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(54) **MODULAR STAIR UNIT FOR A SWIMMING POOL**

**Publication Classification**

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(57) **ABSTRACT**

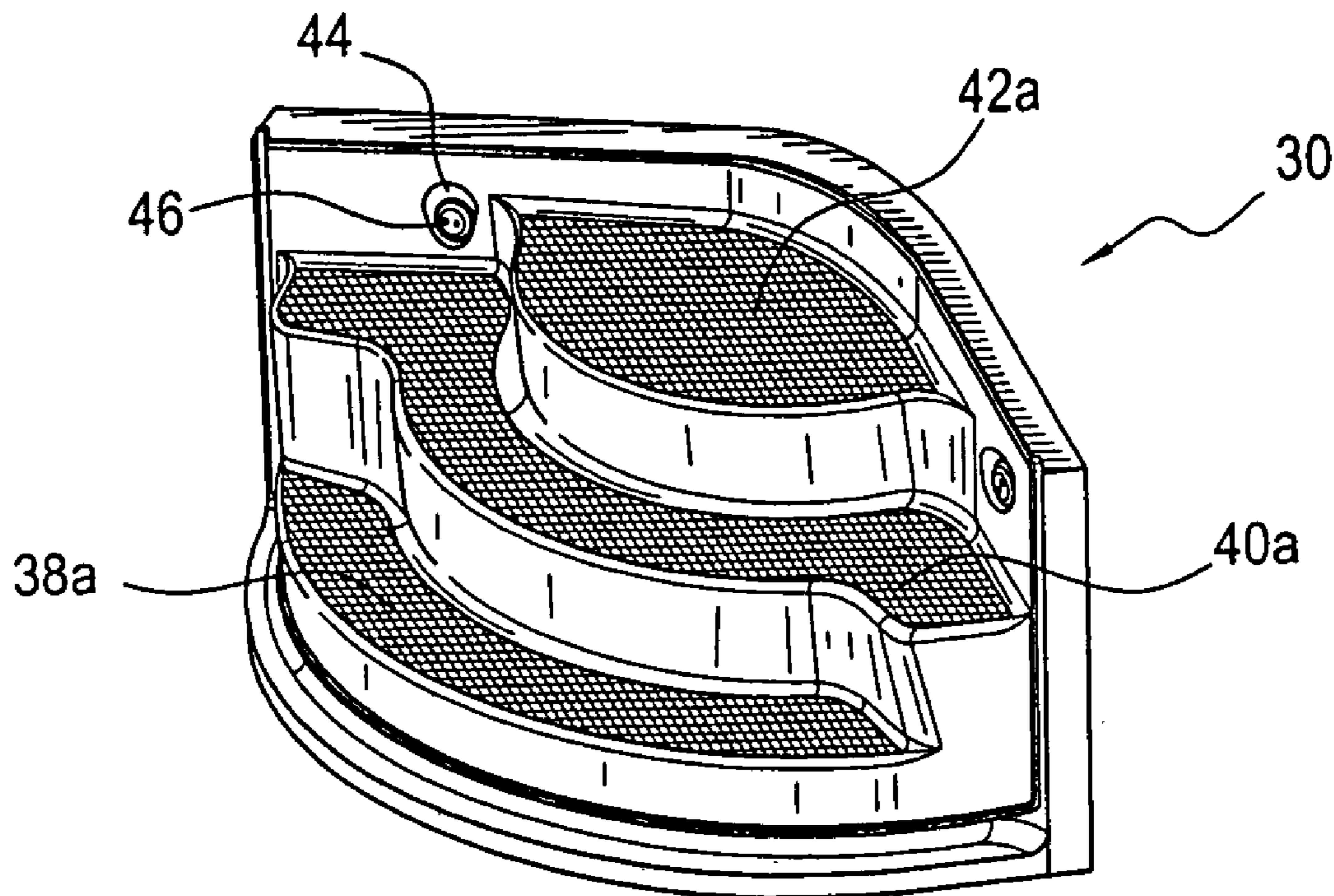
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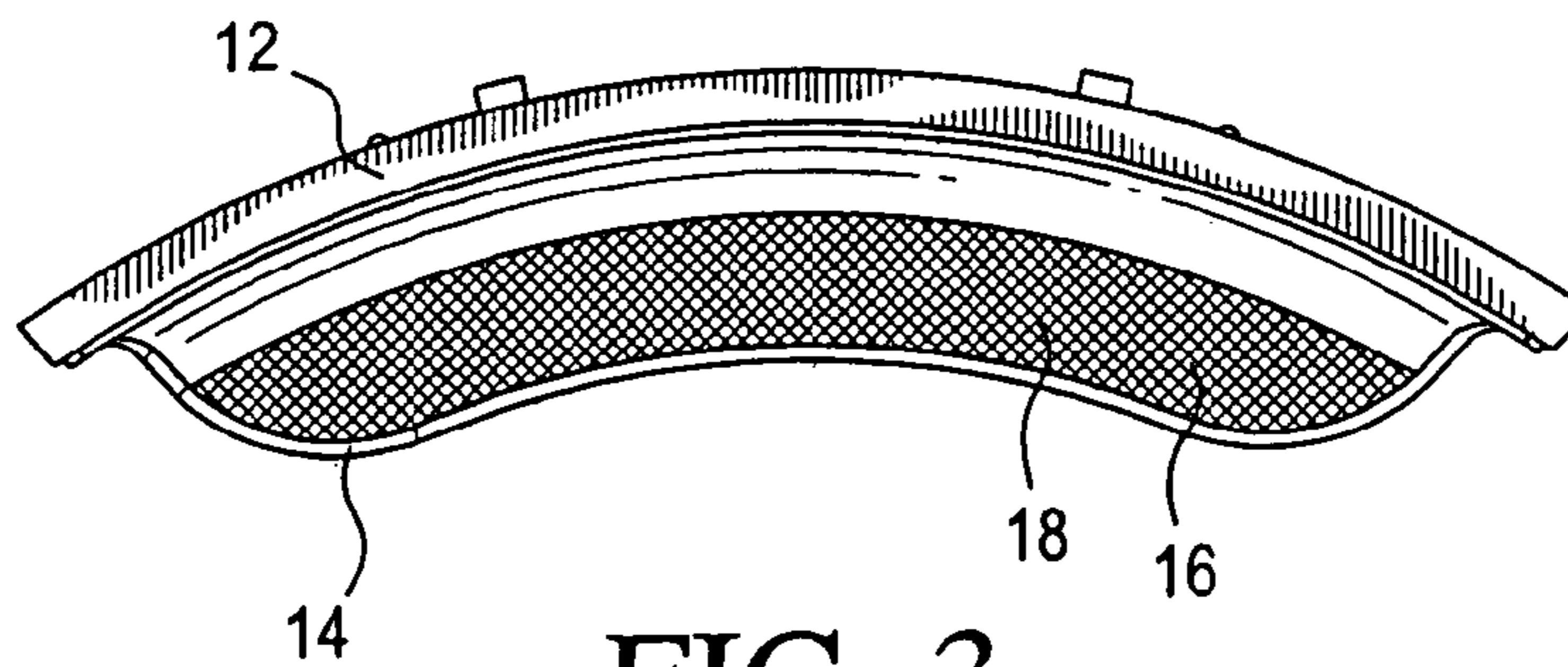
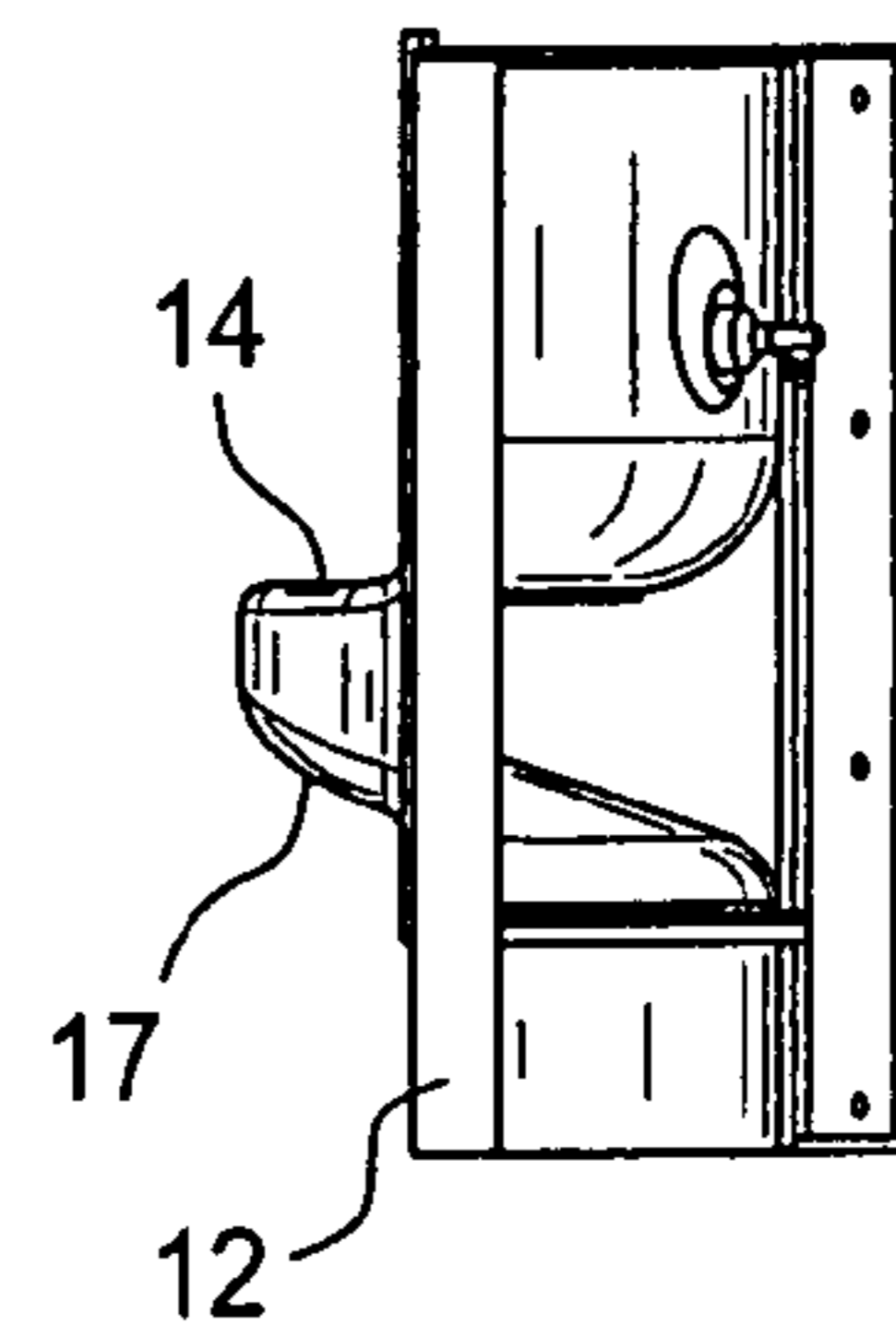
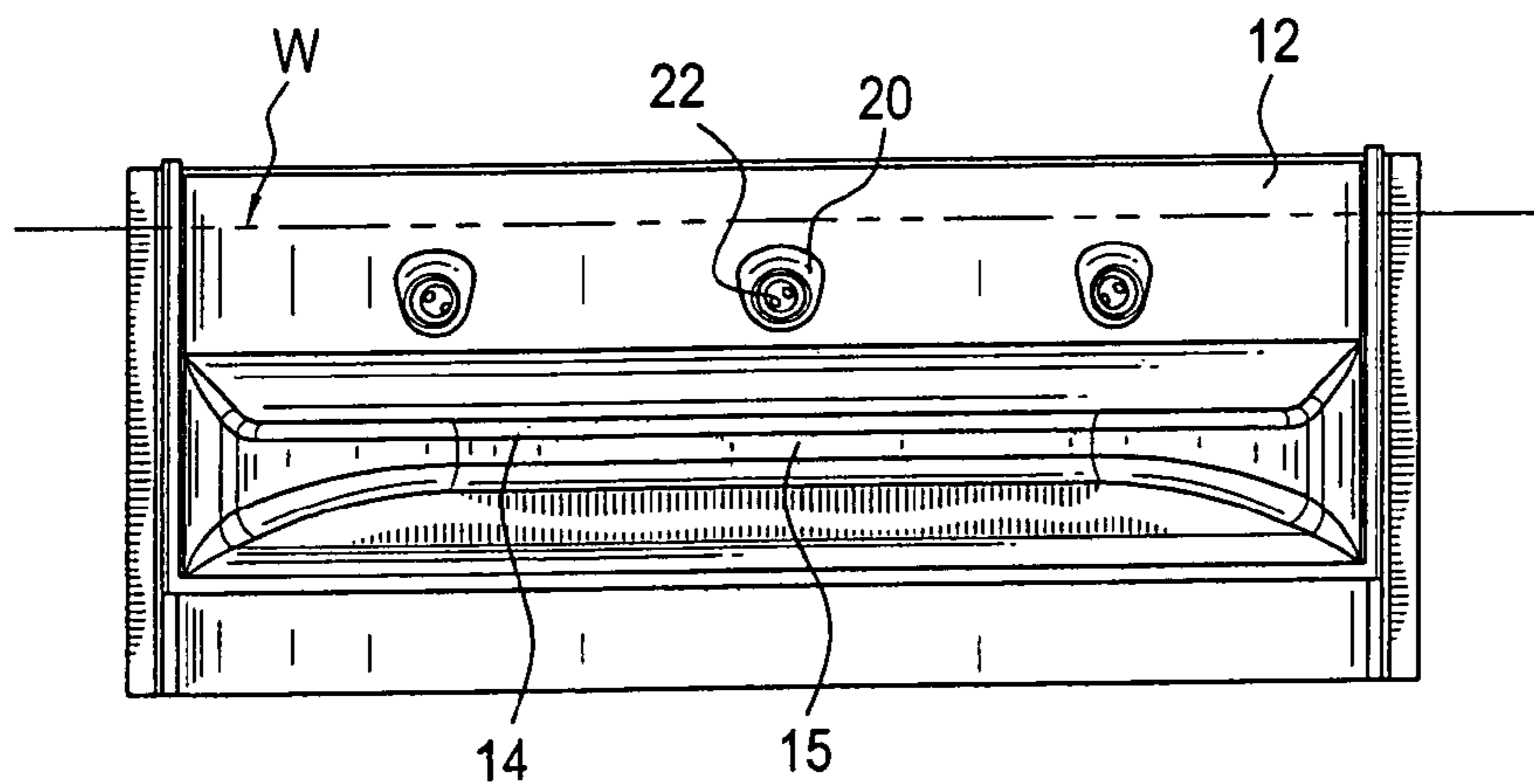
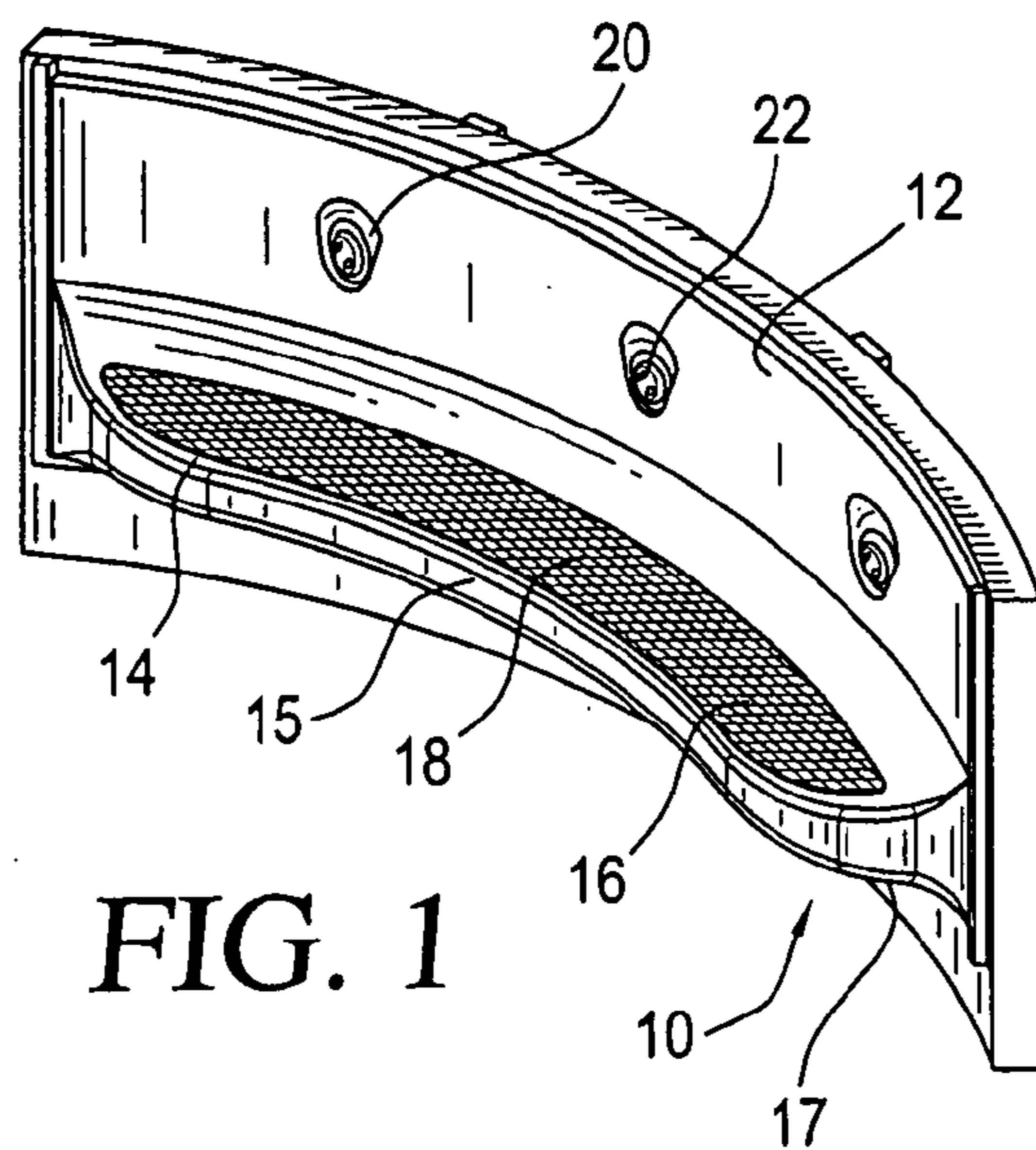
A modular stair unit for use in a swimming pool formed from a plurality of contiguous modular wall panels joined end-to-end to define a pool enclosure having a vertical perimeter wall includes a vertical wall having opposite ends adapted to be joined with contiguous wall panels and being substantially coplanar with the vertical walls of the contiguous wall panels at its joinder therewith and at least two planar steps extending downwardly and protruding from the vertical wall into the pool, the top step being recessed below the top of the vertical wall and at least one of the steps defining a seating area for supporting a person seated thereon. A plurality of hydrotherapy jets are spaced apart along the vertical wall above the seating area and below the water line of the swimming pool.

