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(54) Title: PIVOTING ENCLOSURE COLLAPSIBLE CONTAINMENT DEVICE

(57) Abstract: A pet containment device comprising a tube member back that pivots relative to a base member bottom to define an interior space capable of receiving a pet/animal. The base member is connectable to anchor points in a vehicle.

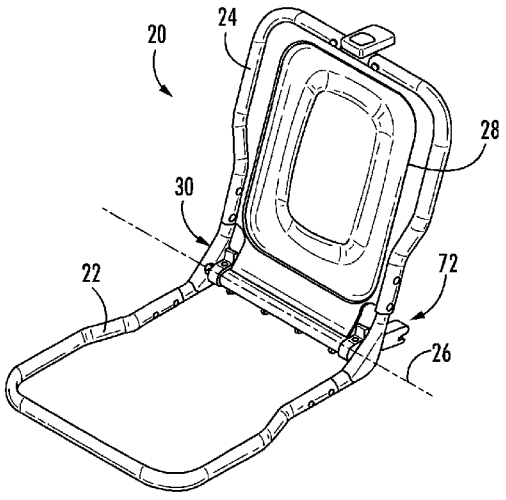

FIG. 1

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[Continued on next page]

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PIVOTING ENCLOSURE COLLAPSIBLE CONTAINMENT DEVICE

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Patent Application No. 63/583,440, filed on September 18, 2023, U.S. Provisional Patent Application No. 63/508,714, filed June 16, 2023, U.S. Provisional Patent Application No. 63/648,783, filed May 17, 2024, and U.S. Provisional Patent Application No. 63/659,951, filed on June 14, 2024, which are incorporated by reference as if fully set forth.

TECHNICAL FIELD

[0002] Exemplary embodiments of the present disclosure relate generally to a pet containment system. In particular, the present disclosure relates to a pet containment system for securing a pet or an animal in a vehicle.

BACKGROUND

[0003] Many people regard their pets as family members or companions. As such, pet owners often travel with their pets via automobile to vacation destinations, trips to the veterinarian, or around town. Pet transport cages or pet vests are available that cooperate with safety belts of a vehicle to prevent a pet from roaming within and/or escaping from a vehicle. However, these devices can be overly restricting and generally do not adequately secure a pet in the case of a sudden change in vehicle speed or direction. Additionally, it can be difficult to load an animal into a cage in a vehicle and/or cumbersome for some animals to wear pet vests. An improperly restrained pet is more likely to be injured and to injure occupants of a vehicle during a crash.

SUMMARY OF THE INVENTION

[0004] According to an embodiment, a pet containment device includes a back member that pivots relative to a base member bottom to define an interior space capable of receiving a pet/animal. The base member is connectable to anchor points in a vehicle, such as the vehicle's LATCH (Lower Anchors and Tethers for Children) Restraint System, ISOFIX anchors, or other suitable vehicle anchor point(s).

[0005] In accordance with one aspect, a pet containment device comprises a base member, and a back member. The base member and the back member are coupled for pivoting movement relative to each other between a stowed position and a use position. The base member is connectable to an anchor point in a vehicle, and the base member and the back member define at least portions of an interior space for receiving a pet/animal when in the use position.

[0006] The base member can include a pivot subassembly, and the back member can be coupled to the pivot assembly. The pivot assembly can include at least one latch member for coupling with an anchor point in a vehicle. The latch member cab be movable relative to the pivot subassembly. A collapsible barrier can be attached to the base member, the collapsible barrier can extend between the base member and the back member when in a deployed position and at least partially define the interior space. The collapsible barrier can be fixed to the back member. The collapsible barrier can be independently moveable relative to the back member. The collapsible barrier can include at least of stiffener pivotally attached to the pivot subassembly. The collapsible barrier can include a net. The collapsible barrier can include an attachment for securing to a vehicle anchor point. The back member can include an upper attachment for securing to a vehicle anchor point.

