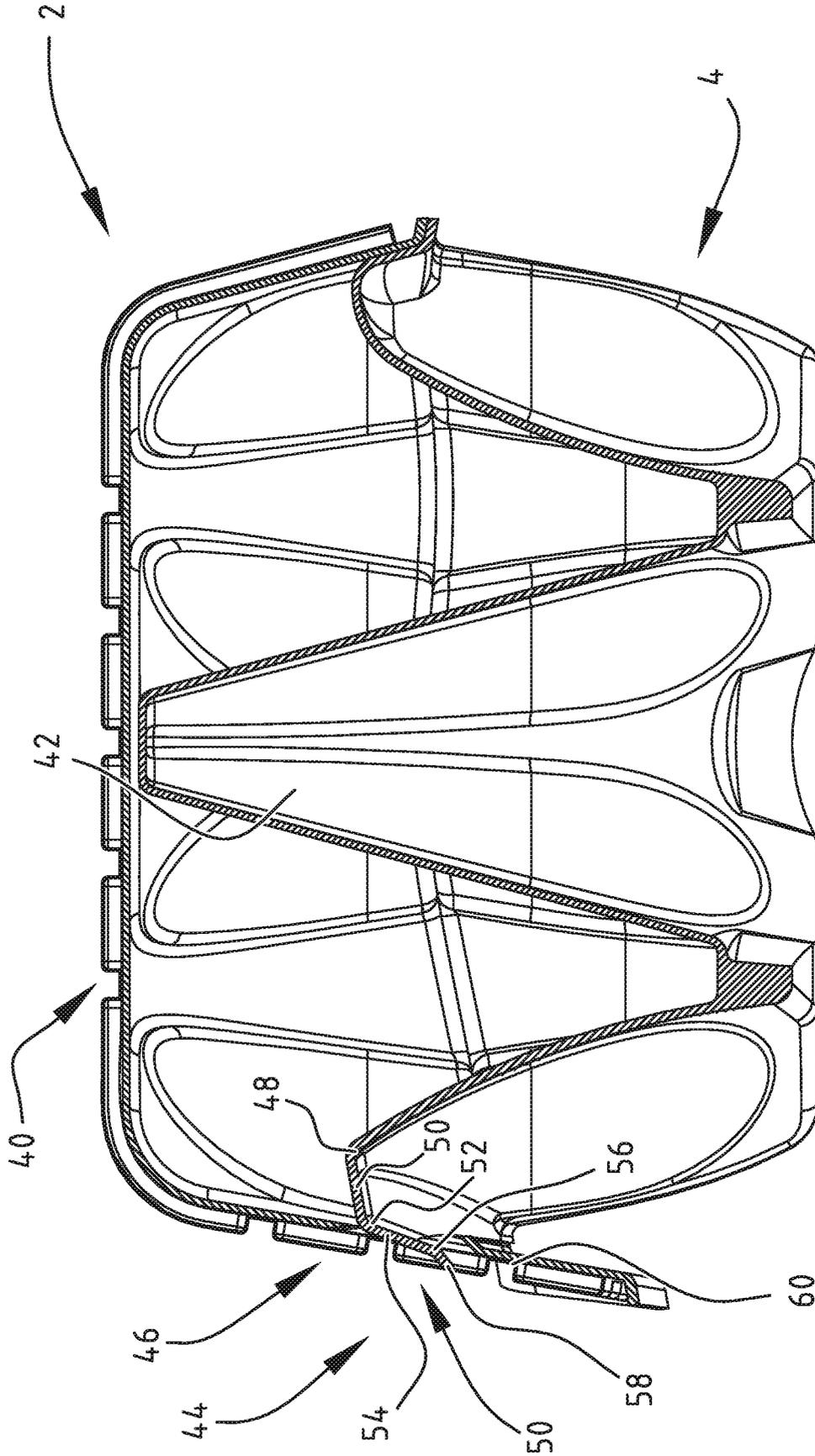


FIG. 5