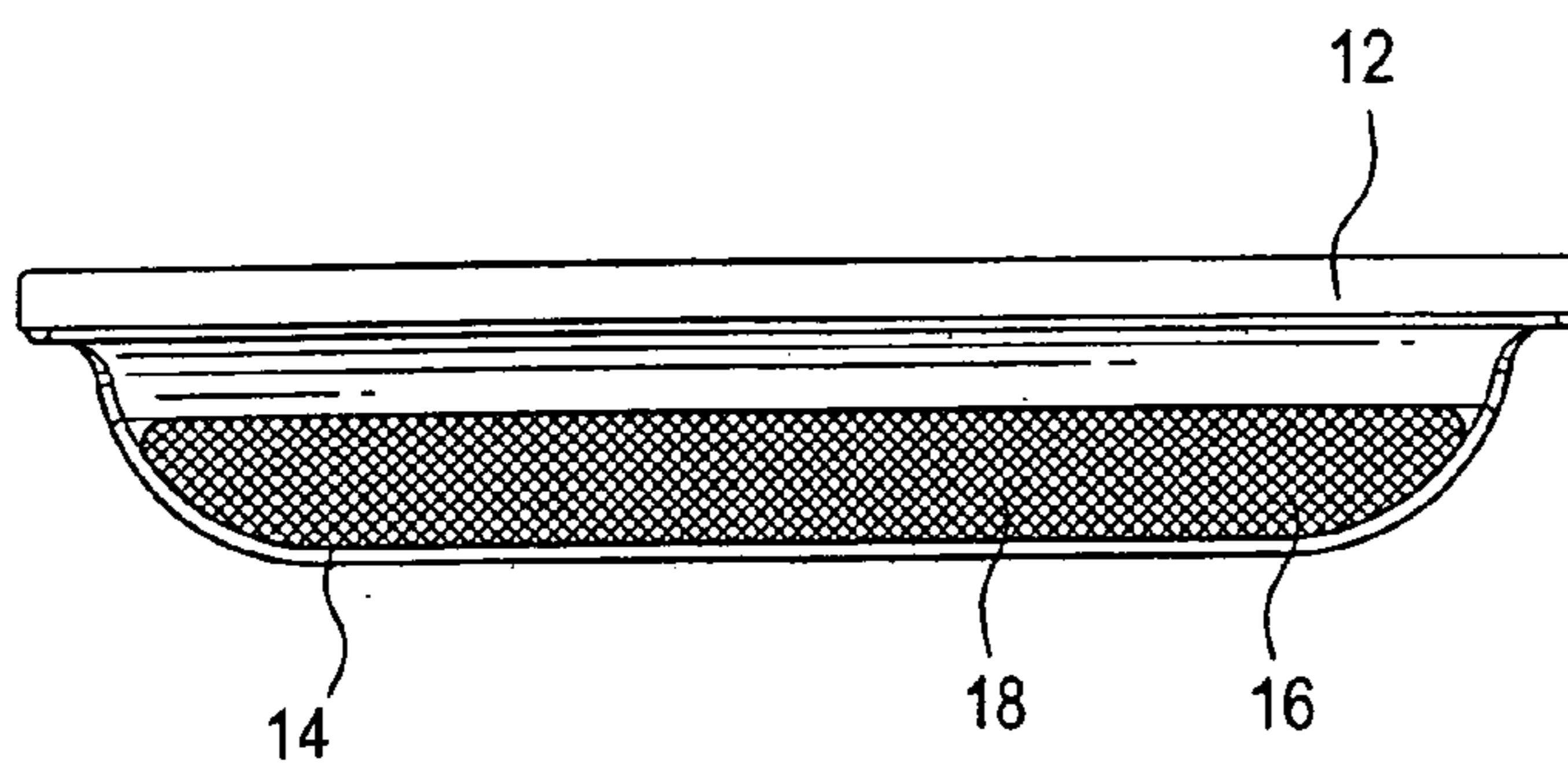
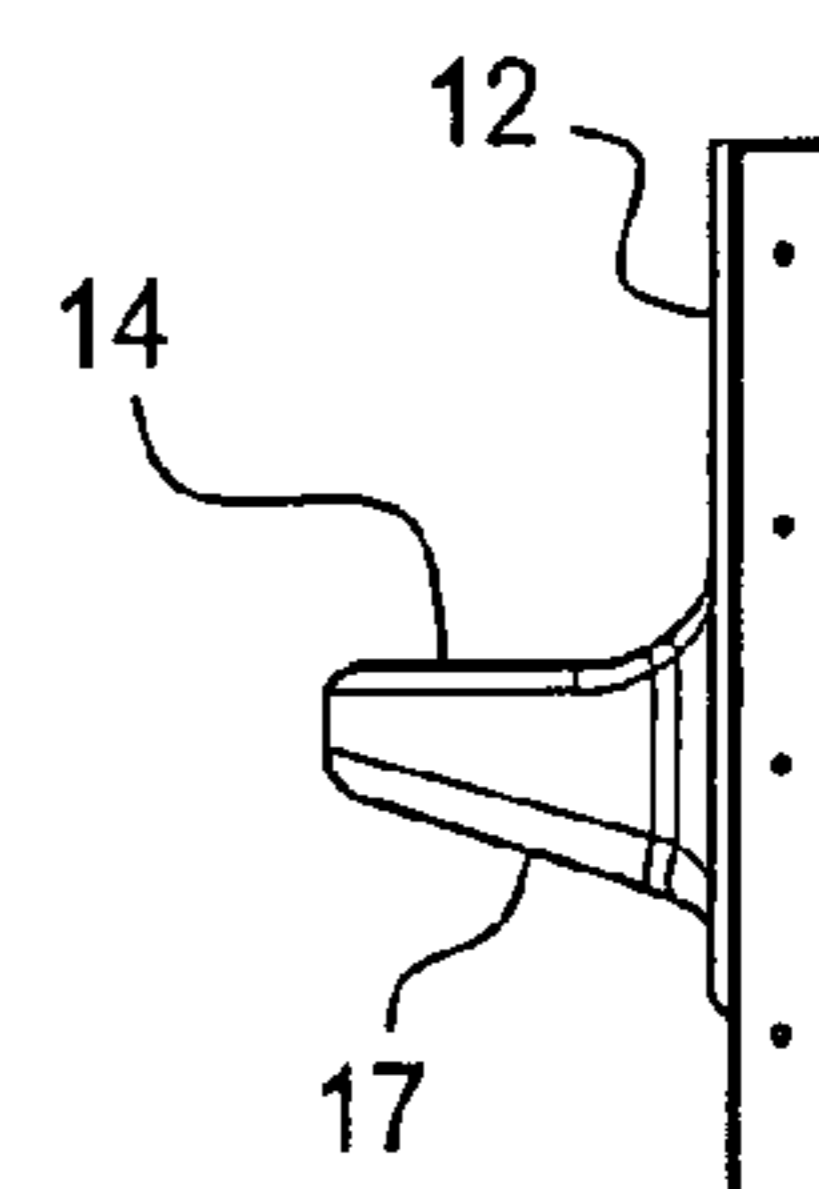
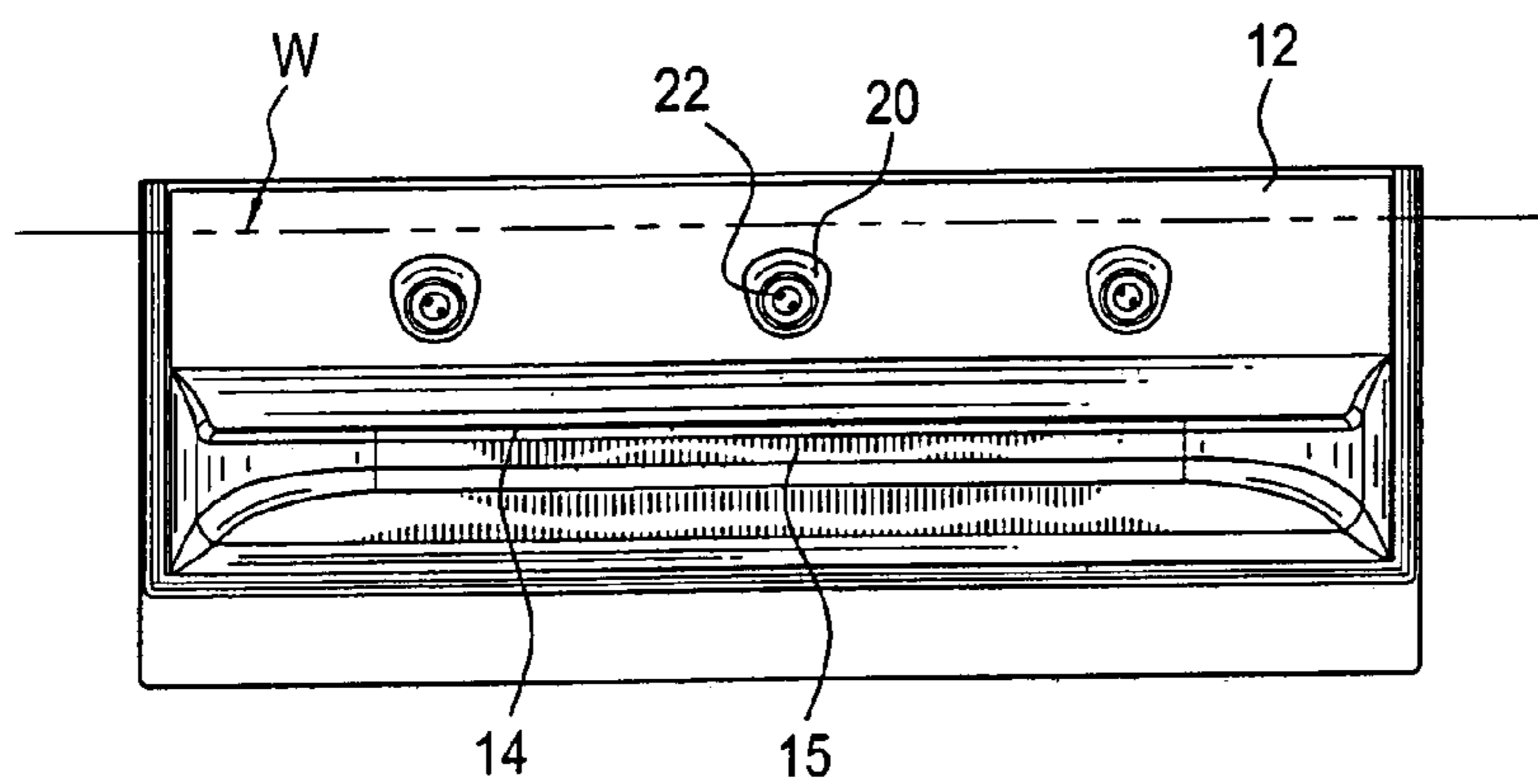
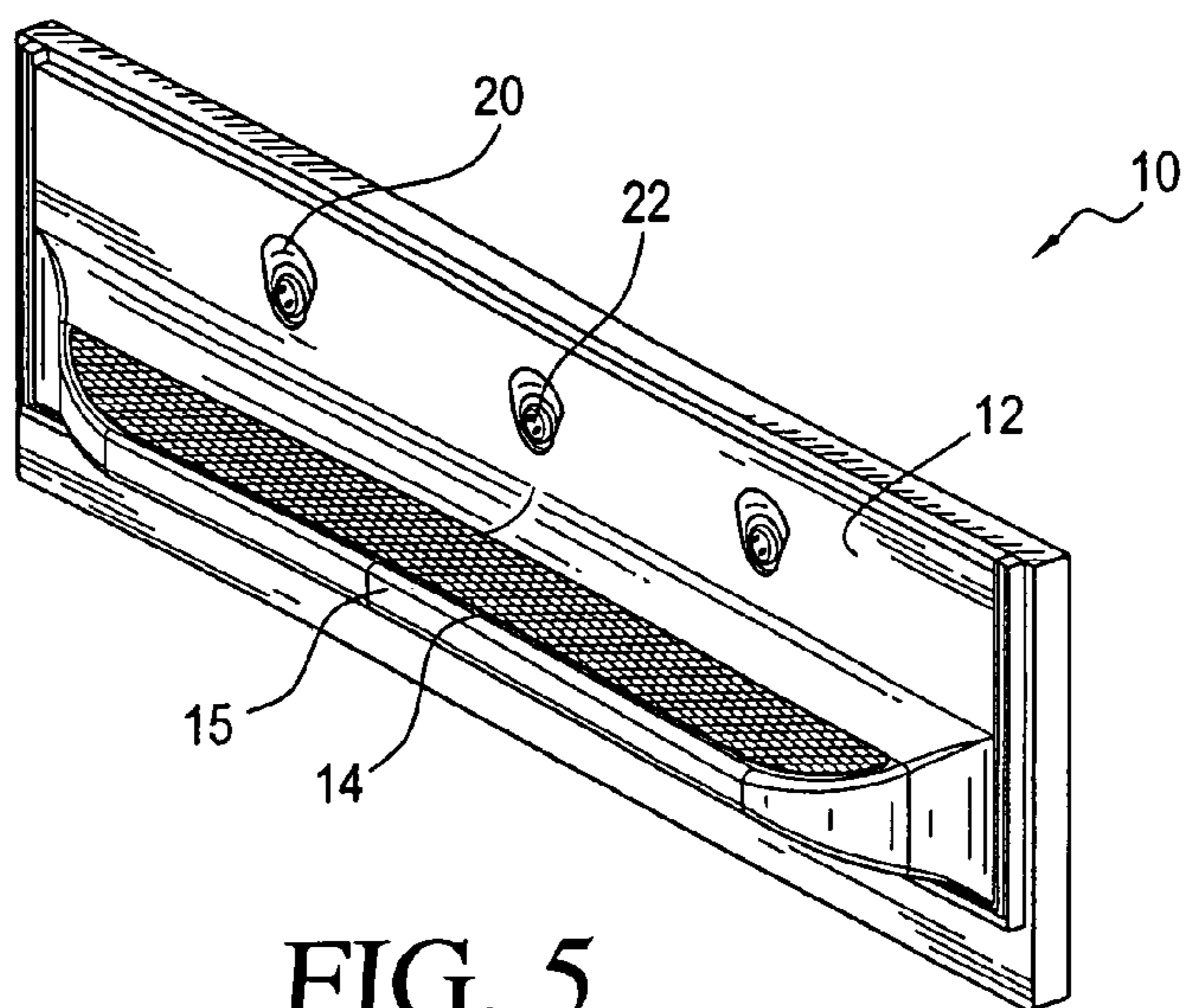
(22) Filed: **Apr. 27, 2011**

