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(54) **LAVATORY SYSTEM**

SANITÄRSYSTEM

SYSTEME DE LAVABOS

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Description

BACKGROUND

[0001] The present invention relates to a lavatory system. More particularly, the present invention relates to a lavatory system with a multiple tier deck.

[0002] It is known to install a lavatory system in a public, commercial or industrial, residential or non-residential environment such as a restroom. Such known lavatory systems typically include one or more stations that provide lavatory services to one or more users. Such known lavatory systems also typically include a countertop, a backsplash, one or more wash basins (with drains), accommodating one or more faucets, and are adopted for plumbing to be coupled to the faucets (and drains). In such known decks, the countertop is typically mounted to comply with Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities and Uniform Accessibility Standards for Lavatories.

[0003] However, such known lavatory systems typically require multiple custom designed and manufactured components, such as multiple cover designs for placement at the various stations. However, such known cover designs may not be conveniently or efficiently manufactured, stored, transported, inspected, and the like. Also, each of these covers requires its own tooling (e.g., molding, etc.).

DE 93 04 160 U discloses a wash block including multiple wash basins in a wash table and including a holder to support the wash table and receive the fitting elements of the wash basins. Inlet and outlet plumbing elements are received and directed through the holder and a mirror unit is fixed on the wash table providing a mirror in association with each wash basin.

[0004] Accordingly, it would be advantageous to provide for a lavatory system having a cover that provides convenient and efficient fabrication, assembly, installation, and maintenance of the lavatory system. It would also be advantageous to provide may be used at more than one washing station. It would further be advantageous to provide for a deck that is more conveniently usable/accessible to persons regardless of physical abilities of potential users. It would further be advantageous to provide a deck that provides access at multiple levels. It would be desirable to provide for a lavatory system having one or more of these or other advantageous features.

SUMMARY

[0005] The present invention relates to a lavatory system configured to provide hand washing access to a user comprising a deck providing a first station and a second station, plumbing in communication with the first station and the second station, and a first cover and a second cover configured to inhibit access to at least a portion of the plumbing. The first cover and the second cover each

having a first portion and a second portion that are removable. The first cover is mountable at the first station and the second cover is mountable at the second station. The first portion is removed on the first cover to provide a first recess and the second portion is removed on the second cover to provide a second recess so that the first recess and the second recess are configured to receive a portion of the plumbing.

[0006] The present invention also relates to an enclosure system for a lavatory system having plumbing and a deck. The system comprises a first cover configured to inhibit access to at least a portion of the plumbing and having a first portion and a second portion that are selectively removable, and a second cover configured to inhibit access to at least a portion of the plumbing and having a first portion and a second portion that are selectively removable. The first portion of the first cover is removed to provide a first recess to receive a portion of the plumbing and the second portion of the second cover is removed to provide a second recess to receive a portion of the plumbing.

[0007] The present invention further relates to a method of assembling a lavatory system comprising providing a deck, plumbing, a first cover, and a second cover, the first cover and the second cover being configured to inhibit access to at least a portion of the plumbing and each cover having a first portion and a second portion that are electively removable, removing the first portion from the first cover to provide a first recess and mounting the first cover at the first station so that the first recess receives at least a portion of the plumbing, and removing the second portion from the second panel to provide a second recess and mounting the second cover at the second station so that the second recess receives at least a portion of the plumbing.

[0008] The present invention further relates to various features and combinations of features shown and described in the disclosed embodiments.

DESCRIPTION OF THE FIGURES

[0009] FIGURE 1 is a perspective view of a lavatory system according to a preferred embodiment.

[0010] FIGURE 2 is an exploded perspective view of the lavatory system of FIGURE 1 with an accessory mounting structure.

[0011] FIGURE 3 is a front elevation view of the lavatory system of FIGURE 1.

[0012] FIGURE 4 is a sectional view of the lavatory system of FIGURE 1.

[0013] FIGURE 5 is a perspective view of a lavatory system according to an exemplary embodiment.

[0014] FIGURE 6 is a perspective view of a lavatory system according to an exemplary embodiment.

[0015] FIGURE 7 is a perspective view of a lavatory system according to an exemplary embodiment.

[0016] FIGURE 8 is a perspective view of a lavatory system according to an exemplary embodiment.

[0017] FIGURE 9 is a front elevation view of the lavatory system of FIGURE 8.

[0018] FIGURE 10 is a perspective view of a lavatory system according to an exemplary embodiment.

[0019] FIGURE 11 is a rear perspective view of the lavatory system of FIGURE 10.

[0020] FIGURE 12 is a rear exploded perspective view of the lavatory system of FIGURE 10.

[0021] FIGURE 13 is a rear exploded perspective view of a lavatory system according to an alternative embodiment.

[0022] FIGURE 14 is a rear perspective view of a lavatory system according to an alternative embodiment.

[0023] FIGURE 15 is a rear perspective view of a cover for the lavatory systems shown in FIGURES 10, 13, and 14.

[0024] FIGURE 16 is a rear perspective view of the cover of FIGURE 15 with a portion removed.

[0025] FIGURE 17 is a rear perspective view of the cover of FIGURE 15 with two portions removed.

[0026] FIGURE 18 is a fragmentary section view of the cover of FIGURE 15 taken along line 18-18.

[0027] FIGURE 19 is a section view of the lavatory system of FIGURE 10 taken along line 19-19.

[0028] FIGURE 20 is a section view of the lavatory system of FIGURE 10 taken along line 20-20.

DETAILED DESCRIPTION OF PREFERRED AND OTHER EXEMPLARY EMBODIMENTS

[0029] FIGURES 1-5 show a multilevel lavatory system 10 according to a preferred embodiment. Lavatory system 10 is configured to accommodate persons having varying abilities or characteristics for using a lavatory system (e.g., disabled, tall, short, etc.). In addition to the ease of manufacturing and installation, lavatory system 10 incorporates a unitary lavatory subassembly that has a minimum number of components, and provides an independent hand-washing station for users having varying physical attributes or abilities to attend to their washing needs. Also, this provides each user with an adequate sense of privacy while washing at a spaced distance from the next person using the lavatory system.

[0030] Lavatory system 10 includes a deck 12, a mounting arrangement configured to attach lavatory system 10 to an adjacent wall 16, a drain system 18 (shown in FIGURE 2) disposed below deck 12, and a cover 20 configured to enclose plumbing system 18. Lavatory system 10 may be configured for attachment to a surface (such as wall 16 of a restroom or other area where it may be desirable to provide a lavatory services) with a plurality of connection points. Alternatively, the lavatory system may be configured as a free-standing structure. Adjacent wall 16 may be provided with the plumbing source (including both (or either) a hot and cold water supply, preferably combined with a thermostatic mixing valve, or a tempered water supply, a drain, etc.) and an optional source such as an electrical outlet (preferably providing

110 volts GFCI).

[0031] According to an exemplary embodiment, deck 12 includes an arcuate countertop 22 with a backsplash 24 extending upwardly from countertop 22, and a front apron 26 extending downwardly from countertop 22.

[0032] Countertop 22 may be configured in any of a variety of constructions intended to promote the drainage of spilled or splashed water to drain from countertop 22. Countertop 22 includes an upper surface 30 of a lower station 32 having a concave surface and an upper surface 34 of an upper station 36 having a convex surface. According to a preferred embodiment, countertop 22 includes a curved surface configured to prevent water from collecting (or "ponding"), to allow excess, splashed (or spilled fluids) to drain toward a bowl 28, and to facilitate cleanup. According to an exemplary embodiment, the curved surface has a radius of between about 50 inches and 65 inches. According to a preferred embodiment, the curved surface has a radius of between about 55 inches and 60 inches. According to a particularly preferred embodiment, the curved surface has a radius of about 57 inches. According to an alternative embodiment, the curved surface may have any of a variety of radii. According to an alternative embodiment, the deck has a sloped surface, a pitched surface. According to an alternative embodiment, the deck comprises two or more surfaces in a generally horizontal plane that are offset vertically and horizontally.

[0033] Lower station 32 and upper station 36 are configured to provide lavatory service and to accommodate persons having varying abilities for using the lavatory system (e.g., disabled, tall, short, etc.). According to any preferred embodiment, one or more stations of lavatory system 10 are mounted at a standard height that is designed to comply with the Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities and Uniform Accessibility Standards for Lavatories. According to a particularly preferred embodiment, the height of the upper surface of the deck is approximately 34 inches (865 millimeters), provides a lower clearance (i.e., from the floor to the bottom of the apron) of at least 29 inches (735 millimeters) or less above the floor, and is equipped with a set of ADA compliant faucet assemblies. According to any preferred embodiment, lavatory system 10 is mounted with a counter surface no higher than thirty-one inches.

[0034] According to an exemplary embodiment, lower and upper stations 32, 36, are offset from each other to accommodate persons having varying abilities for using the lavatory system (e.g., disabled, tall, short, etc.). The offset station design is intended to provide the individual users of the lavatory system personal hand-washing space. According to a preferred embodiment, lower station 32 is offset vertically and laterally from upper station 36. Lower station 32 is mounted at a height that intended to comply with American National Standards Institute (ANSI) and ADA accessibility standards. According to a preferred embodiment, arcuate profile of the adjacent up-

per surfaces 30, 34 provide a corresponding transition between concave and convex.

[0035] Lower and upper stations 32, 36 each includes a basin or receptacle (shown as bowl 28) and a faucet assembly 38. Lower and upper stations 32, 36 may also include a dispenser attached to countertop 22 adjacent bowl 28 and an overflow conduit. According to an exemplary embodiment shown in FIGURE 4, bowl 28 is attached to a bottom surface of countertop 22, and has an upper periphery that is sized to be larger (or approximately the same) than the aperture in countertop (e.g., so that the bowl reveal seam is hidden). The adhesive used for attaching any separate component of the deck (e.g., the bowl to the countertop) may be the MA 600 Adhesive commercially available from LTW Plexus of Danvers, Maryland. Bowl 28 may be attached by any number of a variety of methods of attachment including an adhesive, a fastener with a gasket, or the like), or separate component may be a drop-in component configured to be attached to upper surface 30, 34 of countertop 22 by any number of a variety of methods of attachment (including fasteners, adhesive, friction, or the like). According to an alternative embodiment, bowl 28 may be any number of a variety of shapes and configurations. According to an exemplary embodiments, two or more differently configured (e.g., size, shape, etc.) are provided. According to an alternative embodiment the bowl is an integrally formed component of deck 12. According to another exemplary embodiment, the bowls are formed (e.g., molded or cast) with the deck. According to an exemplary embodiment, the drainage for bowls 28 is provided by a plurality of linear holes 46 in the bottom of each bowl 28.

[0036] Front apron 26 is designed to provide a contoured frontal surface to conceal certain components of lavatory system 10 and may have any number of a variety of contours or shapes. According to a preferred embodiment, front apron 26 extends downward from countertop 22 and conceals a portion of cover 20 that attaches to a bottom surface 42 of countertop 22. According to an exemplary embodiment, an apron 43 is contoured (e.g., curved or arcuate). (For example, apron 43 extends down from countertop 22 by a consistent value or dimension.) According to alternative embodiments, the apron may have any of a variety of configurations.

[0037] Backsplash 24 is designed to protect the wall adjacent to countertop 22 (e.g., from water splashed from the lower and upper stations 32, 36 or other physical damage). The lower edge of apron 26 and the upper edge of the backsplash 24 have horizontal edges such that the arcuate or curved surface is provided by the countertops.

[0038] According to a preferred embodiment, countertop 22 includes a liquid barrier 44 (shown as a ridge or rib) is located between each of stations 32, 36 and is configured to prevent liquids from the upper station 36 from draining towards lower station 32. Barrier 44 projects (or steps up) from upper surfaces 30, 34 of countertop 22. According to an alternative embodiment, the liquid barrier can be a projection, slot, channel, or the like.