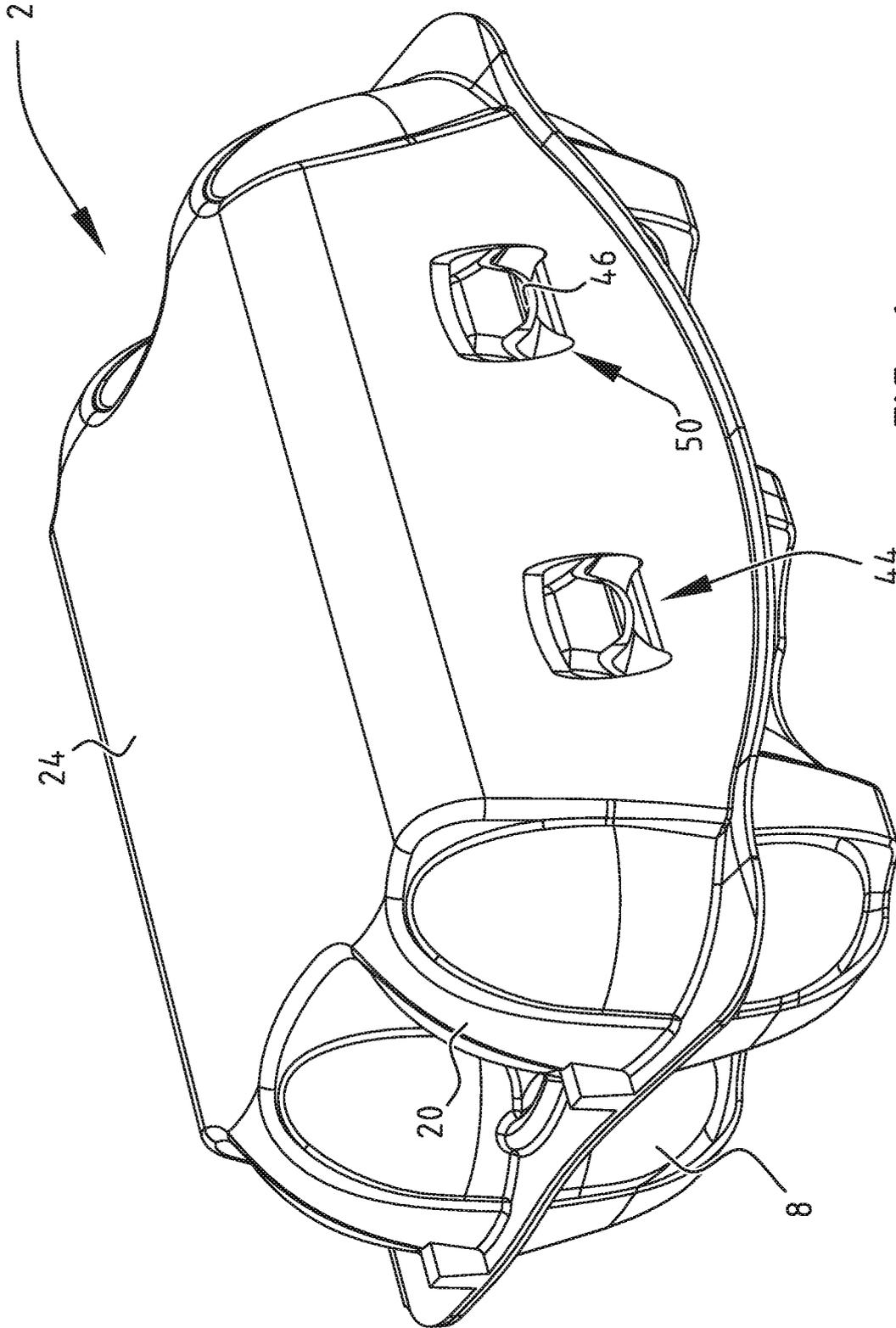


FIG. 6