**Related U.S. Application Data**

(62) Division of application No. 12/075,060, filed on Mar. 7, 2008, now Pat. No. 7,971,286.









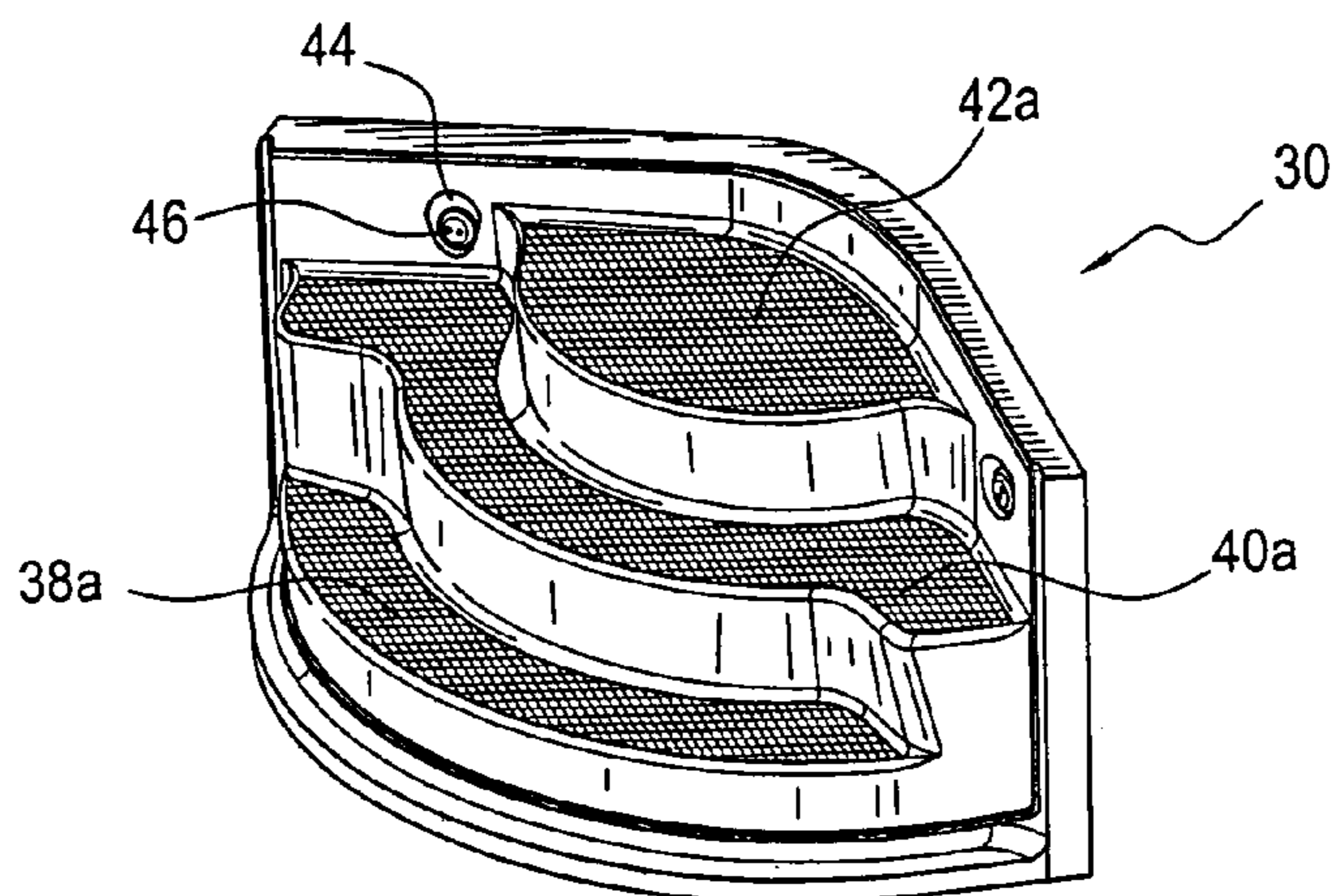


FIG. 9

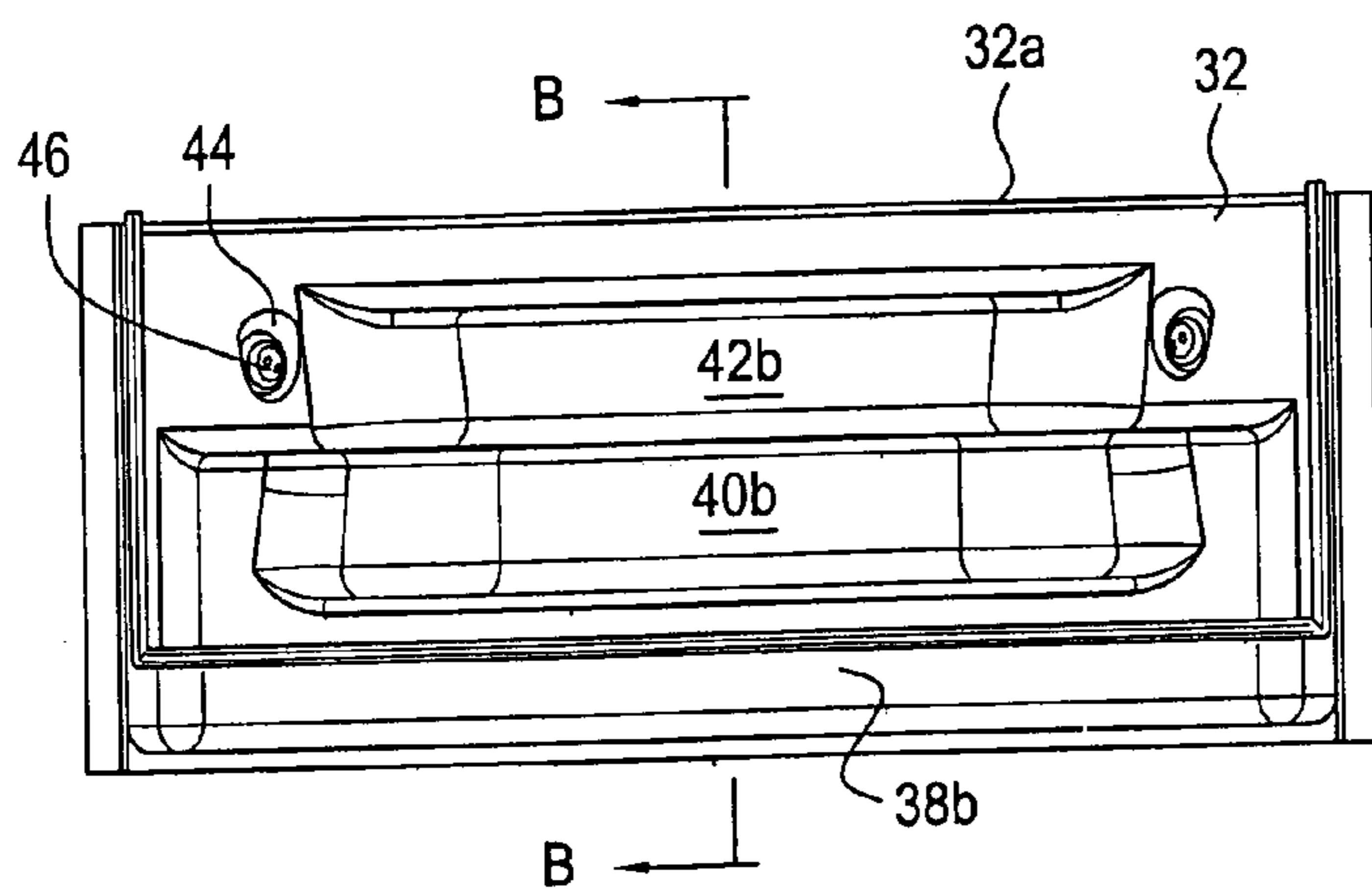


FIG. 10

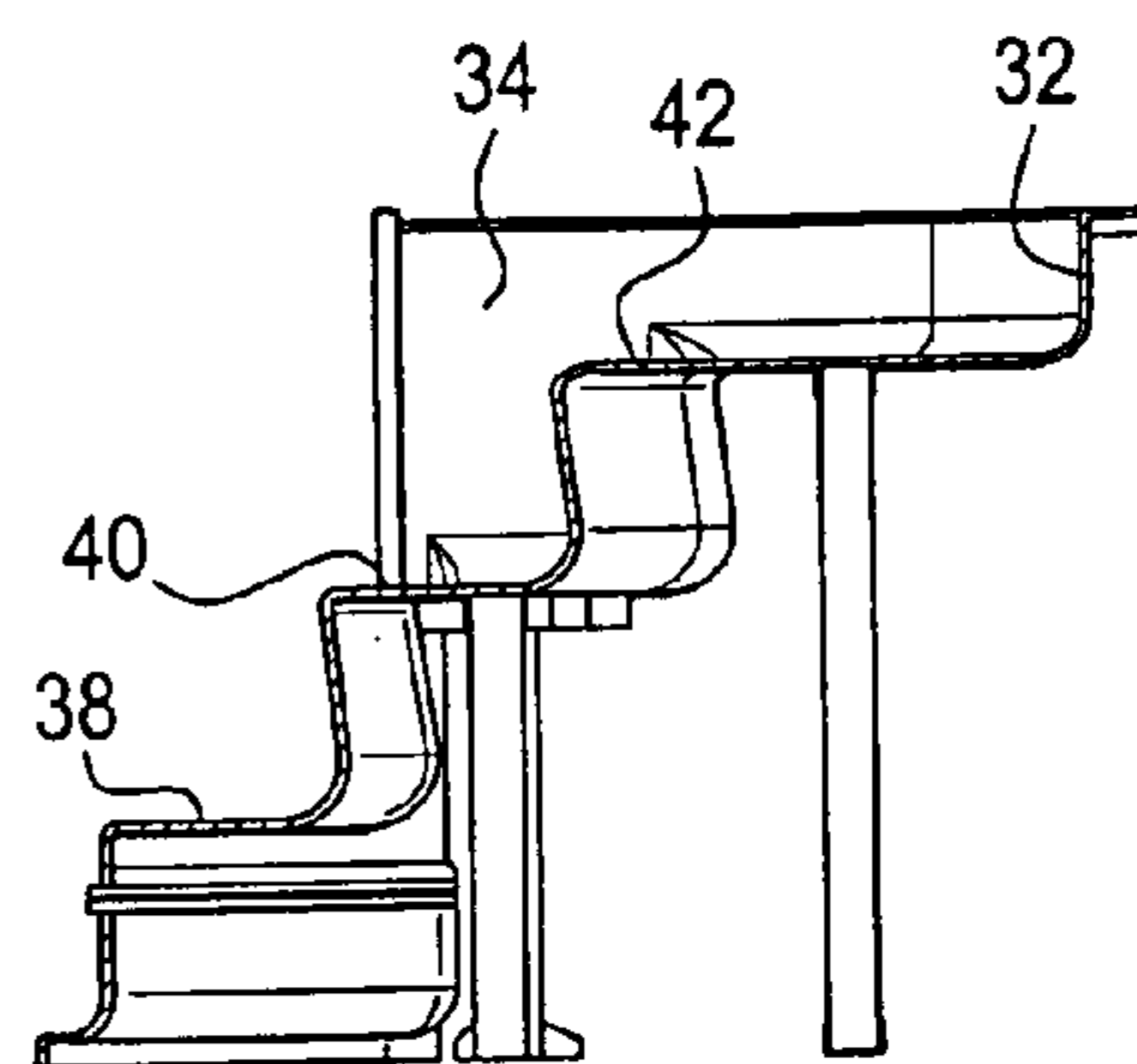


FIG. 12

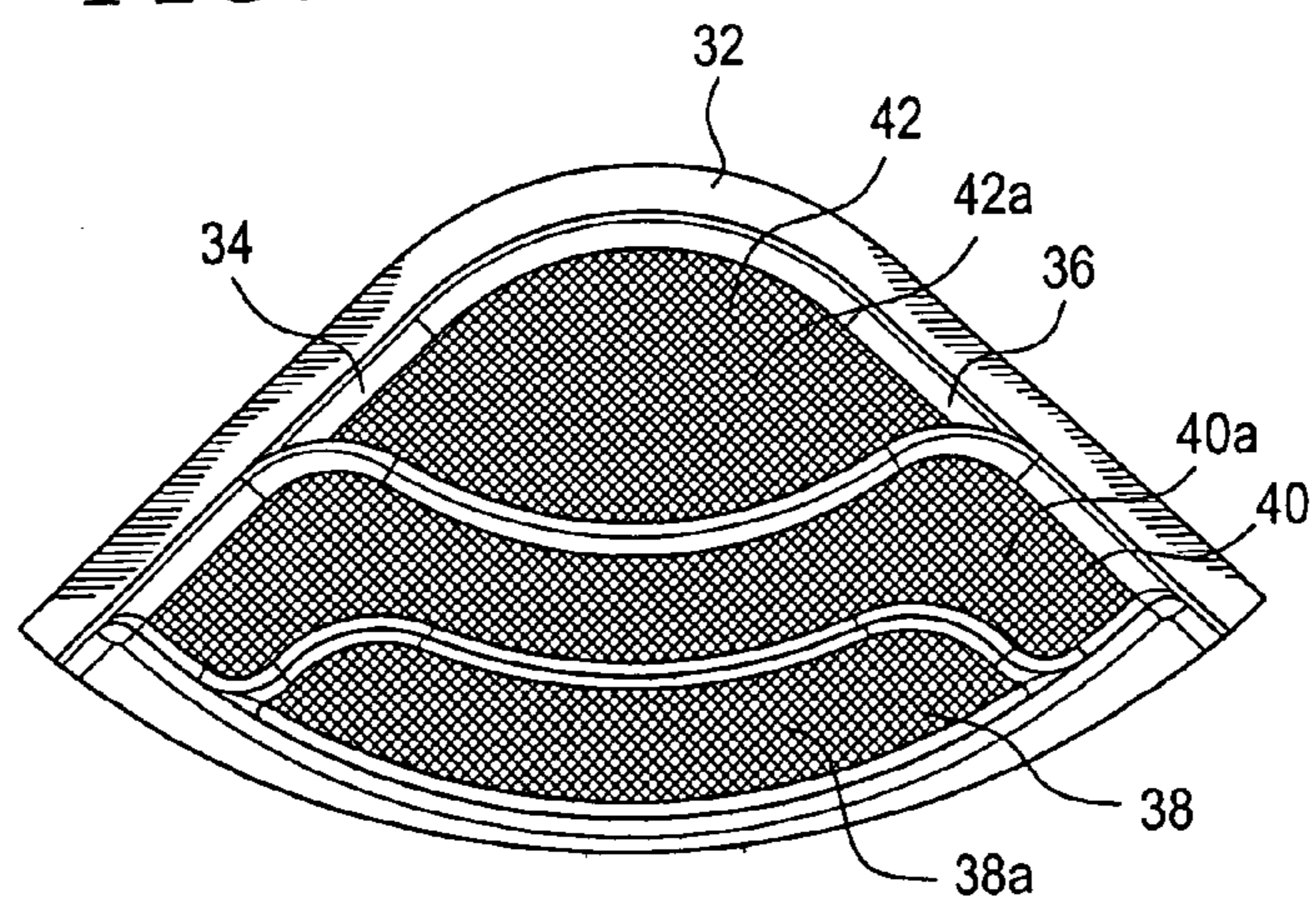


FIG. 11

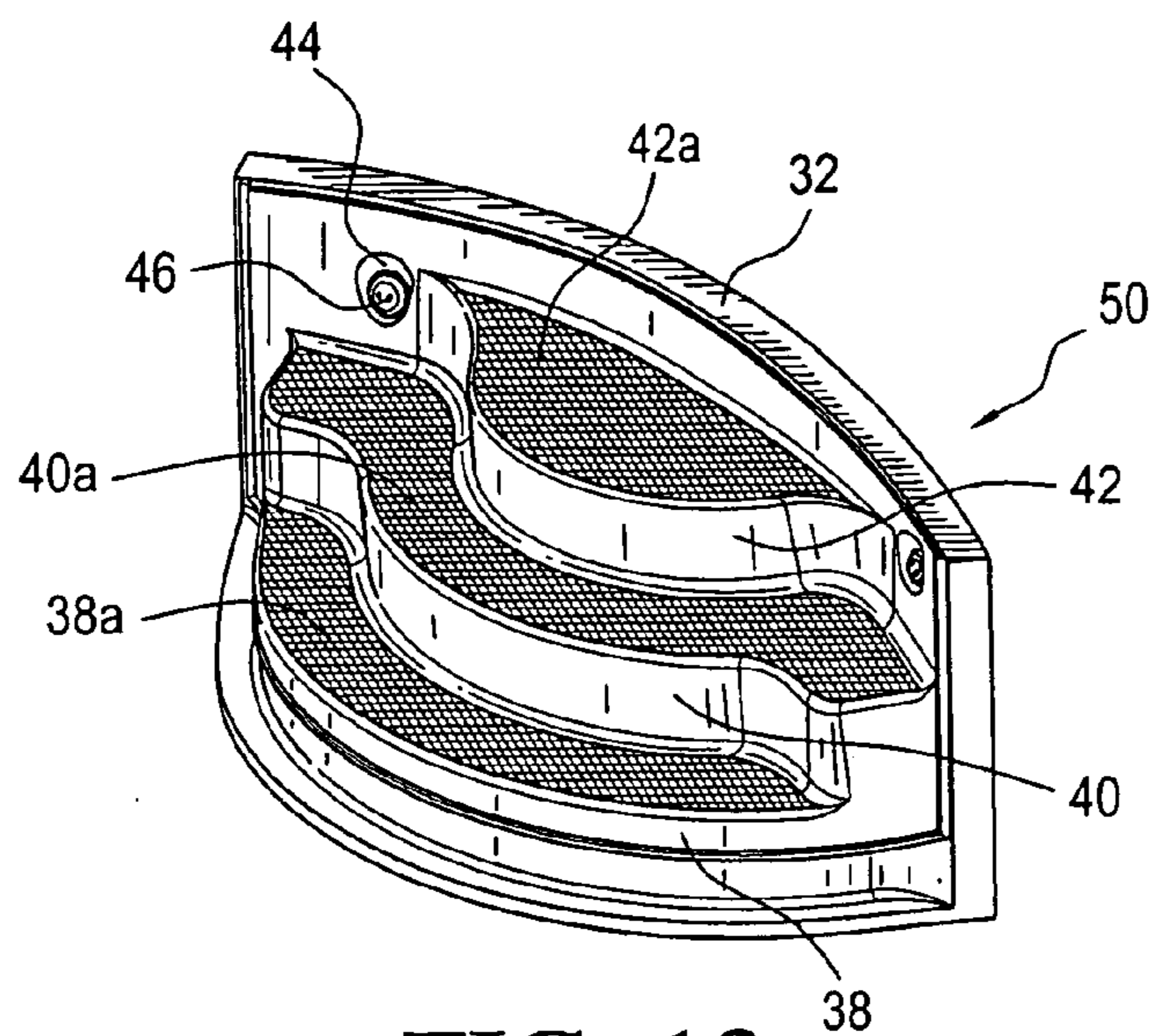


FIG. 13

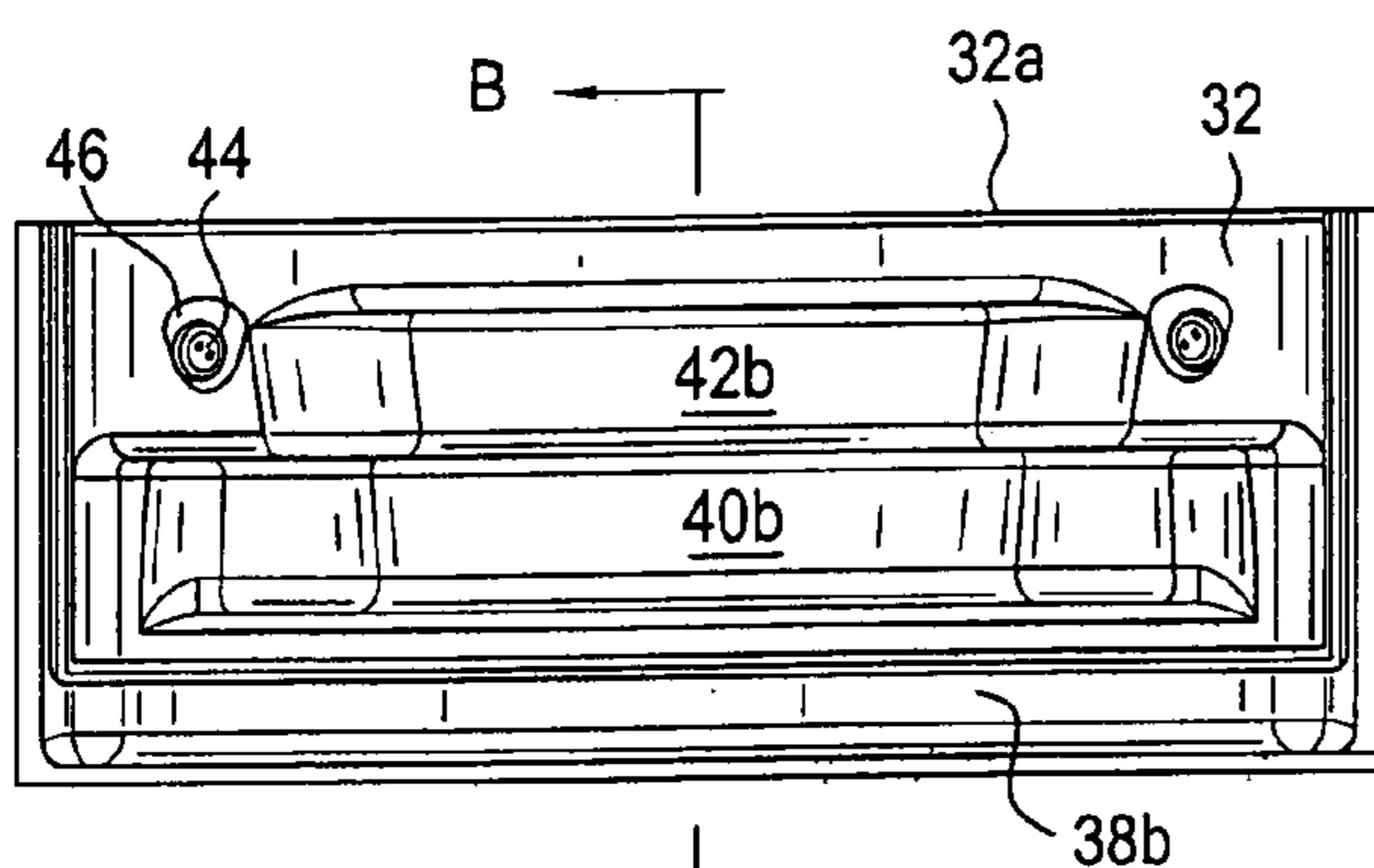


FIG. 14

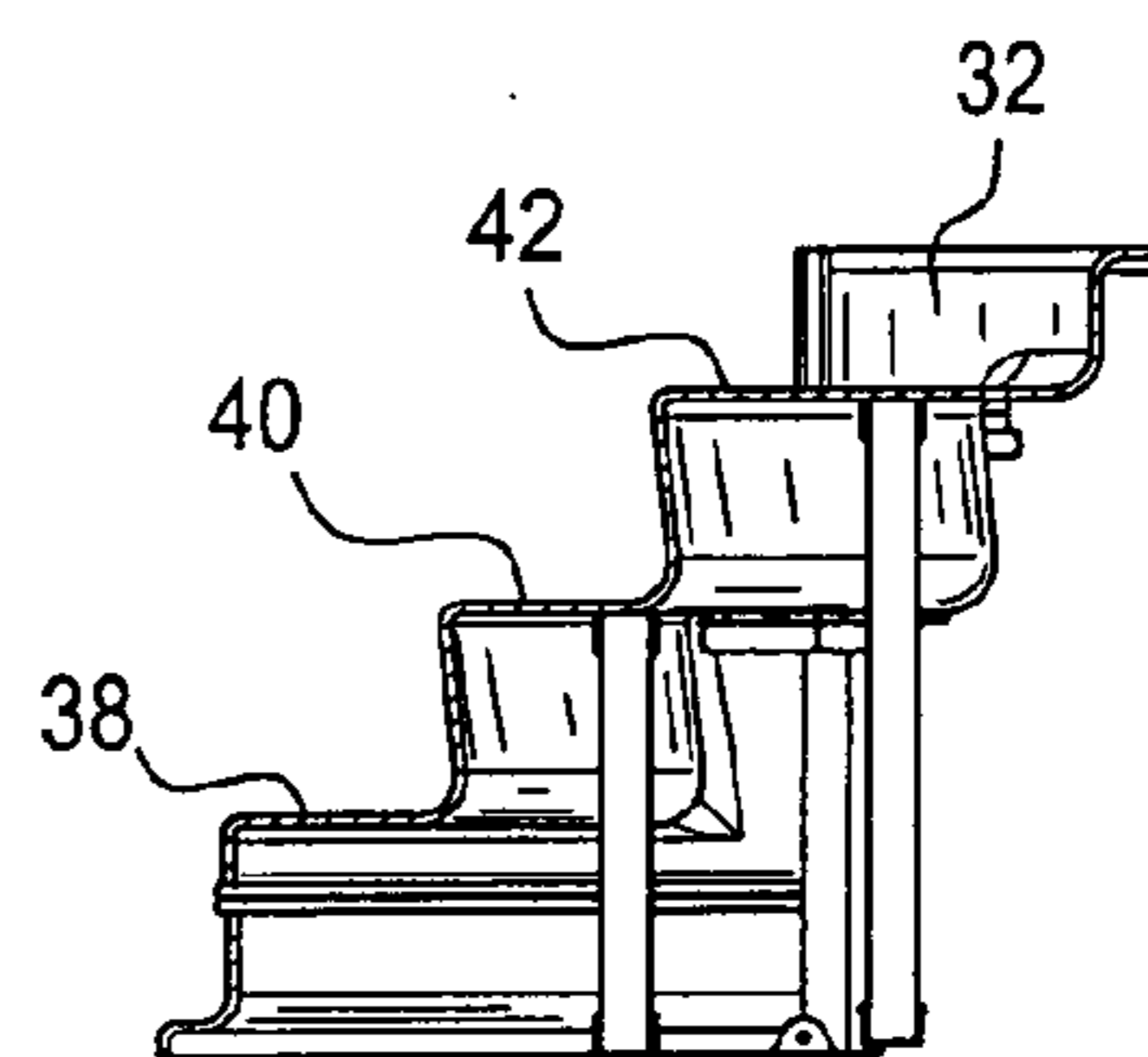


FIG. 16

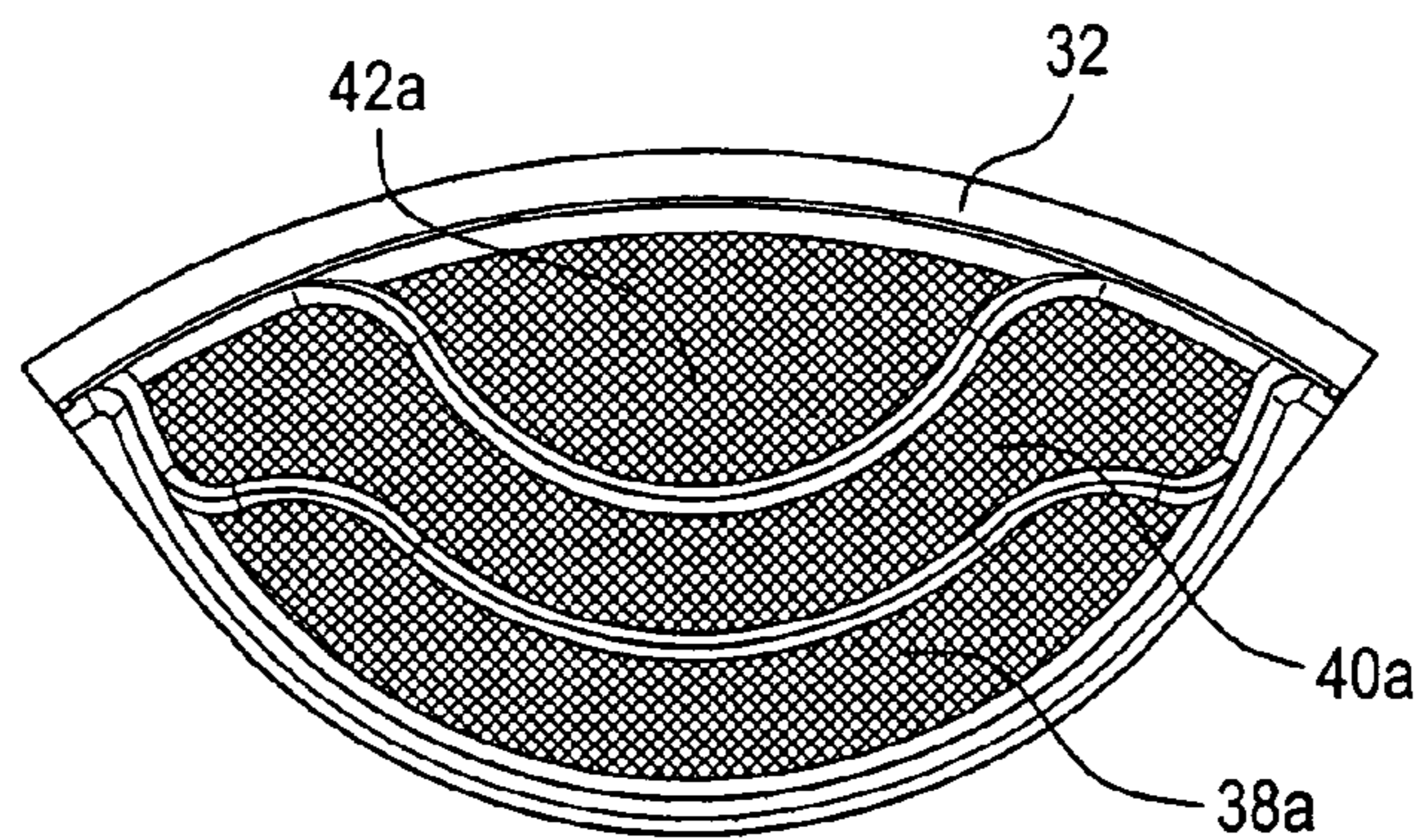


FIG. 15

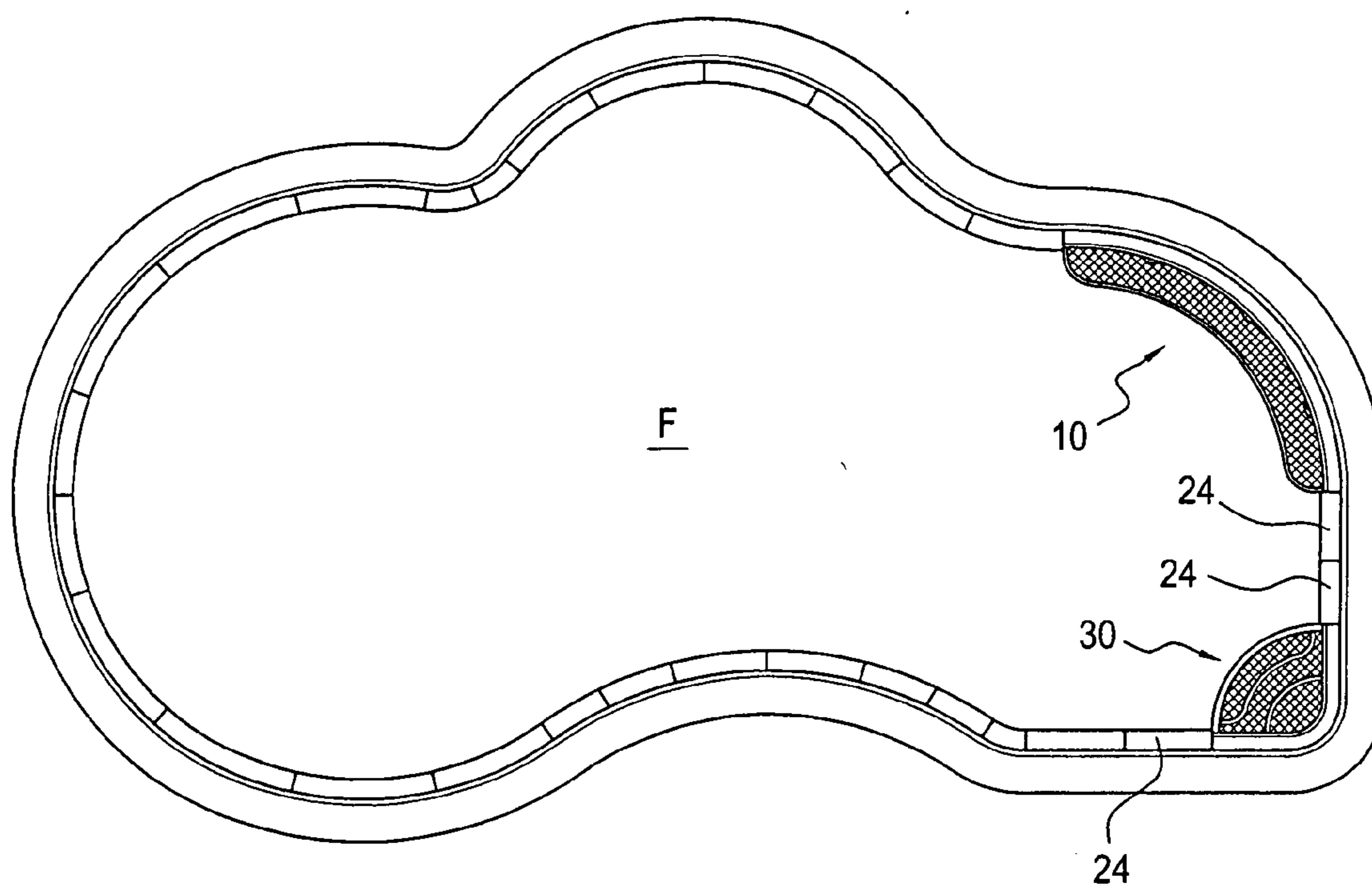


FIG. 17

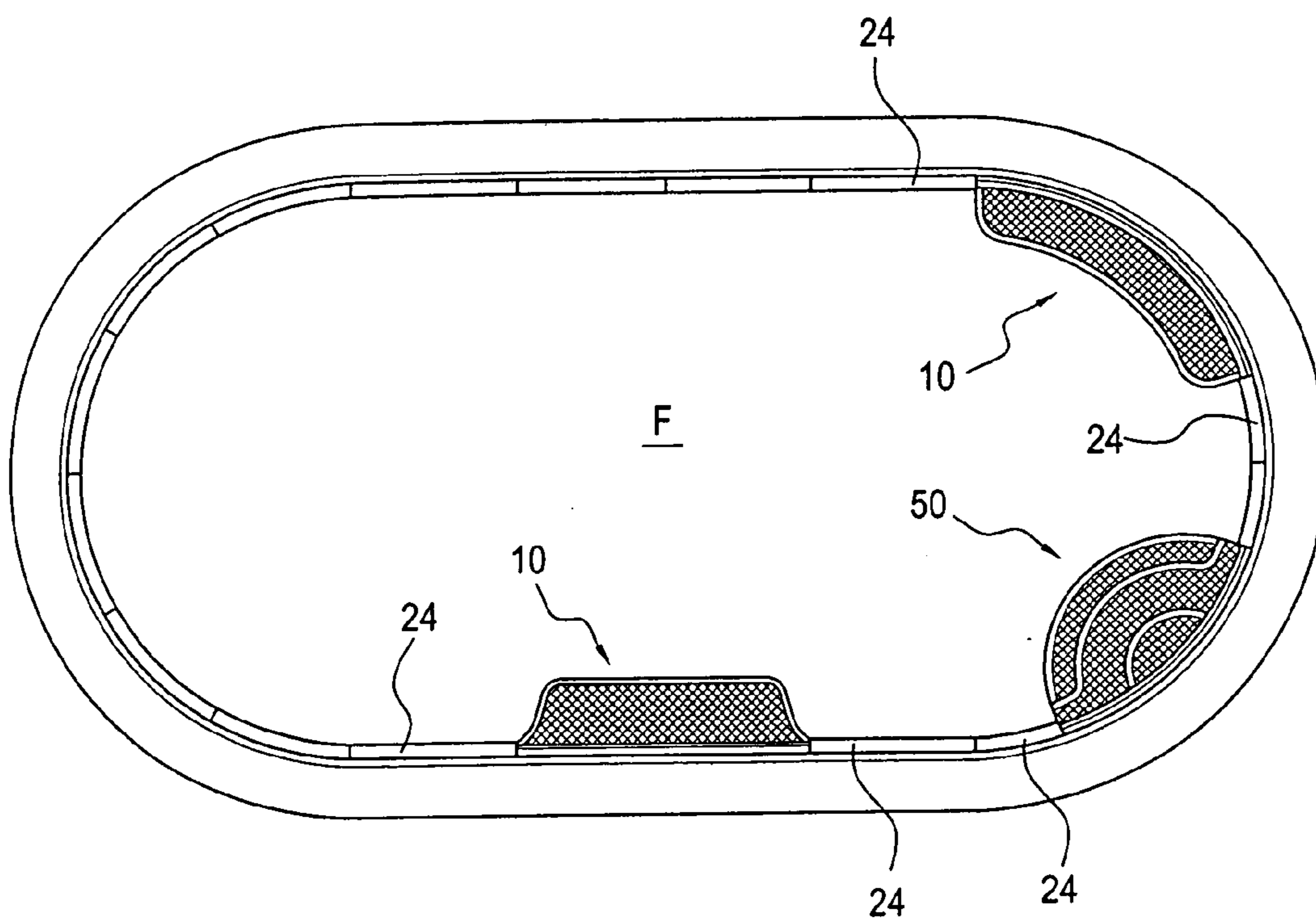


FIG. 18



## MODULAR STAIR UNIT FOR A SWIMMING POOL

### FIELD OF THE INVENTION

[0001] The present invention relates generally to a swimming pool which incorporates a seating bench that projects into the interior of the pool from the vertical pool wall. The present invention also relates to a swimming pool which incorporates a stair that projects into the interior of the pool from either an arcuate wall or corner defined between two vertical pool walls.

### BACKGROUND OF THE INVENTION

[0002] One popular manner of constructing a swimming pool is by connecting a plurality of modular wall panels end-to-end to form the swimming pool. Frequently, the enclosure thus formed is not watertight and a flexible liner covers the end-to-end connected modular walls and the bottom of the swimming pool. Typical swimming pools of modular construction are disclosed, for example, in U.S. Pat. Nos. 3,596,296-Gertz, No. 4,661,247-Weir et al and No. 4,797,957-Weir et al. One or more of the modular walls may be omitted during construction and substituted with a modular seating unit, as is disclosed, for example, in U.S. Pat. No. 5,228,148-Weir.

[0003] The availability of a seating means to permit a swimmer to rest or lounge in a comfortable position in a swimming pool is a desirable convenience in a pool. While it is possible to lower a chair or stool, or even a seating module as is disclosed in U.S. Pat. No. 5,333,322, into a swimming pool as a seating means, this is awkward, difficult, often uncomfortable and, sometimes, hazardous. For example, in U.S. Pat. No. 5,333,322, there is disclosed a drop-in or add-on seat module for a swimming pool which rests upon the pool liner wall and/or the pool bottom and comprises two side-by-side bucket seats, limiting seating to two persons. As such, these drop-in units trap or restrict water flow behind and/or underneath and/or within the cavity formed by the unit upon the pool wall and/or pool bottom and can be a source of algae growth within the pool. It is also known, particularly for application to modular pools, from U.S. Pat. No. 5,228,148, to provide a seating module which may be substituted for a standard perimeter wall module within the modular perimeter wall of the swimming pool. The module of U.S. Pat. No. 5,228,148 has its two bucket seats recessed within the wall of the pool such that the seats do not protrude into the swimming pool beyond the plane formed by the vertical wall of the swimming pool. In an embodiment of the module of U.S. Pat. No. 5,228,148, the seat module includes a stairway recessed within the wall of the pool which is positioned adjacent the recessed seats. Like the seats, the stairway does not protrude into the swimming pool beyond the plane formed by the vertical wall of the swimming pool. This type of recessed modular unit creates a recess or well extending into the deck surface at the bucket seats and at the stairway.