[0039] Deck 12 may be made from any of a variety of solid surface materials, stainless steel, laminates, fiberglass, and the like. According to a particular preferred embodiment, the deck is made from a densified solid surface material composed of an acrylic modified polyester resin that complies with ANSI Z124.3 and Z124.6. According to a particularly preferred embodiment, the surface material is of a type commercially available under the trade name TERREON® from Bradley Corporation of Menomonee Falls, Wisconsin. The deck is intended to be resistant to chemicals, stains, burns, and impact such that surface damage can easily be repaired with everyday cleaners or fine grit abrasives. According to a preferred embodiment, deck 12 is molded from a mixture of resin, filler, pigment, and catalyst, which forms a liquid when combined. The liquid mixture is poured or cast into a gel-coated fiberglass mold at a filler hole (i.e., "mold hole"). According to an alternative embodiment, filler holes are located midway between the basins.

[0040] A method of forming the deck according to a particularly preferred embodiment is as follows: (a) the mold is coated with a gel; (b) the resin, filler, pigment, and catalyst are each measured and are mixed; (c) the liquid mixture is cast or injected into a filler hole of the gel-coated fiberglass mold and allowed to cure until it can be removed from the mold; (d) the deck is removed from the mold and post-cured (e.g., heated to further relieve internal stresses); (e) the flash is removed from the deck; (f) the surface is prepared by polishing, sanding, or other finishing processes; (g) any additional operations (e.g., machining, drilling holes and adding inserts, or the like) are done prior to shipping and/or assembling the lavatory system. According to alternative embodiments, the mold is prepared according to the desired deck configuration with inserts and blocks.

[0041] According to exemplary embodiments, the deck may be integrally molded to include certain combinations of its components, such as the countertop, back splashguard and the front apron. According to alternative embodiments, the deck can be integrally molded to include additional or other combinations of components, such as one or both of the side aprons, the backsplash and/or or other of the side splashguards. According to other alternative embodiments, the deck can be integrally formed (e.g. integrally molded or cast) into any of a variety of shapes and sizes, having any of a variety of dimensions and geometries (e.g., curved or other forms) that may or may not require or include certain of the components.

[0042] Cover 20 is configured to enclose drain system 18 and any electrical supply/components, and conceal components below countertops and all supply and waste connections. Cover is attached to countertop 22 and/or adjacent wall 16 by fasteners (shown as screws). According to a preferred embodiment, cover 20 is designed to comply with all ADA Accessibility Guidelines for Buildings and Facilities, and Uniform Accessibility Standards for Lavatories. Cover 20 has an upper lip configured to rest against bottom surface 42 of countertop 22 and pro-

vide a plurality of apertures for fasteners configured to secure cover 20 to countertop 22. According to an exemplary embodiment, the cover is a hair cell textured acrylonitrile butadiene styrene (ABS) plastic with dull finish. As shown in FIGURES 2 and 3, an individual cover 20 is mounted at each lower and upper station 32, 36. According to an alternative embodiment, a single cover spans substantially the width of the deck to cover the plumbing system of more than one station.

[0043] Faucet assembly 38 includes an activation mechanism (not shown), a sensor (shown as an infrared sensor 48) and conduit (not shown). Activation mechanism is configured to permit and prohibit water flow according to an input signal. Infrared sensor 48 include a sender and a receiver, and is configured to send an output signal when the users place their hands near bowl 28 or under the faucet. According to alternative embodiments, the faucet assembly may be activated by any number of a variety commercially available sensors (including mechanical metering, infrared activation, battery operated infrared, battery operated infrared with temperature control infrared activation). According to a preferred embodiment, the detection area for infrared sensor 48 does not exceed the perimeter of bowl 28. According to an alternative embodiment, the sensor may be a separate fixture mounted to the countertop. According to any preferred embodiment, the faucet assembly may be any of a variety of conventional or commercial available faucet assembly.

[0044] According to a particularly preferred embodiment, faucet assembly is a "no-touch" faucet in the form of a Bradley Futura Model 900 adaptive sensor module commercially available from Bradley Fixtures Corporation of Menomonee Falls, Wisconsin. Infrared sensor 48 electronically activates a 24 volt solenoid valve using a 24 volt AC, 50/60 Hz power supply; faucet assembly 38 includes chrome-plated, solid cast brass body with a center-shank-mounting. According to an alternative embodiment, the faucet assembly may be any number of a variety of commercially available water delivery fixtures including those having manually operated activation mechanisms.

[0045] According to alternative embodiments, shown in FIGURES 5-9 the configuration (e.g., dimensions, number of stations, etc.) of the lavatory system may be varied and may provide one or more number of hand-washing stations having any variety of spacing configurations.

[0046] FIGURES 6 and 7 show a lavatory system 50 according to an alternative embodiment. Lavatory system 50 includes three stations (shown as an upper station 52, an upper station 54, and a lower station 56). Upper stations 52, 54 include an upper surface 58 that is offset (i.e., vertically and laterally) from an upper surface 60 of lower station 56. As such, lower station 56 is configured to comply with ANSI and ADA accessibility standards. Upper stations 52, 54 of lavatory system 50 are configured to provide comfortable and convenient accessibility

to persons having other physical abilities. According to an alternative embodiment, the lavatory system includes two stations with upper surfaces that are vertically offset lower than the upper surface of the third station. According to an alternative embodiment, the lavatory system includes stations that have three (or more) different upper surface heights. According to an alternative embodiment, the lavatory system includes two adjacent stations with upper surfaces that are vertically offset higher than the upper surface of the third station. According to an alternative embodiment, the lavatory system includes two adjacent stations with upper surfaces that are vertically offset lower than the upper surface of the third station. These two adjacent stations having comparable heights may be located at either end or side of the lavatory system (e.g., left or right). According to alternative embodiments, the lavatory systems may have any of a variety of combinations of "higher" or "lower" stations arranged in any of a variety of order or configuration. According to further alternative embodiments, the lavatory may have any number of stations arranged at two or more heights.

[0047] Referring to FIGURE 6, a base 62 (e.g., pedestal, box, etc.) is provided at each upper and lower station 52, 54, 56. Base 62 includes a faucet assembly 84 and a dispenser shown as soap dispenser 66. Base 62 also includes an upper surface 68 configured to provide space for storing items while the user uses lavatory station. According to a preferred embodiment, upper surface 68 includes one or more projections 70 configured to provide a dry surface to support personal items such as purses, briefcases, documents, or the like. Projections 70 are disposed on a portion of the upper surface 68 of base 62 and is formed by ribs or spherical projections (shown as spherical projections in FIGURE 6) extending upward from upper surface 68 of base 62 or by grooves, slots, or channels recessed from upper surface 68. According to an alternative embodiment, the raised surface is a single flat surface sized and designed to have the dimensions of articles typically requiring stowing during hand-washing (e.g., purses, wallets, briefcases, files, etc.) According to a particularly preferred embodiment, the raised surface is raised approximately 6.4 to 12.7 millimetres (0.25 to 0.50 inch) above the upper surface of the countertop.

[0048] FIGURES 8 and 9 show a lavatory system 72 according to an alternative embodiment. Lavatory system 72 includes an upper station 74 and a lower station 76. Upper station 74 has an arcuate countertop 78 with an upper surface 80 that is vertically and laterally offset from an upper surface 82 of an arcuate countertop 84 of (adjacent) lower station 76. Upper station 74 and lower station 76 are separate structures (i.e., non-integral or non-unitary) that are configured to be visually integral (i.e., provide the appearance of a continuous design). The arcuate profile of the adjacent countertops 78, 84 provide a corresponding transition between concave and convex.

[0049] Referring to FIGURES 2 and 7, the lavatory sys-

tem may include a mounting structure 86 configured to provide support for any of a variety of accessories, (e.g., a shelf 88 a bud vase 90, mirror, monitor, light fixture, or the like). Mounting structure 86 includes an arcuate base member 94 (e.g., rail, bar, tube, etc.) mounted to wall 16. (Alternatively, the base member may be mounted to the deck or other structure.) Each shelf 88 includes a pair of brackets 96 having a shelf support member 98 and a base member interface 100 (shown as a downward facing channel). Shelves 88 may be fastened to brackets 96 by fasteners or the like. Each vase 90 includes a bracket 102 having vase support member 104 and a base member interface 106. According to alternative embodiments, the base member, support members, or the base member interfaces may have any of a variety of shapes or configurations.

ADDITIONAL EXEMPLARY EMBODIMENTS

[0050] FIGURES 10-20 show lavatory systems according to an exemplary embodiment. The lavatory systems are configured to accommodate (e.g., to provide hand washing access to) persons having varying abilities or physical attributes or characteristics (e.g., adult, juvenile, children, persons with disabilities, tall, short, etc.) and/or be in compliance with accessibility guidelines. The lavatory systems are also configured to provide for improved manufacturing, inventory control, assembly, installation and maintenance by incorporating common or universal components (at least in the manufacturing stage) that are configurable or reconfigurable for a variety of lavatory system designs and/or configurations (e.g., one-station, two-station, three-station, etc.). The multi-station lavatory systems (i.e., two or more stations) are configured to provide hand washing access to multiple users at the same time. The lavatory systems are further configured to use space more efficiently (e.g., fit and design of deck, sink, cover, and/or walls) to provide improved access to and useability of the lavatory system for users having varying physical attributes or abilities to attend to their washing needs.

[0051] According to an exemplary embodiment shown in FIGURES 10-12, lavatory system 110 includes a deck 112 and covers 114, 116, 118. The covers shown in FIGURES 10-17 are adaptable (configurable, reconfigurable, or the like) to accommodate a variety of mounting conditions (arrangements, positions, etc.) so that it can be mounted at a variety of positions below a deck. Referring to FIGURES 10, 19, and 20, the covers are designed to limit access (e.g., physical and visual) to plumbing 120 beneath the deck 112.

[0052] According to a preferred embodiment, lavatory system 110 provides for a connection to a common fluid supply line 122 (e.g., cold water supply and/or hot water supply) and a common drainage line 124 so that installation to lavatory system 110 is simple and efficient. Referring to FIGURES 11 and 12, plumbing 120 for lavatory system 110 includes a drainage network 126, which ex-

tends beneath deck 112 and is connected to single drainage line 124 disposed in wall 128. Drainage network 126 is coupled to each drain 130 by a drain conduit 132. The drain conduits 132 are coupled to a junction 134 where waste water from each drain 130 is combined. Single drain pipe or line 124 includes a P-trap 138 is coupled to junction 134 at a coupling to conduct the waste water out of lavatory system 110. According to an alternative embodiment, each drain could be connected to a separate drainage line at separate connection points. A faucet assembly 156 (in communication with a faucet operations device 157) and a soap dispenser 136 are mounted to deck 112. According to an exemplary embodiment, faucet assembly 156 includes a battery operated infrared faucet. According to a particularly preferred embodiment, faucet assembly 156 is a model no. S53-302 faucet commercially available from Bradley Fixtures Corporation of Menomonee Falls. According to an alternative embodiment, any of a variety of faucets may be used. The faucet assembly may also include a thermostatic mixing valve, a transformer (to convert battery operated faucets, hot water heaters, etc.).

[0053] According to an exemplary embodiment, plumbing (e.g., waste line drainage conduit 132, supply line 122, electrical wiring and connections, etc.) that would be exposed between the covers is covered by a transition cover 140 to limit access (e.g., physical and visual) to the plumbing (e.g., drain conduits 132, supply lines, electrical wiring and connection, etc.). As such, the cover and the transition cover are configured to enclose the plumbing and/or electrical wiring (e.g., for visual effect, for compliance with ADA and/or ANSI rules, etc.).

[0054] Each cover includes a recess or space on one or both of its sides to receive at least a portion of transition cover 140 and/or drain conduit 132. For example, first cover 114 has a single recess 142 on its left side, a second cover 116 has a recess 144 on its right side, and a third cover 118 has recesses 142, 144 are on both of its sides.