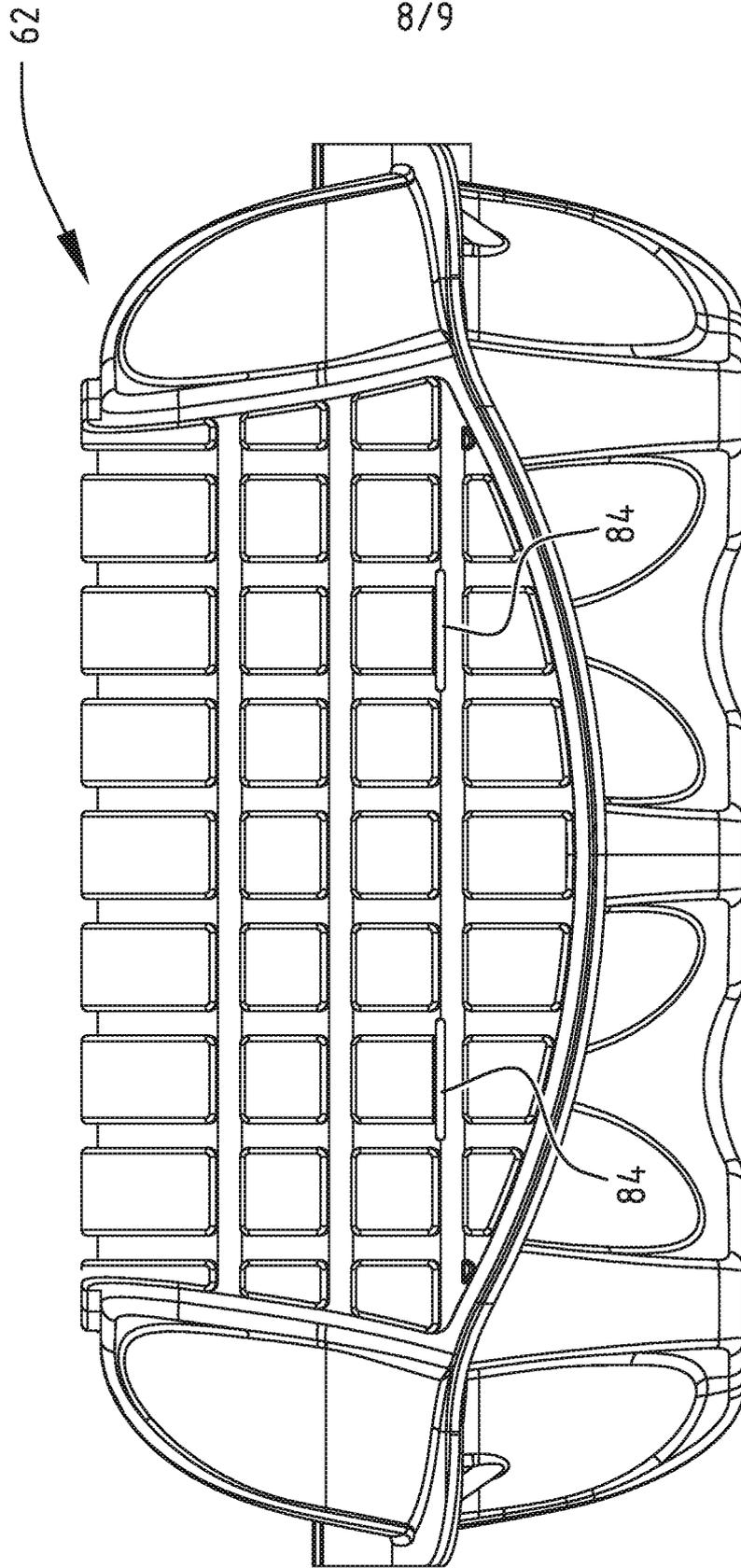


FIG. 8