[0004] Accordingly, there is a need for a modular seating area for modular pools which does not utilize deck space to provide the seating area, can accommodate more than two persons, provides freedom of movement of the legs, such as for kicking the water while seated, and is not confining to sit in but, rather, permits a person seated thereon to stretch out. Efforts to date directed at providing such a module suffer from one or more shortcomings. This is because prior art efforts at providing modular seating elements are either

uneconomical to manufacture, hazardous and/or cumbersome or difficult to install or use. Accordingly, there remains a need for a simple, inexpensive to manufacture, easy to install, durable bench-type module for modular swimming pools.

### SUMMARY OF THE INVENTION

[0005] It is, therefore, a primary object of the present invention to provide a modular bench-type seating element which is integral with the structural wall of a swimming pool, but which protrudes into the interior of the pool.

[0006] It is another object of the present invention to provide a modular bench-type seating element which takes up no deck space to provide the seating area.

[0007] It is yet another object of the present invention to provide a modular bench-type seating element which permits persons seated on the bench-type seating element to kick their lower legs in the water without striking any part of their feet on the pool wall.

[0008] It is still another object of the present invention to provide a modular bench-type seating element which provides 360° vertically oriented accessibility to the bench seating area.

[0009] It is another object of the present invention to provide a modular stair element which is integral with the structural wall of a swimming pool, but which protrudes into the interior of the pool and which defines a seating area into which at least one hydrotherapy jet provides a flow of water.

[0010] It is yet another object of this invention to provide a bench-type seating element and/or stair element for swimming pools which each comprise a modular unit and each of which can be integrated into the wall of the swimming pool by replacing one or more of the standard modular wall panels of the pool.

[0011] The foregoing and other objects are achieved in accordance with the present invention by providing a modular occupant bench seating unit for use in a swimming pool formed from a plurality of contiguous modular wall panels joined end-to-end to define a pool enclosure having a vertical perimeter wall, said pool having a floor and being adapted to be filled with water to a water line along the vertical perimeter wall, said bench unit comprising a module devised to replace one of said modular wall panels and adapted to be joined with said contiguous wall panels, said bench module comprising:

[0012] a vertical wall having a top, a bottom and opposite ends, said opposite ends adapted to be joined with contiguous wall panels, said vertical wall being substantially coplanar with the vertical walls of said contiguous wall panels; and

[0013] an elongate bench having an elongate side protruding from said vertical wall between the top and bottom thereof into said pool substantially beyond the plane formed by the vertical wall of the pool, said bench having an upper side and an under side, said upper side defining an occupant seating area and said underside being spaced from the floor of said pool.