[0055] According to a preferred embodiment, the covers are made without any recesses. Instead, each cover has portions 146, 148 (e.g., "knock-outs" or removable panels, wall portions, or the like) that are removed during installation (mounting, attaching, connecting, etc.) of the covers to lavatory system 110. As such, a single cover (usable in any of the positions beneath the deck) is molded from a single mold (tool) for all of the possible mounting positions beneath the lavatory system. Depending on the position of the particular cover on lavatory system 110 (e.g., under left station, right station, middle station (if present)), one or both of removable portions 146, 148 are removed.

[0056] According to an exemplary embodiment, removable portions 146, 148 may be provided (defined, outlined, etc.) by a wall or panel portion having a reduced wall thickness relative to the wall thickness of the cover. According to a preferred embodiment, removable portions are defined or outlined by a channel or groove 150

along an inside surface 152 of the cover. According to a particularly preferred embodiment, portions 146, 148 are removed by a tool (e.g., cutting tool, thermal tool, rotary tool, knife, saw, etc.) applied along groove 150. According to an alternative embodiment, the removable portions are defined by ribs, grooves on outside wall, markings, indicia, scoring or score line, or the like that allow for easy identification of the removable portion and preferably for easy detachment of the knock-out portion. According to an alternative embodiment, the removable portions are defined by a series of slots, grooves, holes, or the like (e.g., perforations) that allow for easy identification of the removable portion and preferably for easy detachment of the knock-out portion.

[0057] According to a preferred embodiment, each cover includes a recess 153, which may include indicia (e.g., symbol, brand name, logo, etc.) in any of a variety of forms (e.g., label, ink, molded in, etc.). According to an exemplary embodiment, the covers comprise a plastic material manufactured from any of a variety of molding, forming, casting, or forming operations (e.g., injection molding, rotational molding, thermoforming, vacuum forming, pressure forming, or the like). According to exemplary embodiments, material for the cover may be any of a variety of plastics (e.g., thermoplastics, thermosets, acrylic, polyethylene, polypropylene, high-impact polystyrene, acrylonitrile butadiene styrene, or the like) or other materials (e.g., metal, laminates, etc.).

[0058] To install lavatory system 110, deck 112 is mounted to support brackets 154 attached to wall 128. Plumbing 120 is connected to faucet assemblies 156 and basins 158. Transition cover or covers 140 are mounted to wall 128 and over a portion of waste-line drainage conduit 132 with a single fastener 160 through a center vertical slot 162. Each cover which (at least partially) covers the transitional cover and the plumbing, is prepared or fabricated. The covers may be prepared on site of the installation or at the manufacturer, distributor, installer, or any location where staging or fabrication or assembly may occur. A first cover 114 (e.g., the right cover when viewing lavatory system 110) has the left removable portion 146 removed (e.g., cut, ripped, separated, scored, etc.) to expose or create recess 142. A second cover 116 (i.e., the left cover when viewing from the front) has the right removable portion 148 removed to expose or create recess 144. A third cover 118 (the middle cover when viewing from the front if a three station lavatory system) has both removable portions 146, 148 removed to expose or create recesses 142, 144. The covers are mounted to wall 128 using fasteners 164 that are inserted through apertures or slots 166 on mounting portions 168 on the covers (shown as a recess 170 and a flange 172) and through apertures or slots 174 on mounting portion 176 of transition cover 140.

[0059] Referring to FIGURES 10 and 12, lavatory system 110 is shown to include deck 112 having basin 158 (e.g., bowl, sink, receptacle, etc.) mounted to a counter-top 178. FIGURE 19 shows a section view of cover 114

mounted at an upper station 36. FIGURE 20 shows a section view of a cover 118 mounted at a lower station 32. To accommodate ADA clearance dimensions, cover 118 is configured and mounted to reduce or (preferably) minimize spacing between cover 118 and deck 112, basin 158, plumbing 120, and other portions of lavatory system 110. For example, as shown in FIGURE 20, a top edge 180 of cover 118 is adjacent (e.g., near or even in contact with) a lower surface 182 of deck 112.

[0060] According to an exemplary embodiment, one or more stations are intended to provide an ergonomically correct position for a variety of potential users (e.g., one or more adults, children, persons with disabilities, and combinations thereof). According to a preferred embodiment, basin 158 is configured (shaped, formed, molded, contoured, etc.) to interface with cover 118 to position basin 158 closer to the user and comply with Americans with Disabilities Act ("ADA") Accessibility Guidelines for Buildings and Facilities and Uniform Accessibility Standards for Lavatories which are herein incorporated by reference) and American National Standards Institute (ANSI) Z124.3 and Z124.6 (which are herein incorporated by reference) so that the user is not required to reach as far to operate the faucet, place hands under running water (or in sink area), or the like, and still provide a conventionally sized sink area. The configuration of basin 158 is also intended to minimize the space occupied by lavatory system 110 in the room or space that it resides (e.g., washroom, restroom, bathroom, hallway, shop floor, and other industrial, commercial, and/or private spaces).

[0061] According to an exemplary embodiment, the lavatory systems are configured to comply with ADA guidelines (adult and juvenile) and/or other accessibility guidelines. As shown in FIGURE 20, a block 192 is shown to illustrate accessibility clearances in compliance with ADA guidelines. Block 192 includes a deck counter surface height H1, a deck clearance height H2 from the floor to the apron, a knee clearance height H3 from the floor to the underneath of the lavatory (i.e., the cover shown in the FIGURES), a toe clearance height H4, a clear floor space, a total clearance depth D1, and a knee clearance depth D2.

[0062] Under current ADA adult guidelines, a lavatory is to be provided with H1 being no higher than 34 inches (865 millimeters), H2 being a minimum of 29 inches (735 millimeters), H3 being a minimum of 27 inches (685 millimeters), H4 being a minimum of 8 inches (205 millimeters), D1 being a minimum of 17 inches (430 millimeters), D2 being a minimum of 8 inches (205 millimeters), and if a minimum of 9 inches (230 millimeters) of toe clearance is provided, a maximum of 6 inches (150 millimeters) of the 48 inches (1220 millimeters) of clear floor space required at the fixture may extend into the toe space. Under ADA children or juvenile guidelines, a lavatory is to be provided with an apron clearance and a knee clearance (H2) of 24 inches (610 millimeters) minimum and a rim or counter surface height (H1) of 31 inches

es (760 millimeters) maximum. According to a particularly preferred embodiment, the ADA adult compliant station has a deck 178 between 813 millimetres (32 inches) and 864 millimetres (34 inches) above the floor and 559 millimetres (22 inches) from the wall, an apron 762 millimetres (30 inches) above the floor, a cover 311 millimetres (12.25 inches) above the floor. According to a particularly preferred embodiment, the ADA juvenile compliant station has a deck 178 that is 787 millimetres (31 inches) above the floor and 559 millimetres (22 inches) from the wall, an apron 686 millimetres (27 inches) above the floor, a cover 235 millimetres (9.25 inches) above the floor.

[0063] As shown in FIGURES 19 and 20, one or more stations of the lavatory system is mounted at a height that is designed to comply with the accessibility guidelines. According to an exemplary embodiment, the cover and basin are configured (e.g., shaped, orientated, etc.) to provide space beneath the deck for block 192 in compliance with accessibility guidelines. Referring to FIGURE 20, basin 158 includes a front wall 184, a rear wall 186, a pair of sidewalls 188, and an overflow opening 189. As illustrated with clearance block 192, the user is able to be positioned closer to the sink area as cover 118 is not disposed as far from wall 128 if front wall 184 was not contoured. According to an exemplary embodiment, cover 118 includes a concave portion 190 (e.g., an indentation or the like). According to a preferred embodiment, front wall 184 of basin 158 is configured (e.g., shaped, designed, orientated, etc.) to conform with the cover. According to an exemplary embodiment, front wall 184 is contoured to provide space beneath deck 112 so that the user (e.g., if seated in a wheelchair) would not have to reach as far to place hands over basin 158. According to a preferred embodiment, the contour of front wall 184 projects into the area defined by basin 158. According to a particularly preferred embodiment, front wall 184 is at least partially "convex" so that front wall 184 project or curves into the sink area. As such, the lavatory system is configured to use space more efficiently (e.g., fit and design of deck, sink, cover, and/or walls), and provide improved access to and useability of the lavatory system for users having varying physical attributes or abilities to attend to their washing needs.

[0064] FIGURES 10-12 show a lavatory system with three stations (shown as an upper station, an upper station, and a lower station). The upper stations include an upper surface that is offset (i.e., vertically and laterally) from an upper surface of the lower station. As such, the lower station is configured to comply with ANSI, ADA, and/or other accessibility standards. The upper stations of the lavatory system are configured to provide comfortable and convenient accessibility to persons having other physical abilities. According to an alternative embodiment, the lavatory system includes two stations with upper surfaces that are vertically offset lower than the upper surface of the third station. According to an alternative embodiment, the lavatory system includes stations that have three (or more) different upper surface heights (e.g.,

to accommodate three potential users having three different physical abilities, such as standard, ADA adult, and ADA juvenile). According to an alternative embodiment, the lavatory system includes two adjacent stations with upper surfaces that are vertically offset lower than the upper surface of the third station (e.g., at the same or different heights). These two adjacent stations may be located at either end or side of the lavatory system (e.g., left or right). According to alternative embodiments, the lavatory system may have any of a variety of combinations of "higher" or "lower" stations arranged in any of a variety of order or configuration. According to further alternative embodiments, the lavatory may have any number of stations arranged at two or more heights.

[0065] According to a particularly preferred embodiment shown in FIGURES 19 and 20, the deck (including the apron and backsplash) and basin are molded or cast as an integral or one-piece component using solid surface material. According to an alternative embodiment, the deck can be cast or molded as two or more components that are assembled.

[0066] It is also important to note that the construction and arrangement of the elements of the lavatory system as shown in the preferred and other exemplary embodiments are illustrative only. Although only a few embodiments of the present invention have been described in detail in this disclosure, those skilled in the art who review this disclosure will readily appreciate that many modifications are possible (e.g., variations in sizes, dimensions, structures, shapes and proportions of the various elements, values of parameters, mounting arrangements, materials, colors, orientations, etc.) without materially departing from the novel teachings and advantages of the subject matter recited in the claims. For example, the lavatory system may have any number of stations located at any number of heights. Also, the deck may have any of a variety of configurations, materials, and stations. Accordingly, all such modifications are intended to be included within the scope of the present invention as defined in the appended claims.

Claims

1. A lavatory system configured to provide hand washing access to a user comprising:

a deck (112) providing a first station and a second station;
plumbing (120) in communication with the first station and the second station;
a first cover (114) and a second cover (116) configured to inhibit access to at least a portion of the plumbing (120), the first cover (114) and the second cover (116) each having a first portion (146) and a second portion (148) that are removable;

- wherein the first cover (114) is mountable at the first station and the second cover (116) is mountable at the second station;
 wherein the first portion (146) is removed on the first cover to provide a first recess (142) and the second portion (148) is removed on the second cover (118) to provide a second recess (144) so that the first recess (142) and the second recess (144) are configured to receive a portion of the plumbing (120).
2. The system of Claim 1 wherein the first portion (148) is defined by a first groove (150) and the second portion (148) is defined by a second groove (150).
3. The system of Claim 2 wherein the first groove (150) and the second groove (150) are disposed on an inside surface (152) of the first cover (114) and the second cover (116).
4. The system of Claim 1 further comprising a third station and a third cover (118) mountable at the third station and including the first portion (146) and a second portion (148) that are selectively removable to provide the first recess (142) and the second recess (144) to receive at least a portion of the plumbing (120).
5. The system of Claim 1 wherein the first cover (114) is substantially identical to the second cover (116) before the first portion (146) or the second portion (148) is removed.
6. The system of Claim 1 further comprising a third cover (118) configured to inhibit access to the plumbing (120) extending between the first recess (142) of the first cover (114) and the second recess (144) of the second cover (116).
7. A method of assembling a lavatory system, the method comprising:
- providing a deck (112), plumbing (120), a first cover (114), and a second cover (116), the first cover (114) and the second cover (116) being configured to inhibit access to at least a portion of the plumbing (120) and each cover having a first portion (146) and a second portion (148) that are selectively removable;
 removing the first portion (146) from the first cover (114) to provide a first recess (142) and mounting the first cover (114) at the first station so that the first recess (142) receives at least a portion of the plumbing (120);
 removing the second portion (148) from the second cover (116) to provide a second recess (144) and mounting the second cover (116) at the second station so that the second recess (144) receives at least a portion of the plumbing

(120).