[0007] The pet containment device can further comprise a collapsible barrier including a pivot arm attached to the base member, the collapsible barrier extending between the base

member and the back member when in a deployed position and at least partially defining the interior space, wherein the pivot subassembly includes a lock mechanism for securing the pivot arm in at least one of a stowed or deployed position. The lock mechanism can include a lock body on the pivot subassembly, the lock body having at least one slot for receiving a pin of the pivot arm, whereby movement of the pivot arm is constrained by the movement of the pin in the at least one slot of the lock body. The at least one slot can include an arcuate portion and at least one detent portion for locking the pivot arm in a deployed or stowed position. The pin can be biased to engage the at least one detent portion of the slot. The at least one detent portion of the slot can extend in a radial direction from the arcuate portion of the slot. The lock mechanism can further comprise an actuator operatively coupled to the pin for selectively aligning the pin with the arcuate portion of the slot to allow movement of the pivot arm. The actuator can be supported on the pivot arm. The base member and the back member can include cooperating features for securing the back member in at least one of the stowed position or the use position. The cooperating features can include a recess associated with one of the base member or the back member and a protrusion associated with the other of the base member or back member.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The following descriptions should not be considered limiting in any way. With reference to the accompanying drawings, like elements are numbered alike:

[0009] FIG. 1 is a perspective view of a pet containment device without soft goods according to an embodiment;

[0010] FIG. 2 is a front view of the pet containment device of FIG. 1;

[0011] FIG. 3 is a side view of the pet containment device of FIG. 1;

[0012] FIG. 4 is a perspective view of the pet containment device of FIG. 1 with soft goods;

[0013] FIG. 5 is a front view of the pet containment device of FIG. 4;

[0014] FIG. 6 is a side view of the pet containment device of FIG. 4;

[0015] FIGS. 7A-7D are side views of the pet containment device of FIG. 1 showing progressive stages between opening and closing the pet containment device;

[0016] FIG. 8A is a perspective view of a collapsed state of the pet containment device of FIG. 1;

[0017] FIG. 8B is a side view of the pet containment device of FIG. 8A;

[0018] FIG. 9A is a side view of the pet containment device of FIG. 1 with certain parts omitted to show the plastic stiffeners;

[0019] FIG. 9B is a partial detailed view of FIG. 9A;

[0020] FIG. 10 is a side view of the pet containment device of FIG. 1 installed in a vehicle and containing an animal;

[0021] FIGS. 11A-D are respective perspective, front, side, and top views of the pet containment device of FIG. 1 shown installed in a vehicle;

[0022] FIGS. 12A-C are respective perspective, front, and side views of the pet containment device of FIG. 1 shown installed in a vehicle and containing an animal;

[0023] FIG. 13A is a perspective view of a pet containment device according to an embodiment;

[0024] FIG. 13B is a side view of the pet containment device of FIG. 13A, and shown with a plastic base included;

[0025] FIG. 14 is a perspective view of another exemplary pet containment device in a closed position in accordance with the present disclosure;

[0026] FIG. 15 is a perspective view of the pet containment device of FIG. 14 with LATCH arms deployed;

[0027] FIG.16 is a perspective view of the pet containment device of FIG. 14 in an open position;

[0028] FIG. 17 is a perspective view of the pet containment device of FIG. 16 with pivoting enclosure in a use position;

[0029] FIG. 18 is a side view of a lock mechanism of the pet containment device of FIG. 14 in a first position;

[0030] FIG. 19 is a side view of a lock mechanism of the pet containment device of FIG. 14 in a second position;

[0031] FIG. 20 is a side view of a lock mechanism of the pet containment device of FIG. 14 in a third position;

[0032] FIG. 21 is a perspective view of an actuator of the lock mechanism in a locked state;

[0033] FIG. 22 is a perspective view of an actuator of the lock mechanism in an unlocked state;

[0034] FIG. 23 is a perspective view of a portion of the pet containment device of FIG. 14 showing a retention mechanism in a first position;

[0035] FIG. 24 is a perspective view of a portion of the pet containment device of FIG. 14 showing the retention mechanism in a second position;

[0036] FIG. 25 is a perspective view of another exemplary pet containment device in accordance with the present disclosure;

[0037] FIG. 26 is a perspective view of another exemplary pet containment device in accordance with the present disclosure;

[0038] FIG. 27 is a side view of a stroller and a pet containment device in accordance with the present disclosure; and

[0039] FIG. 28 is a perspective view of the stroller of FIG. 27.