[0014] In another aspect of the present invention, a plurality of hydrotherapy jets are spaced apart along the vertical wall of the bench module above the upper side of the bench and below the water line of the swimming pool.

[0015] In yet another aspect of the present invention, the under side of the bench is spaced sufficiently from the floor of the swimming pool to allow occupants seated on the bench to position their lower legs beneath the bench. At the same time, the bench protrudes a sufficient distance from



the vertical wall of the bench module to allow occupants seated on the bench to kick their lower legs without striking their feet on the vertical wall.

[0016] In still another aspect of the present invention, there is provided a modular stair unit for use in a swimming pool formed from a plurality of contiguous modular wall panels joined end-to-end to define a pool enclosure having a vertical perimeter wall, said pool having a floor and being adapted to be filled with water to a water line along the vertical perimeter wall, said stair unit comprising a module devised to replace one of said modular wall panels and adapted to be joined with said contiguous wall panels, said stair module comprising:

[0017] a vertical wall having a top, a bottom and opposite ends, said opposite ends adapted to be joined with contiguous wall panels, said vertical wall being substantially coplanar with the vertical walls of said contiguous wall panels; and

[0018] at least two substantially planar steps having horizontal tread and respective risers extending downwardly and protruding from said vertical wall into said pool, the top step being recessed below the top of said vertical wall, at least one of said steps defining a seating area for supporting a person seated thereon, said vertical wall including at least one hydrotherapy water jet above said seating area and below the water line of said swimming pool for providing a flow of water into said seating area.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. 1 is a perspective view of a curved bench-type seating module of the present invention.

[0020] FIG. 2 is a front elevational view of the curved bench-type seating module of FIG. 1.

[0021] FIG. 3 is a plan view of the curved bench-type seating module of FIG. 1.

[0022] FIG. 4 is a side elevational view of the curved bench-type seating module of FIG. 1.

[0023] FIG. 5 is a perspective view of a straight bench-type seating module of the present invention.

[0024] FIG. 6 is a front elevational view of the straight bench-type seating module of FIG. 1.

[0025] FIG. 7 is a plan view of the straight bench-type seating module of FIG. 1.

[0026] FIG. 8 is a side elevational view of the straight bench-type seating module of FIG. 1.

[0027] FIG. 9 is a perspective view of a corner stair module of the present invention.

[0028] FIG. 10 is a front elevational view of the corner stair module of FIG. 9.

[0029] FIG. 11 is a plan view of the corner stair module of FIG. 9.

[0030] FIG. 12 is a sectional view of the corner stair module taken along line B-B of FIG. 10.

[0031] FIG. 13 is a perspective view of an internal curved stair module of the present invention.

[0032] FIG. 14 is a front elevational view of the curved stair module of FIG. 13.

[0033] FIG. 15 is a plan view of the curved stair module of FIG. 13.

[0034] FIG. 16 is a sectional view of the curved stair module taken along line B-B of FIG. 14.

[0035] FIG. 17 is a top plan view of a swimming pool showing the curved bench-type module and corner stair module installed in the perimeter wall of a modular pool and projecting from the pool wall into the interior of the pool.