8. The method of Claim 7 wherein the first portion (146) and the second portion (148) are removed with a cutting tool.
9. The method of Claim 7 further comprising providing a third cover (118) configured to be disposed between the first cover (114) and the second cover (116) and to inhibit access to plumbing (120) extending between the first recess (142) of the first cover (114) and the second recess (144) of the second cover (116).
10. The method of Claim 7 further comprising mounting the third cover (118) and then mounting the first cover (114) and the second cover (116).

Patentansprüche

1. System für einen Waschraum, das derart ausgebildet ist, dass es einem Benutzer Zugang zum Händewaschen bietet, umfassend:

ein Deck (112), das eine erste Station und eine zweite Station bereitstellt;

Installationsmittel (120), die mit der ersten Station und der zweiten Station in Verbindung stehen;

eine erste Abdeckung (114) und eine zweite Abdeckung (116), die derart ausgebildet sind, dass sie den Zugang zu zumindest einem Teil der Installationsmittel (120) verhindern, wobei die erste Abdeckung (114) und die zweite Abdeckung (116) jeweils einen ersten Abschnitt (146) und einen zweiten Abschnitt (148) aufweisen, die entferntbar sind;

wobei die erste Abdeckung (114) an der ersten Station anbringbar ist, und die zweite Abdeckung (116) an der zweiten Station anbringbar ist;

wobei der erste Abschnitt (146) an der ersten Abdeckung entfernt wird, um eine erste Aussparung (142) zu schaffen, und der zweite Abschnitt (148) an der zweiten Abdeckung (118) entfernt wird, um eine zweite Aussparung (144) zu schaffen, so dass die erste Aussparung (142) und die zweite Aussparung (144) derart ausgebildet sind, dass sie einen Teil der Installationsmittel (120) aufnehmen.

2. System nach Anspruch 1, wobei der erste Abschnitt (148) durch eine erste Auskehlung (150) definiert ist, und der zweite Abschnitt (148) durch eine zweite Auskehlung (150) definiert ist.
3. System nach Anspruch 2, wobei die erste Auskehlung (150) und die zweite Auskehlung (150) an einer

Innenfläche (152) der ersten Abdeckung (114) und zweiten Abdeckung (116) angeordnet sind.

4. System nach Anspruch 1, ferner umfassend eine dritte Station und eine dritte Abdeckung (118), die an der dritten Station anbringbar ist und den ersten Abschnitt (146) und einen zweiten Abschnitt (148) enthält, welche selektiv entfernbar sind, um die erste Aussparung (142) und die zweite Aussparung (144) bereitzustellen, um zumindest einen Teil der Installationsmittel (120) aufzunehmen.
5. System nach Anspruch 1, wobei die erste Abdeckung (114) im Wesentlichen mit der zweiten Abdeckung (116) identisch ist, bevor der erste Abschnitt (146) oder der zweite Abschnitt (148) entfernt wird.
6. System nach Anspruch 1, ferner umfassend eine dritte Abdeckung (118), die dazu gestaltet ist, den Zugang zu den Installationsmittel (120) zu verhindern, die sich zwischen der ersten Aussparung (142) der ersten Abdeckung (114) und der zweiten Aussparung (144) der zweiten Abdeckung (116) erstrecken.
7. Verfahren zum Zusammenbau eines Systems für einen Waschraum, wobei das Verfahren Folgendes umfasst:

Bereitstellen eines Decks (112), von Installationsmittel (120), einer ersten Abdeckung (114) und einer zweiten Abdeckung (116), wobei die erste Abdeckung (114) und die zweite Abdeckung (116) derart ausgebildet sind, dass sie den Zugang zu zumindest einem Teil der Installationsmittel (120) verhindern, und jede Abdeckung einen ersten Abschnitt (146) und einen zweiten Abschnitt (148) aufweist, die selektiv entfernbar sind;

Entfernen des ersten Abschnitts (146) von der ersten Abdeckung (114), um eine erste Aussparung (142) zu schaffen, und derartiges Anbringen der ersten Abdeckung (114) an der ersten Station, dass die erste Aussparung (142) zumindest einen Teil der Installationsmittel (120) aufnimmt;

Entfernen des zweiten Abschnitts (148) von der zweiten Abdeckung (116), um eine zweite Aussparung (144) zu schaffen, und derartiges Anbringen der zweiten Abdeckung (116) an der zweiten Station, dass die zweite Aussparung (144) zumindest einen Teil der Installationsmittel (120) aufnimmt.
8. Verfahren nach Anspruch 7, wobei der erste Abschnitt (146) und der zweite Abschnitt (148) mit einem Schneidwerkzeug entfernt werden.

9. Verfahren nach Anspruch 7, ferner umfassend das Bereitstellen einer dritten Abdeckung (118), die derart ausgebildet ist, dass sie zwischen der ersten Abdeckung (114) und der zweiten Abdeckung (116) angeordnet wird und den Zugang zu Installationsmittel (120), die sich zwischen der ersten Aussparung (142) der ersten Abdeckung (114) und der zweiten Aussparung (144) der zweiten Abdeckung (116) erstrecken, verhindert.
10. Verfahren nach Anspruch 7, ferner umfassend das Anbringen der dritten Abdeckung (118) und dann das Anbringen der ersten Abdeckung (114) und der zweiten Abdeckung (116).

Revendications

1. Système de toilette configuré pour fournir l'accès à un utilisateur pour qu'il se lave les mains, comprenant :

un plan de toilette (112) fournissant un premier poste et un deuxième poste ;

une plomberie (120) en communication avec le premier poste et le deuxième poste ;

un premier couvercle (114) et un deuxième couvercle (116) configurés pour empêcher l'accès à au moins une partie de la plomberie (120), le premier couvercle (114) et le deuxième couvercle (116) ayant chacun une première partie (146) et une seconde partie (148) qui sont amovibles ;

dans lequel le premier couvercle (114) peut être monté au niveau du premier poste et le deuxième couvercle (116) peut être monté au niveau du deuxième poste,

dans lequel la première partie (146) est retirée sur le premier couvercle pour fournir un premier évidement (142) et la seconde partie (148) est retirée sur le deuxième couvercle (118) pour fournir un second évidement (144) de sorte que le premier évidement (142) et le second évidement (144) sont configurés pour recevoir une partie de la plomberie (120).
2. Système selon la revendication 1, dans lequel la première partie (148) est définie par une première rainure (150) et la seconde partie (148) est définie par une seconde rainure (150).
3. Système selon la revendication 2, dans lequel la première rainure (150) et la seconde rainure (150) sont disposées sur une surface interne (152) du premier couvercle (114) et du deuxième couvercle (116).
4. Système selon la revendication 1 comprenant en outre un troisième poste et un troisième couvercle

(118) pouvant être monté au niveau du troisième poste et comprenant la première partie (146) et une seconde partie (148) qui sont sélectivement amovibles pour fournir le premier évidement (142) et le second évidement (144) pour recevoir au moins une partie de la plomberie (120). 5

5. Système selon la revendication 1, dans lequel le premier couvercle (114) est sensiblement identique au deuxième couvercle (116) avant que la première partie (146) ou la seconde partie (148) ne soit retirée. 10

6. Système selon la revendication 1, comprenant en outre un troisième couvercle (118) configuré pour empêcher l'accès à la plomberie (120) s'étendant entre le premier évidement (142) du premier couvercle (114) et le second évidement (144) du deuxième couvercle (116). 15

7. Procédé pour assembler un système de toilette, le procédé comprenant les étapes consistant à : 20

prévoir un plan de toilette (112), une plomberie (120), un premier couvercle (114) et un deuxième couvercle (116), le premier couvercle (114) et le deuxième couvercle (116) étant configurés pour empêcher l'accès à au moins une partie de la plomberie (120) et chaque couvercle ayant une première partie (146) et une seconde partie (148) qui sont sélectivement amovibles ; 25
retirer la première partie (146) du premier couvercle (114) pour fournir un premier évidement (142) et monter le premier couvercle (114) au niveau du premier poste de sorte que le premier évidement (142) reçoit au moins une partie de la plomberie (120), 30
retirer la seconde partie (148) du deuxième couvercle (116) pour fournir un second évidement (144) et monter le deuxième couvercle (116) au niveau du deuxième poste de sorte que le second évidement (144) reçoit au moins une partie de la plomberie (120). 35 40

8. Procédé selon la revendication 7, dans lequel la première partie (146) et la seconde partie (148) sont retirées avec un outil de coupe. 45

9. Procédé selon la revendication 7, comprenant en outre l'étape consistant à prévoir un troisième couvercle (118) configuré pour être disposé entre le premier couvercle (114) et le deuxième couvercle (116) et pour empêcher l'accès à la plomberie (120) s'étendant entre le premier évidement (142) du premier couvercle (114) et le second évidement (144) du deuxième couvercle (116). 50 55

10. Procédé selon la revendication 7, comprenant en outre les étapes consistant à monter le troisième

couvercle (118) et monter ensuite le premier couvercle (114) et le deuxième couvercle (116).