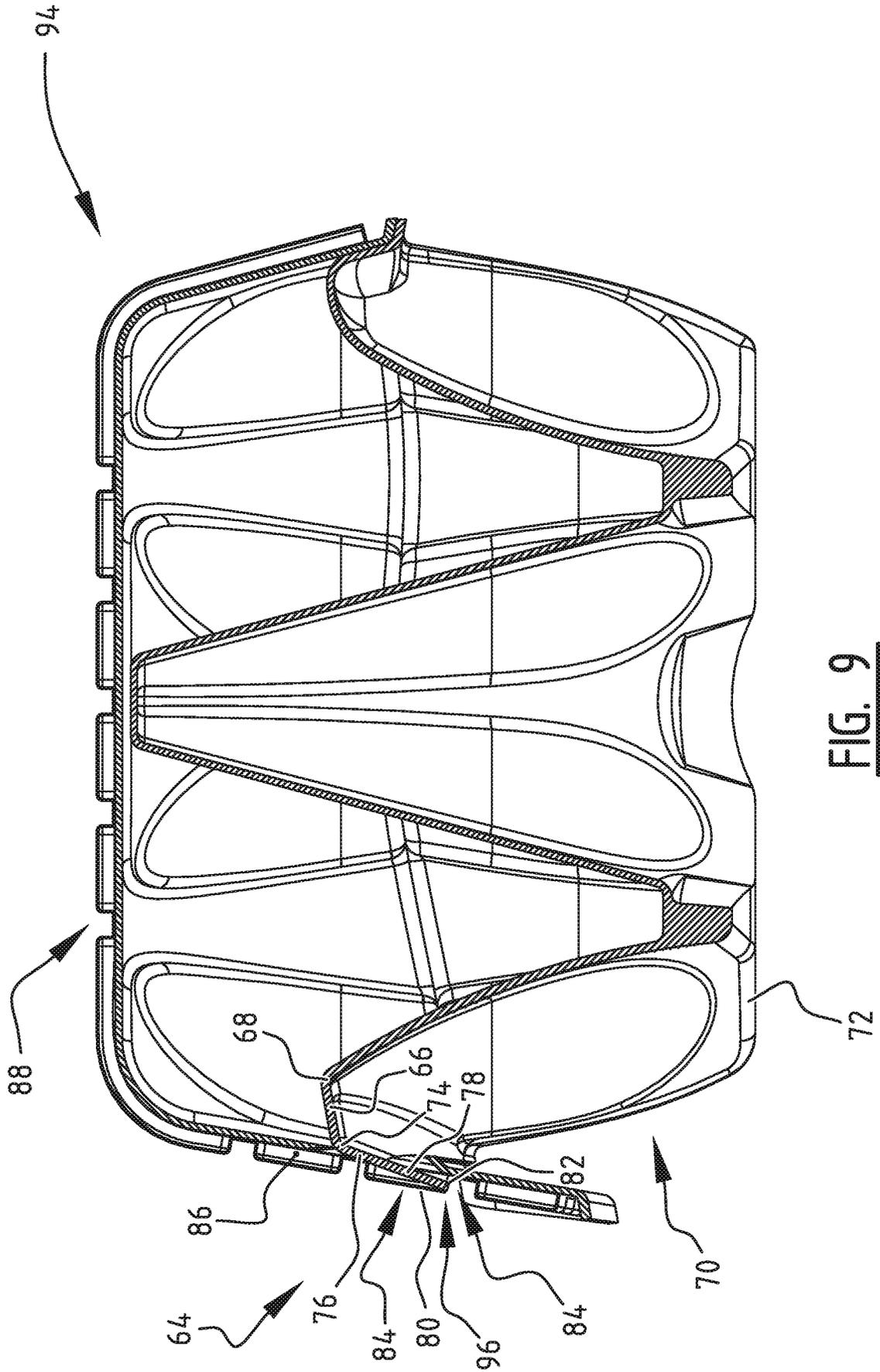


FIG. 9