[0036] FIG. 18 is a top plan view of a swimming pool showing the curved and straight bench-type modules and a curved inner stair module installed in the perimeter wall of a modular pool and projecting from the pool wall into the interior of the pool.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0037] The seating module of the invention, in its preferred embodiment, contemplates the substitution of a bench-type seating module for a modular wall panel of a swimming pool which is formed from a plurality of contiguously joined modular wall panels. A purchaser of a swimming pool, therefore, for a relatively minor additional expense, may include in the purchase a seating module which is integrated into the pool wall and in which the seating bench projects from the pool wall into the interior of the pool, but does not extend downwardly into contact with the pool floor. In effect, the bench-type seating module fills the opening in the pool wall perimeter resulting from omitting one or more "standard" modular wall panels and completes the interior perimeter of the swimming pool structure. Unlike the seating modules of the prior art, the seat portion, e.g., the bench, of the instant seating module protrudes into the swimming pool substantially beyond the plane formed by the vertical wall of the swimming pool but does not extend downwardly to the pool floor, thus allowing space between the pool floor and the underside of the seat portion for the legs of a person seated on the bench. Stated otherwise, there is no riser wall extending downwardly to the pool floor from the elongate side of the bench which protrudes into the swimming pool. This permits a person seated on the bench to kick his/her lower legs, as people commonly do in swimming pools, without striking one's feet either on a riser wall or on the vertical pool wall. In addition, it allows the purchaser of the pool to install the bench seating module wherever desired in the pool wall right up to the time of pool wall assembly without affecting the pool liner design or construction. This is because with the shelf-type bench seat of the present invention, no specially designed liner is required whereas, if there were a riser wall extending downwardly to the pool floor from the elongate side of the bench which protrudes into the swimming pool, a specially designed pool liner would be required to accommodate the riser wall. In addition to the added versatility of location placement afforded by the bench seating module of the present invention, there is the additional benefit of the cost saving attributed to not needing a specially designed pool liner. Moreover, unlike the confining bucket seats shown in prior art seating modules, the instant protruding bench permits 360° vertically oriented accessibility, i.e., accessibility in a vertical plane, to the bench seating area. A person seated on the modular bench of the present invention can turn sideways and lie on the bench surface with legs outstretched or with bent knees and feet in contact with the bench surface. In addition, depending upon the size of the people using the modular bench unit, it can comfortably accommodate at least three people, and possibly more. The seating module of the invention may be used with any of a variety of standard commercially available swimming pools that are constructed from a plurality of modular wall panels that are joined end-to-end to form the perimeter of the swimming pool, including rectangular shaped pools and free form shaped pools.