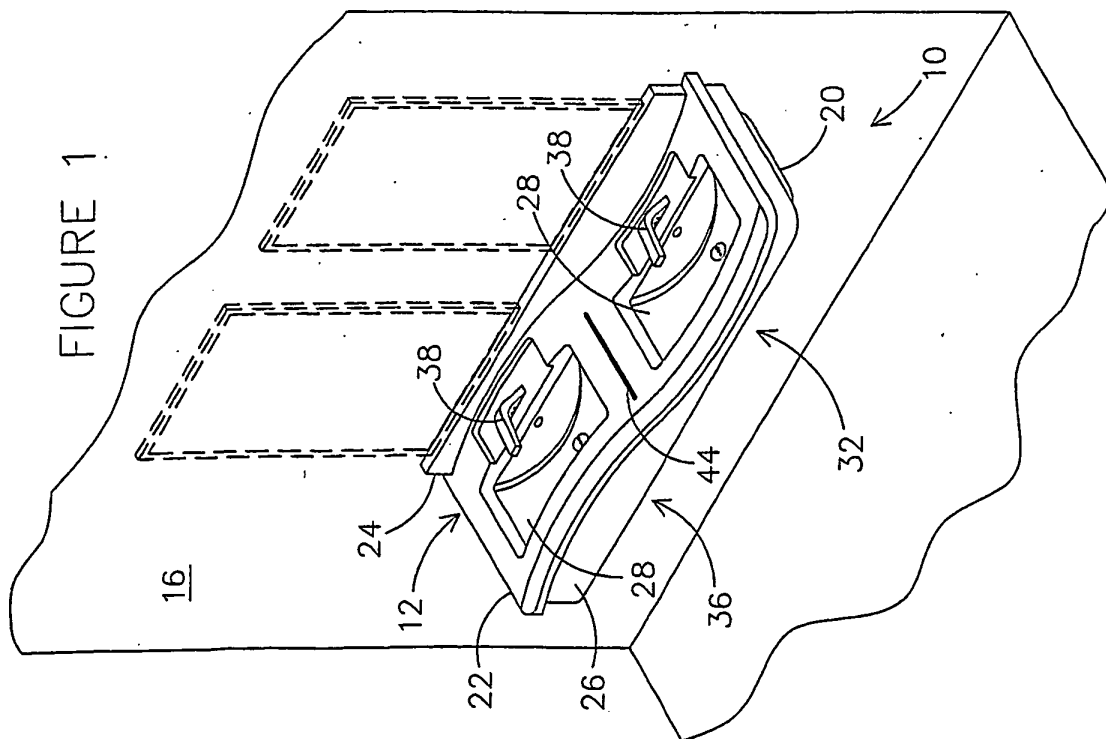


FIGURE 1

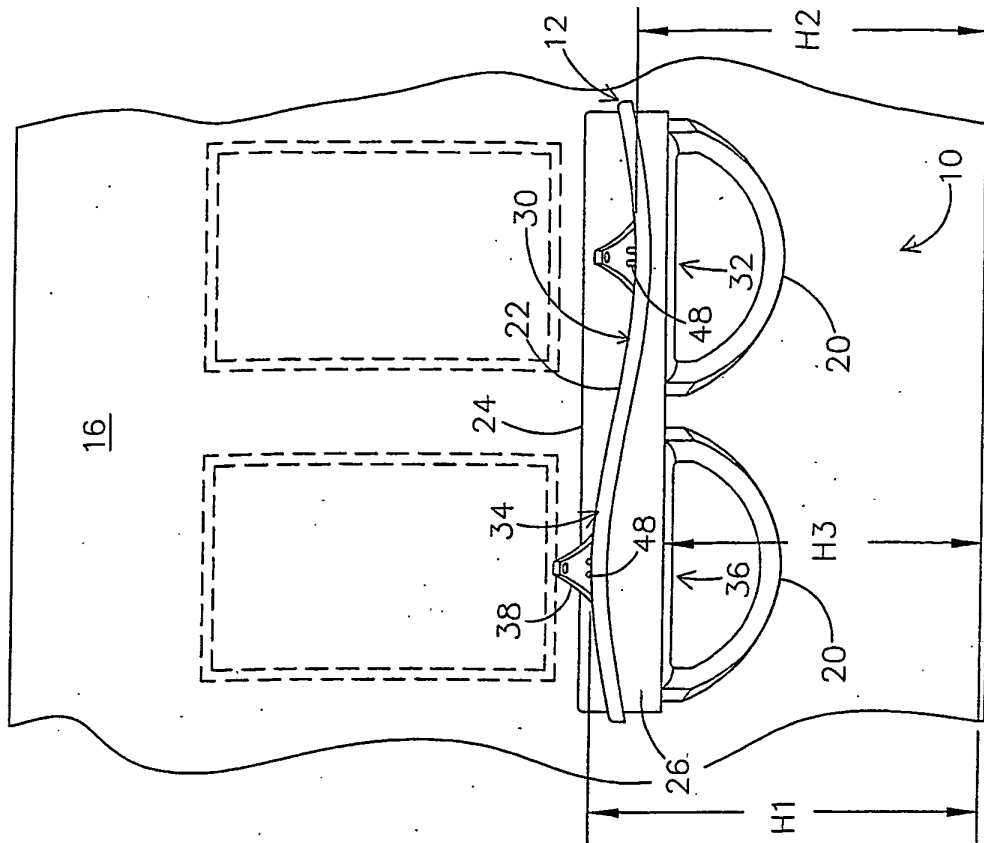
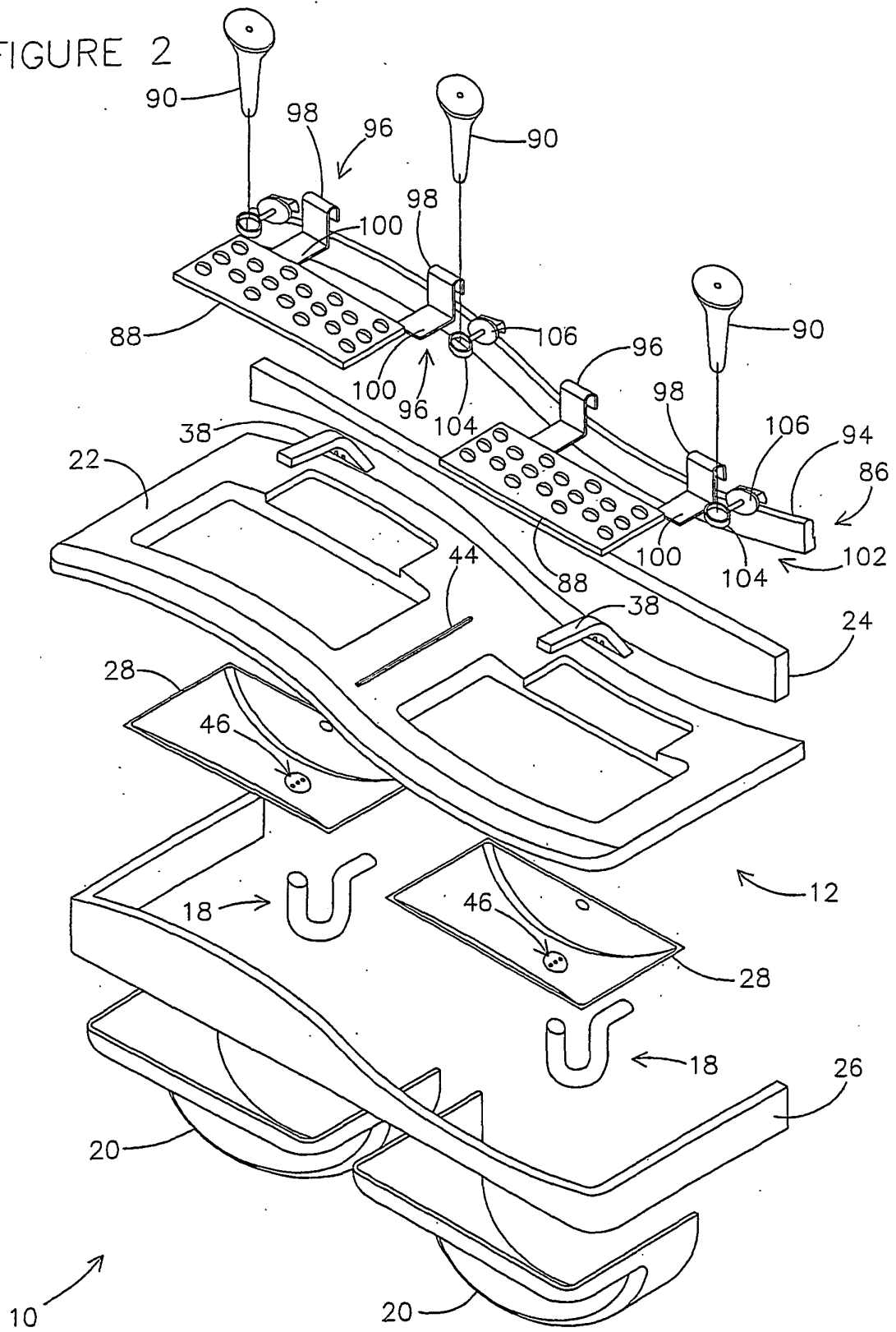
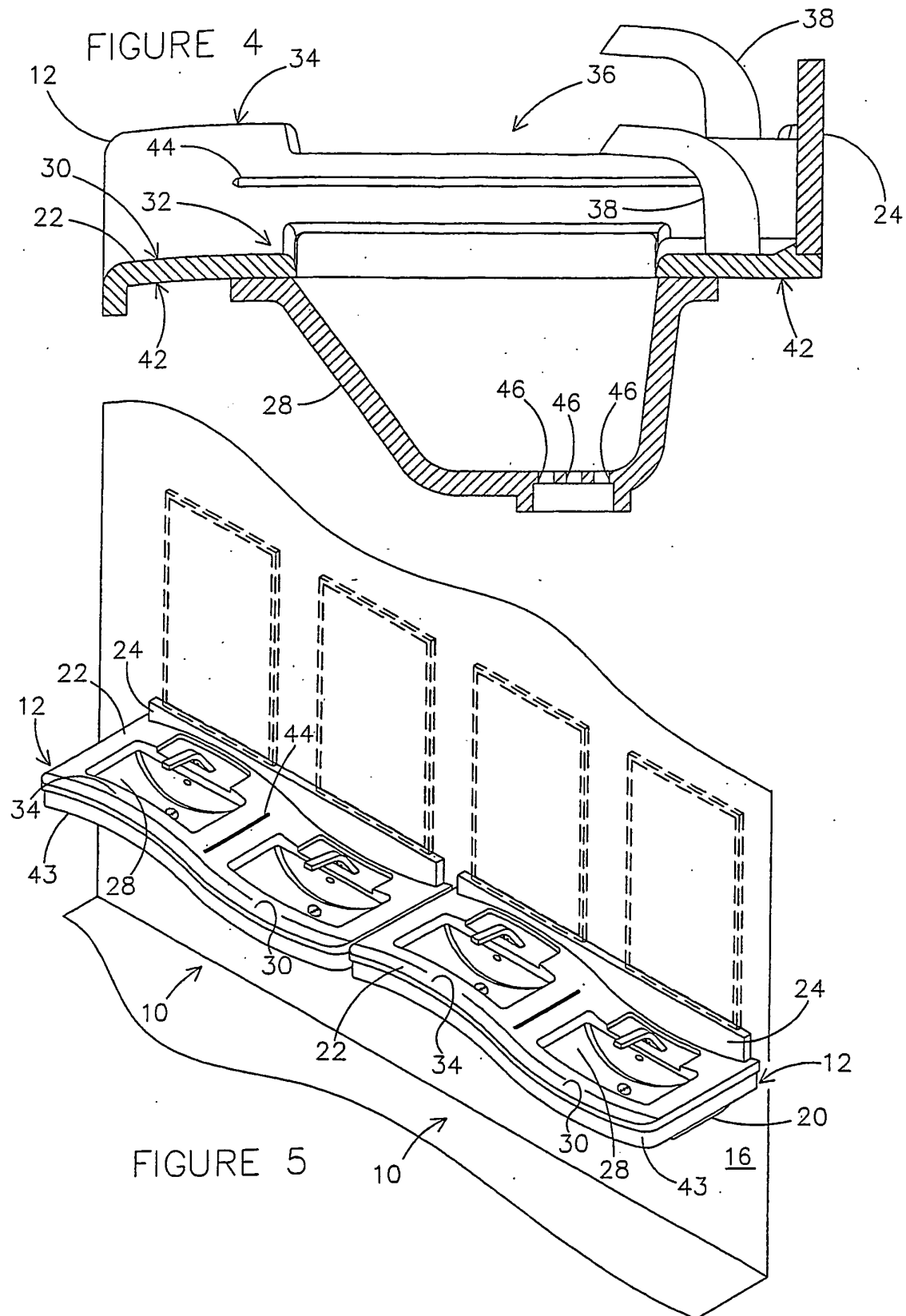


FIGURE 3

FIGURE 2





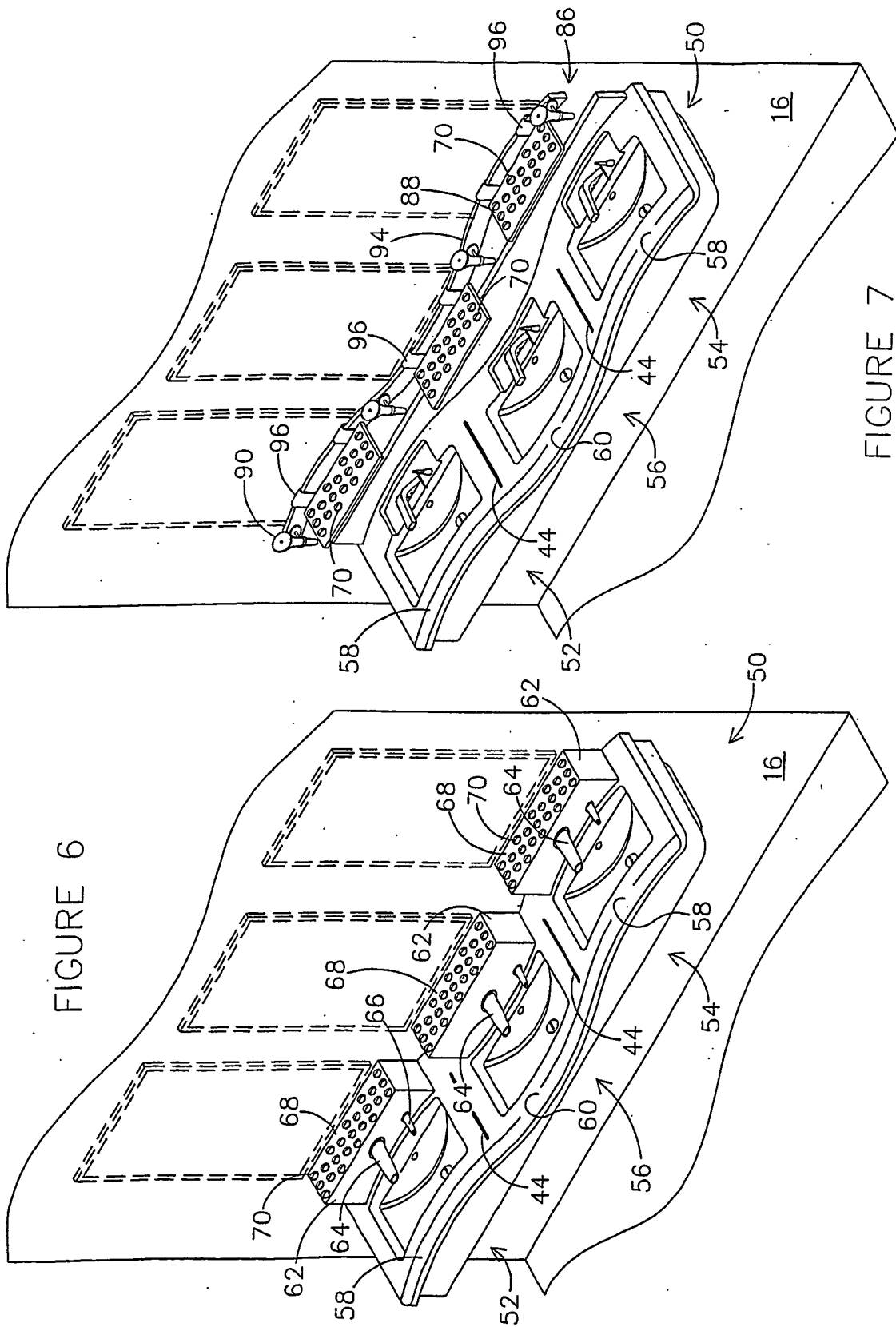
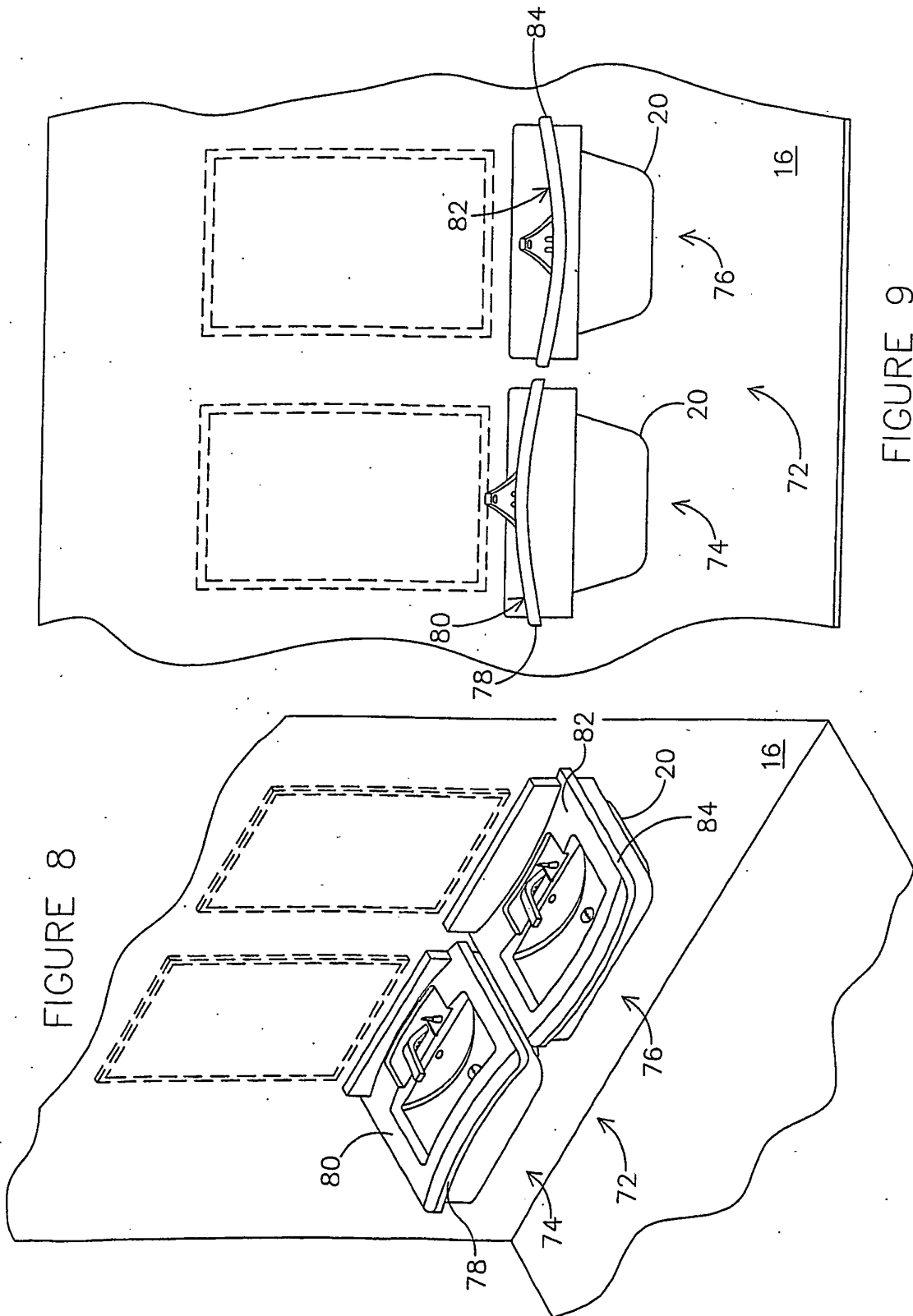