[0038] Referring to FIGS. 1-8, In its simplest form, the seating module 10 comprises a vertical perimeter wall or back



wall **12** and an elongate bench portion **14** protruding therefrom at substantially a right angle thereto, in the nature of a shelf. The seating portion **16** of the bench **14** includes a slip resistant tread pattern **18**, such as the well known diamond tread pattern. In a preferred embodiment, the intersection of the back wall **12** with the seating portion **16** of bench **14** is gently curved to avoid sharp corners, the elongate side **15** of the bench **14** protruding into the pool has a sufficiently small vertical dimension to allow a person seated on the bench **14** to bend his/her leg at the knee such that the lower end of the leg is beneath the bench **14** and the underside **17** of bench portion **14** rapidly merges into the back wall **12**, intersecting the back wall **12** well above the floor **F** of the pool. This allows persons seated on the bench **14** to kick their lower legs, as people commonly do in swimming pools, without striking their feet on the vertical back wall **12**. Jet nozzle recesses **20** are formed in the back wall **12** above the bench **14** for the installation of hydrotherapy jets **22**. It is desirable that both the bench **14** and the nozzles of the jets **22** are located below the swimming pool water line **W** when the seating module **10** is in place and secured to the contiguous wall panels **24** (see FIGS. **17** and **18**) and the pool is filled with water. As illustrated in FIGS. **1-4**, the perimeter of the back wall **12** is arcuate or curved, which is suitable for swimming pool shapes such as oval, lagoon or kidney shaped pools. However, it will be appreciated that the shape of the back wall **12** and the corresponding shape of the bench **14** may be adapted to fit the shape of the swimming pool by selecting shapes which are appropriate for replacing "standard" modular wall panels at the selected location along the pool perimeter. As illustrated in FIGS. **5-8**, the perimeter of the back wall **12** is straight and the bench **14**, likewise, is straight, which is suitable for replacing a straight modular wall panel in virtually any shaped pool. Whatever the planar shape of the pool vertical wall as defined by the contiguous wall panels **24**, i.e., straight or curved, the vertical wall **12** of bench seating module **10** is coplanar therewith.

[0039] A seating element is desirable as a simple, yet important resting accommodation, especially for the elderly, and also for making available the benefits of the therapeutic treatment of the kind that is derived from the use of turbulent water expelled against the body of an occupant of the bench. The water expelled from the jets **22** positioned along the back wall **12** of the seating module **10** may be warmed from the swimming pool water heater (not shown), which is well known in the art. Pressurized air furnished by an air generating means (not shown), which is also well known in the art, is preferably fed through suitable valve means and mixed with the heated water to produce a therapeutic turbulent water flow at the nozzles of jets **22**. Any suitable number of such jets **22** may be employed, depending upon the length of the bench **14**. Generally, positioning the nozzles of the jets **22** spaced apart at approximately two foot intervals along the back wall **12** of the seating module **10** is sufficient.

[0040] The seating module **10** is generally of a molded design of one piece construction and is provided with securing flanges at each side of the bench seat, the flanges being adapted to be secured to and mate with the flanges of contiguous wall panels **24** by means which are conventional in the art. In one embodiment, the connection between adjacent panels are formed to be substantially water tight by suitable caulking or by incorporating a rubber or other yieldable composition gasket where the ends of the seating module connect to the respective ends of the contiguous wall panels. In another embodiment, the pool includes a flexible liner which

covers the walls and bottom of the swimming pool to define a water holding container. The vinyl liner is attached/sealed to the substantially vertical surfaces of the seating module **10** by compressing the vinyl liner into a gasket or caulking material using a faceplate and screws or other mechanical means of compression to create a watertight seal on the substantially vertical surfaces of the seating module **10**. As indicated previously, no specially designed liner is required as would be the case if there were a riser wall extending downwardly to the pool floor from the elongate side of the bench which protrudes into the swimming pool.

[0041] For purposes of illustration only, a typical seating module **10** might have a length along the back wall **12** measured from left to right in FIGS. **2** and **6**, for example, of about 8 feet, a back wall vertical height of about 40 inches, bench seating portion **16** protruding from the back wall **12** about 18-20 inches down from the top of the back wall **12**, a bench depth from its protruding elongate side **15** to the back wall **12** of about 14-16 inches and a bench **14** thickness between its upper and lower surfaces at its protruding elongate side **15** of about 4-6 inches. A typical seating module **10** might also include three hydrotherapeutic jets **22** equally spaced along and mounted in the back wall **12** about 10-12 inches below the top of the back wall **12** and spaced apart by about 24 inches. The bench seating portion **16** and the hydrotherapeutic jets **22** should at all times be below the water line **W** of the pool when the pool is filled with water.

[0042] Referring to FIGS. **9-12**, there is shown a corner stair module **30** which, like the seating module **10** is intended to be substituted for a "standard" wall module at a selected location around the perimeter of the swimming pool. From the particular shape of the corner stair module of FIGS. **9-12**, it is intended for installation at a corner of a pool, preferably at the shallow end, where swimmers are likely to want to enter or leave the pool. As shown, it comprises three steps with the tread of each step including a slip resistant surface, such as a diamond tread pattern. However, it will be appreciated that, depending upon the size and depth of the pool and the desired height of each step, there may be more or fewer steps in any stair module. A purchaser of a swimming pool, therefore, for a relatively minor additional expense, may include in the purchase a corner stair module **30** which is integrated into the pool wall and in which the stairs project, progressively, from top to bottom, from the pool wall into the interior of the pool. Not only does the stair module allow ingress into and egress from the pool, but also each of the steps provides a seating area where one or more persons can, if desired, sit.

[0043] Referring to FIGS. **9-12**, there is shown a corner stair module **30** which, like the seating module **10**, is shown with an arcuate perimeter back wall **32** defining the intersection between side walls **34**, **36**. However, it will be appreciated that the shape of the back wall and the corresponding shape of the stair module may be adapted to fit the shape of the swimming pool by selecting shapes which are appropriate for replacing "standard" modular wall panels at the selected location along the pool perimeter. As shown, corner stair module **30** comprises three steps **38**, **40**, **42** protruding from vertical back wall **32** into the pool, with the tread **38a**, **40a**, **42a** of each step including a slip resistant surface, such as a diamond tread pattern, and each step includes a riser portion **38b**, **40b**, **42b** between it and the next lower step or floor. Desirably tread **42a** of step **42** is positioned below the top **32a** of vertical back wall **32** such that back wall **32** serves as a riser for the step from tread **42a** to the deck surface surrounding the pool.



Tread **42a** of top step **42** includes a curvilinear outer edge defining an approximately quarter circular arc. The treads **40a**, **38a** of the second and lower steps **40**, **38** also include generally curvilinear outer edges which are generally concentric with each other and with the curvilinear outer edge of top step **42**. It will be appreciated that, depending upon the size and depth of the pool and the desired height of each step, there may be any number of steps, not less than two, in any stair module.

[0044] Like the bench seating module **10**, the corner stair module **30** also makes available the benefits of hydrotherapeutic treatment of the kind that is derived from use of turbulent water expelled against the body of a person sitting or standing on the steps by providing jet nozzle recesses **44** along the side walls **34**, **36** of the corner stair module **30** for the installation of hydrotherapy jets **46**. The water expelled from jets **46** positioned in the side walls **34**, **36** of the corner stair module **30** may be warmed from the swimming pool water heater (not shown), which is well known in the art. Pressurized air furnished by an air generating means (not shown), which is also well known in the art, is preferably fed through suitable valve means and mixed with the heated water to produce a therapeutic turbulent water flow at the nozzles of jets **46**. Any desired number of such hydrotherapy jets **46** may be employed. For example, as shown in FIG. **10**, jets are shown projecting through each side wall **34**, **36** of the corner stair module **30** at a height between the treads **38a**, **40a** of the middle and upper steps **38**, **40**. However, it will be appreciated that the number and location of the jets **46** is a matter of design choice and may differ from pool to pool. Of particular note is that corner stair module **30** serves not only to allow persons to enter and leave the pool in a convenient manner, but also it provides a seating area, e.g., at the ends of middle step **40**, where hydrotherapeutic treatment is available via hydrotherapy jets **46**.

[0045] As illustrated in FIGS. **9-12**, the perimeter of the back wall **32** is arcuate and defines a corner between side walls **34**, **36**, which is suitable for installation in the corner of a pool, usually in the shallow end. However, it will be appreciated that the shape of the back wall **32** and the corresponding shape of the modular stair **30** need not define a corner stair but may define any straight or arcuate shape for installation as a replacement for any modular wall of the swimming pool perimeter. Thus, the back wall **32** may be adapted to fit the shape of the swimming pool by selecting shapes which are appropriate for replacing "standard" modular wall panels at selected locations along the pool perimeter other than in a corner. Such stair modules will be referred to herein as internal stair modules **50**. As illustrated in FIGS. **13-16**, the perimeter of the back wall **32** is arcuate, which is suitable for replacing a correspondingly arcuate modular wall panel in virtually any shaped pool. Except for the configurational changes required to accommodate an arcuate back wall instead of a corner back wall, e.g., in the length of arc of the steps of the internal stair module **50** and in the structural wall support system (not shown), the construction of the internal stair module **50** is substantially the same as the corner stair module **30**.

[0046] Suitable valve means and safety shut off controls for governing water flow quantity, turbulence generation, tem-

perature adjustment, and the like, all of which are known in the art, may be incorporated in the seating module and stair modules to control the hot water and turbulence available at the jets. In addition, the manner of attaching the seating and stair modules to contiguous wall panels in the swimming pool perimeter is substantially the same and well known in the art.

[0047] While the present invention has been described in terms of specific embodiments thereof, it will be understood that no limitations are intended thereby to the details of construction or design, other than as defined in the appended claims.

1. A modular stair unit for use in a swimming pool formed from a plurality of contiguous modular wall panels joined end-to-end to define a pool enclosure having a vertical perimeter wall, said pool having a floor and being adapted to be filled with water to a water line along the vertical perimeter wall, said stair unit comprising a module devised to replace one of said modular wall panels and adapted to be joined with said contiguous wall panels, said stair module comprising:

a vertical wall having a top, a bottom and opposite ends, said opposite ends adapted to be joined with contiguous wall panels, said vertical wall being substantially coplanar with the vertical walls of said contiguous wall panels at its joiner with said contiguous wall panels; and

at least two substantially planar steps having horizontal tread and respective risers extending downwardly and protruding from said vertical wall into said pool, the top step being recessed below the top of said vertical wall, at least one of said steps defining a seating area for supporting a person seated thereon, said vertical wall including at least one hydrotherapy water jet above said seating area and below the water line of said swimming pool for providing a flow of water into said seating area.

2. A modular stair unit, as claimed in claim 1, wherein said vertical wall is arcuate.

3. A modular stair unit, as claimed in claim 2, wherein the top step includes a curvilinear outer edge and each successive lower step includes a curvilinear outer edge which is generally concentric with the curvilinear outer edges of the other steps.

4. A modular stair unit, as claimed in claim 1, including three steps.

5. A modular stair unit, as claimed in claim 4, wherein said vertical wall is arcuate, said top step includes a curvilinear outer edge and each successive lower step includes a curvilinear outer edge which is generally concentric with the curvilinear outer edges of the other steps.

6. A modular stair unit, as claimed in claim 2, wherein said arcuate vertical wall defines a corner.

7. A modular stair unit, as claimed in claim 5, wherein said arcuate vertical wall defines a corner.

8. A modular stair unit, as claimed in claim 1, wherein said tread of said steps comprises a slip resistant surface pattern for minimizing slipping thereon.

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