FIGURE 7

FIGURE 6



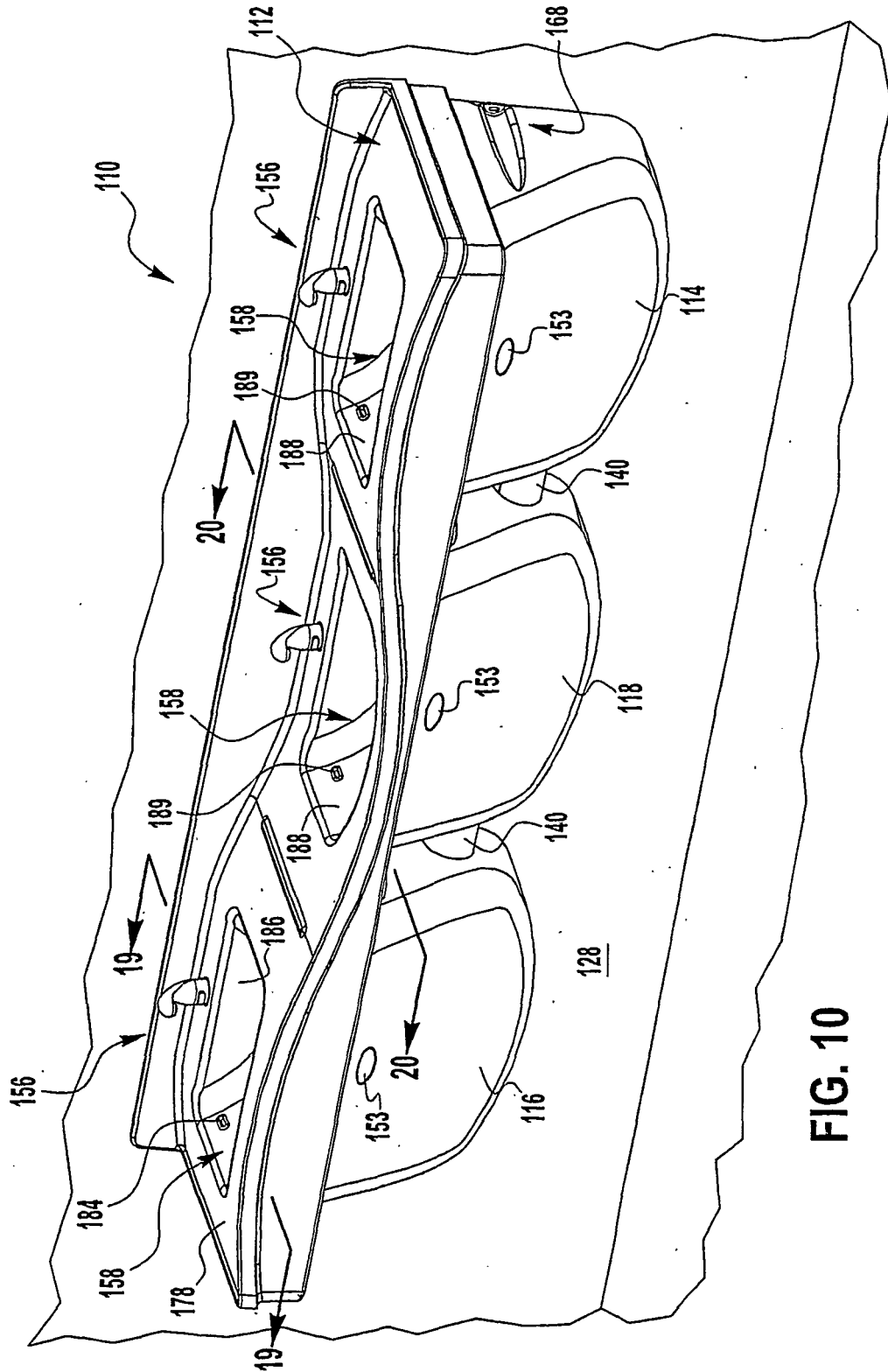


FIG. 10

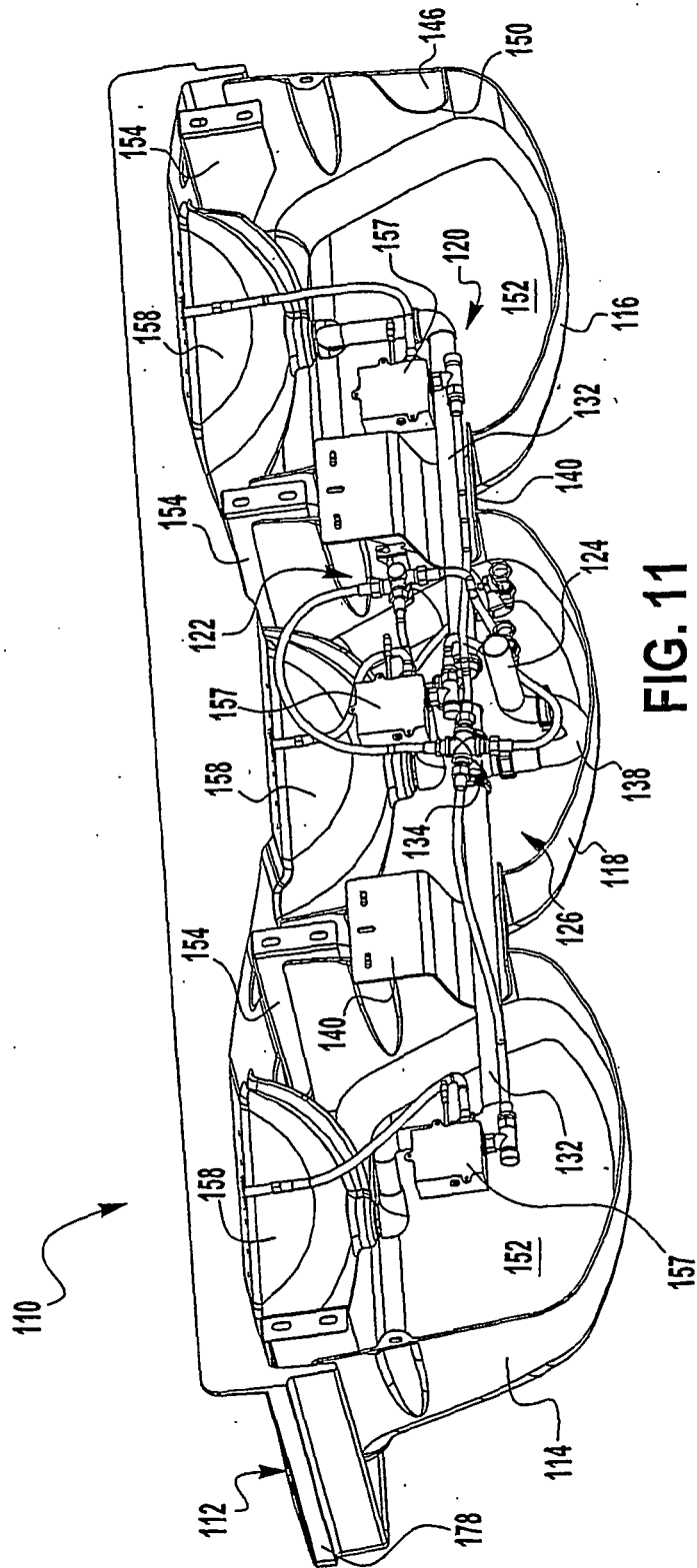


FIG. 11

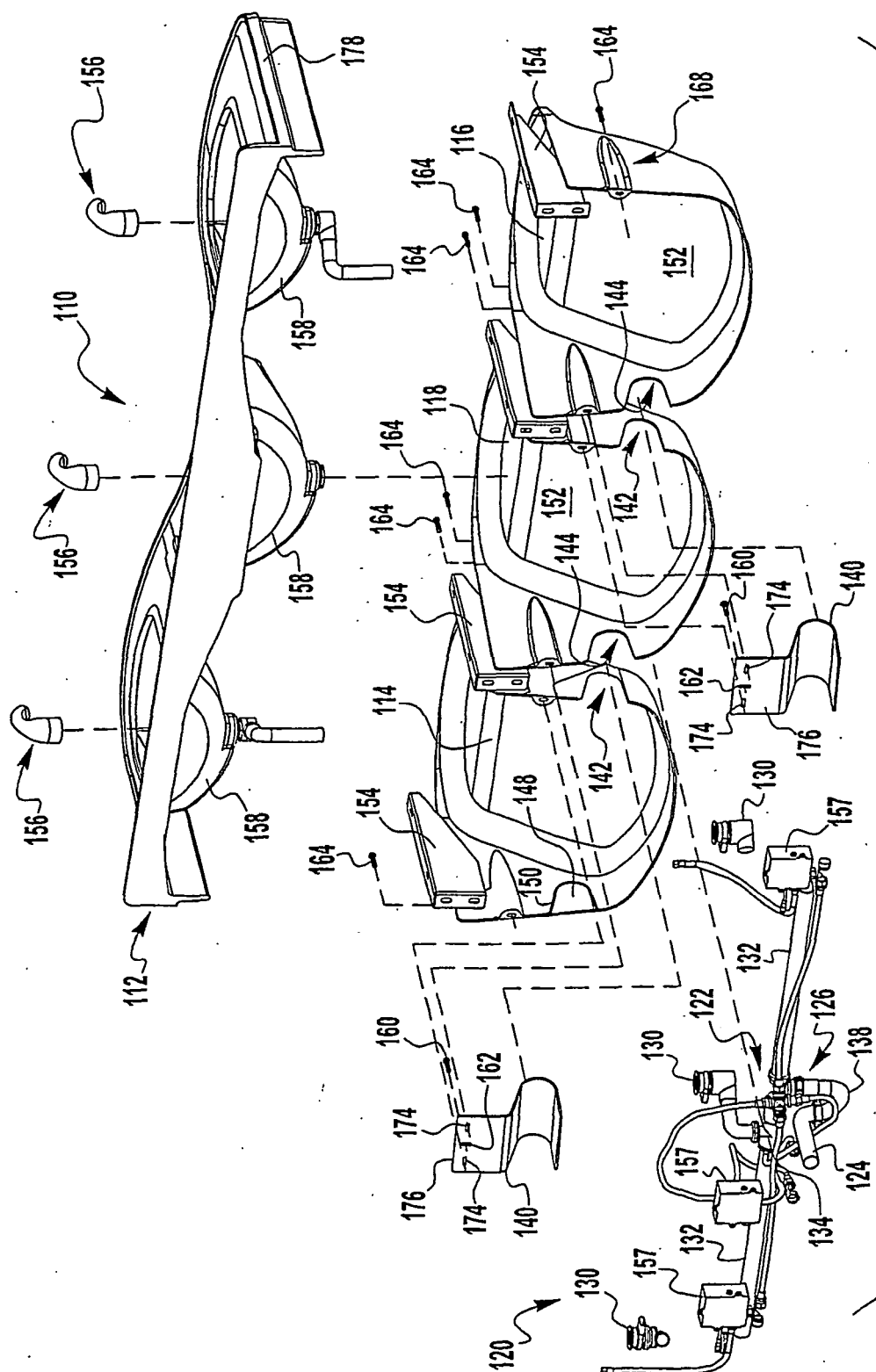


FIG. 12

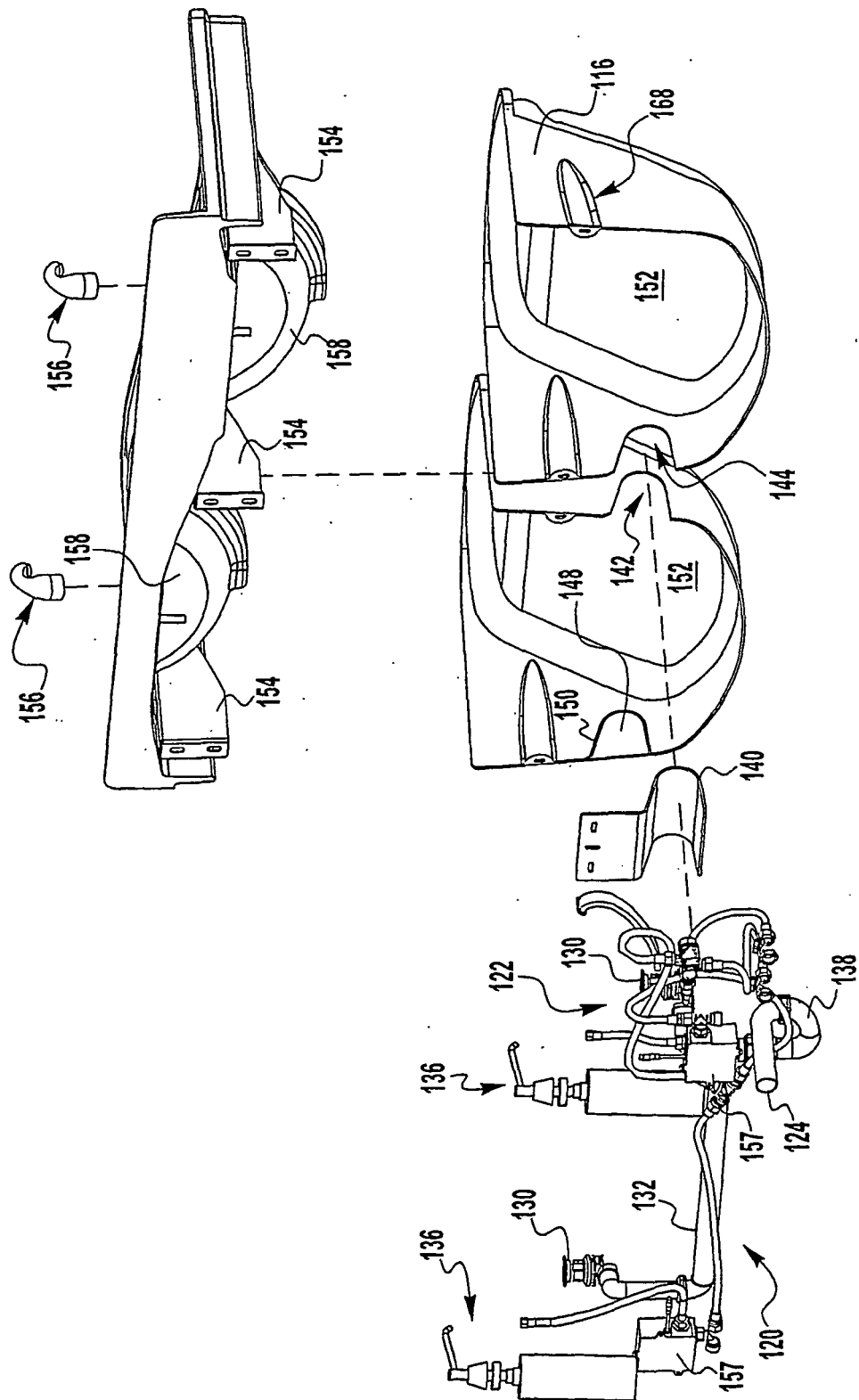


FIG. 13

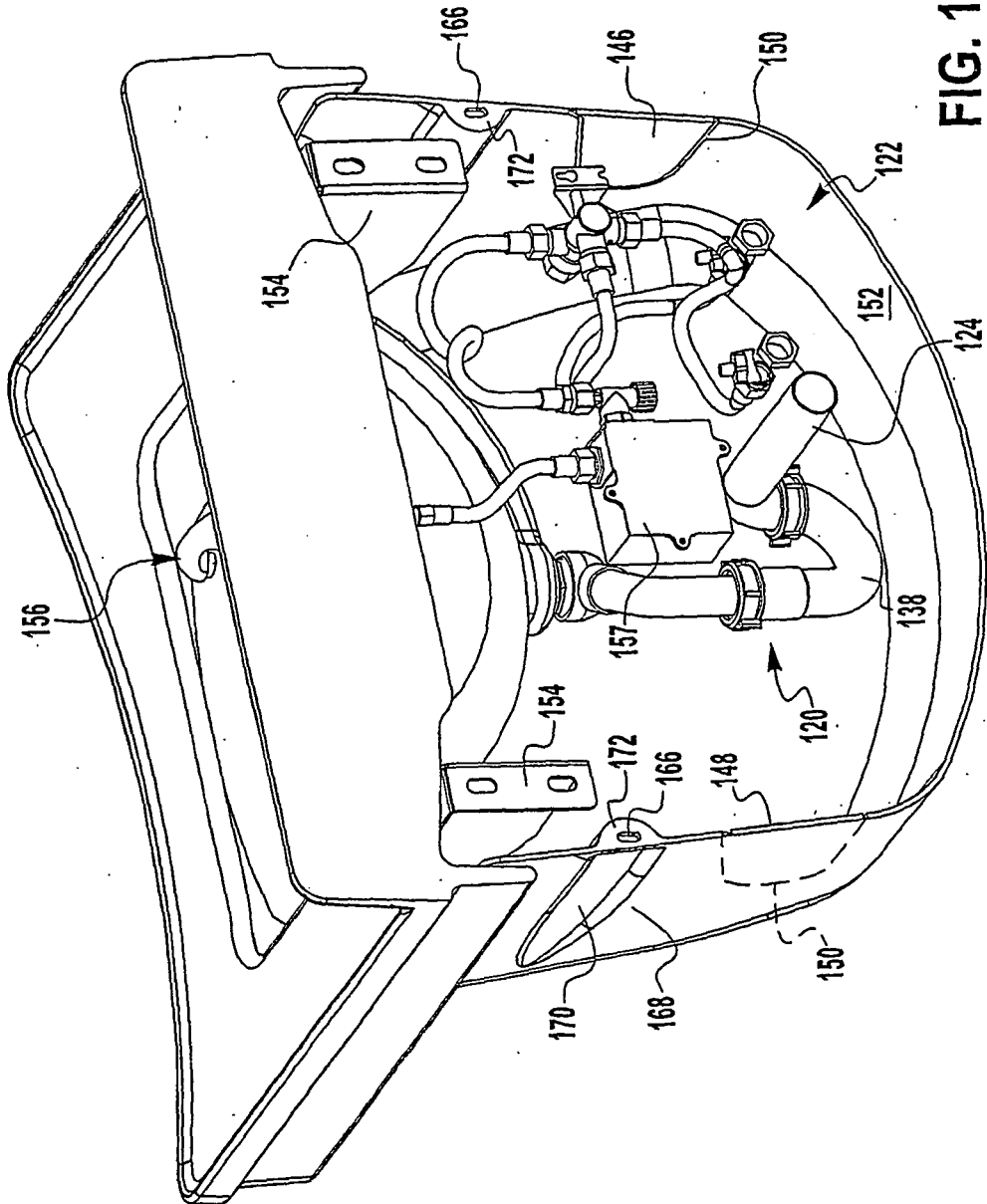


FIG. 14

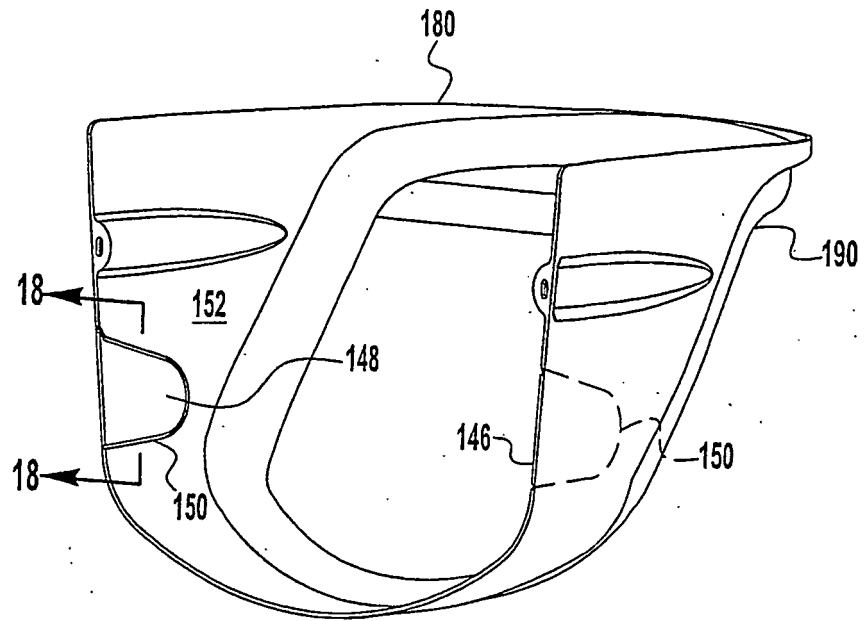


FIG. 15

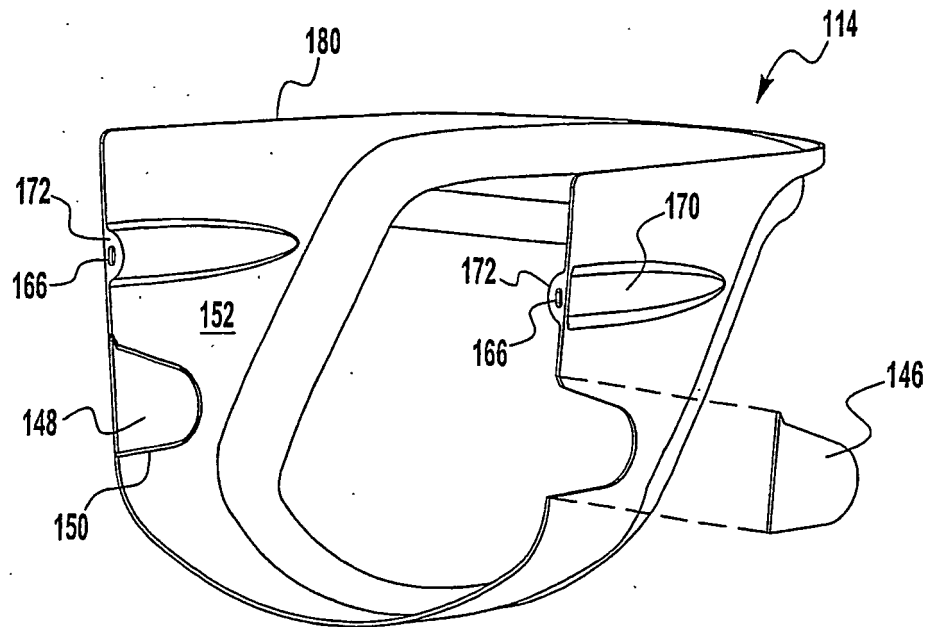


FIG. 16

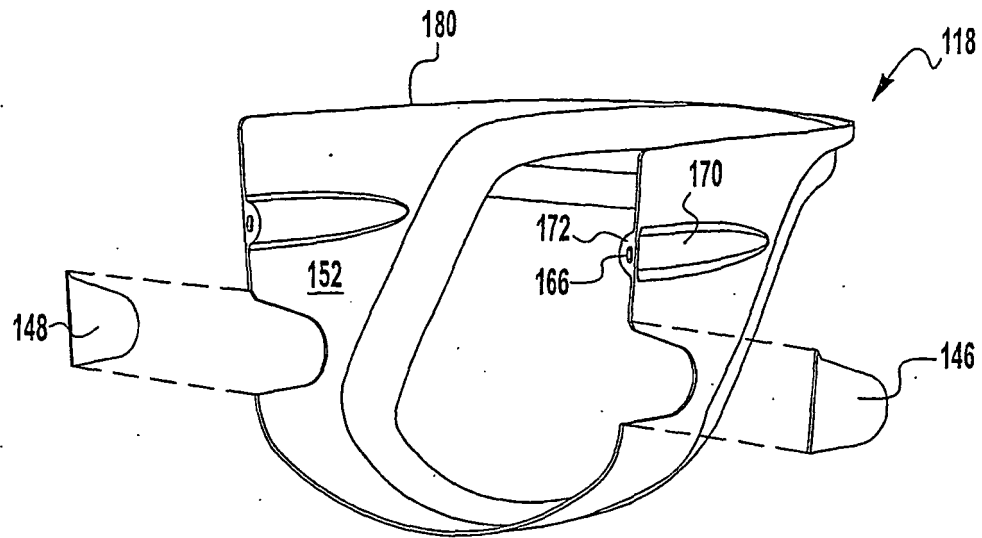


FIG. 17

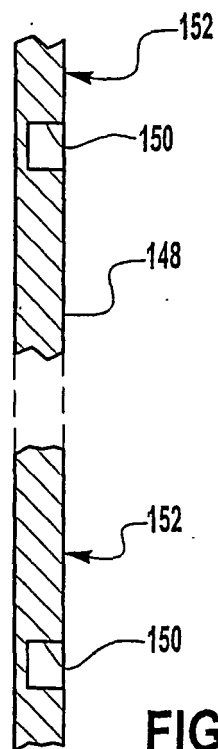
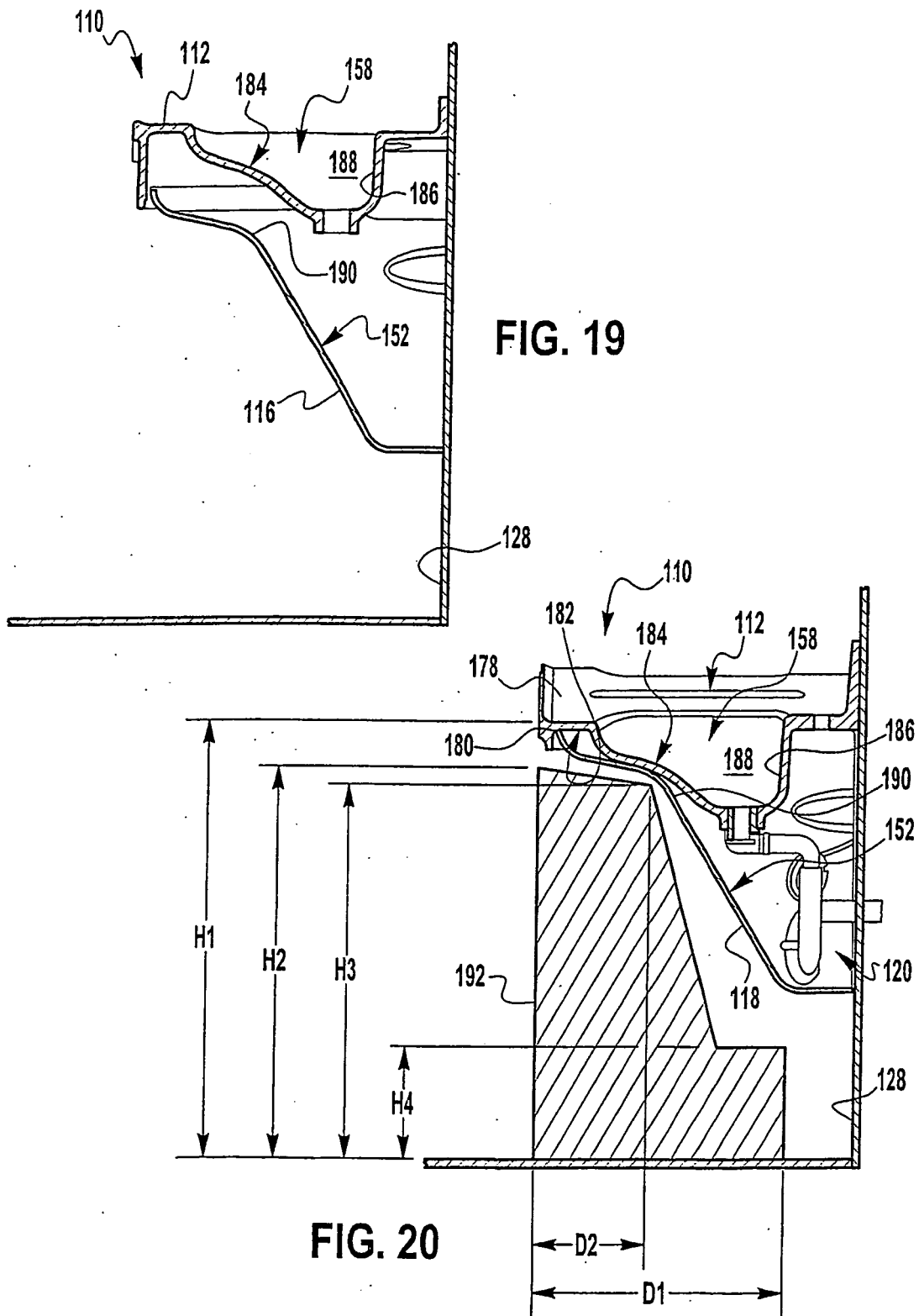


FIG. 18



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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