[0040] FIG. 29 is a perspective view of another exemplary pet containment device in accordance with the present disclosure;

[0041] FIG. 30 is a side view of an exemplary latch arm;

[0042] FIGS. 31 and 32 are cross-sectional view of the latch arm;

[0043] FIG. 33 is a perspective view of another exemplary pet containment device in accordance with the present disclosure;

[0044] FIG. 34 is a rear view of the pet containment device of FIG. 33;

[0045] FIG. 35 is a perspective view of a backpack configured for use with the pet containment device of FIG. 33;

[0046] FIG. 36 is a perspective view of the pet containment device of FIG. 33 connected to the backpack of FIG. 35;

[0047] FIG. 37 is a side view of another exemplary pet containment device in accordance with the present disclosure;

[0048] FIG. 38 is a side view of another exemplary pet containment device in accordance with the present disclosure;

[0049] FIG. 39 is a side view of a stroller configured for use with the pet containment device of FIG. 38;

[0050] FIG. 40 is a side view of another exemplary pet containment device in accordance with the present disclosure;

[0051] FIG. 41 is a perspective view of the pet containment device of FIG. 40;

[0052] FIG. 42 is a perspective view of a stroller configured for use with the pet containment device of FIGS. 40 and 41;

[0053] FIGS. 43 and 44 are bottom views of another exemplary pet containment device in accordance with the present disclosure;

[0054] FIG. 45 is a side view of the pet containment device of FIGS. 43 and 44;

[0055] FIG. 46 is a side view of another exemplary pet containment device in accordance with the present disclosure;

[0056] FIG. 47 is a side view of another exemplary pet containment device in accordance with the present disclosure;

[0057] FIGS. 48 and 49 are perspective views of another exemplary pet containment device and stroller in accordance with the present disclosure;

[0058] FIG. 50 is a perspective view of a rack for use in connection with a pet containment device in accordance with the present disclosure;

[0059] FIG. 51 is a side perspective view of the rack of FIG. 50 and another exemplary pet containment device in accordance with the present disclosure;

[0060] FIGS. 52 and 53 are perspective views of another exemplary pet containment device in accordance with the present disclosure;

[0061] FIGS. 54 and 55 are bottom views of another exemplary pet containment device in accordance with the present disclosure;

[0062] FIGS. 56-58 are rear views of another exemplary pet containment device in accordance with the present disclosure;

[0063] FIGS. 59 and 60 are rear views of another exemplary pet containment device in accordance with the present disclosure;

[0064] FIG. 61 is a perspective view of another exemplary pet containment device in accordance with the present disclosure;

[0065] FIG. 62 is a perspective view of another exemplary pet containment device in accordance with the present disclosure;

[0066] FIGS. 63 and 64 are perspective views of another exemplary pet containment device in accordance with the present disclosure;

[0067] FIG. 65 is a bottom view of the pet containment device of FIGS. 63 and 64;

[0068] FIGS. 66 and 67 are bottom views of the pet containment device of FIGS. 63 and 64 showing an alternate wheel arrangement;

[0069] FIGS. 68 and 69 are bottom views of the pet containment device of FIGS. 63 and 64 showing another alternate wheel arrangement;

[0070] FIG. 70 is a perspective view of another exemplary pet containment device in accordance with the present disclosure;

[0071] FIGS. 71 and 72 are side views of the pet containment device of FIG. 70; and

[0072] FIGS. 73 and 74 are side views of another exemplary pet containment device in accordance with the present disclosure.

DETAILED DESCRIPTION

[0073] A detailed description of one or more embodiments of the disclosed apparatus and method are presented herein by way of exemplification and not limitation with reference to the Figures.

[0074] With reference to FIGS. 1-9B, and initially to FIGS. 1-6, an example of a pet containment device in accordance with the present disclosure is illustrated and identified generally by reference numeral 20. As shown, the pet containment device 20 has a bottom or base member 22 and a back member 24 for placement respectively on a seat bottom and a seat back in a vehicle. In the illustrated, non-limiting embodiment, the base member 22 and the back member 24 each generally include a generally U-shape tubular frame comprised of one or more sections. A panel 28 is supported by a pivot subassembly 30 and/or the back member 24 for pivoting movement. In various embodiments, such a panel 28 may be provided on either, both, or neither of the base member 22 and the back member 24. The panel 28 or portions thereof may be formed of various materials such as plastic, thermoformed fabric, rigid plastic, soft plastic, or the like. The base member 22, back member 24, and/or pivot subassembly 30

may include rigid frame, such as the tubular frame mentioned above, which may be formed of metal, metal shrouded in plastic, or the like.

[0075] The base member 22 and the back member 24 are each pivotable about a pivot axis 26 via the pivot subassembly 30 that joins together the U-shape tubular frames of the base member 22 and the back member 24. The U-shape frames can be releasably or permanently secured to the pivot subassembly 30 via fasteners 31, such as screws, bolts, rivets, spring pins, or the like. The pivot subassembly 30 allows the back member 24 to collapse towards the base member 22. In this regard, the pet containment device 20 is collapsible from a use position shown in FIG. 7A to a collapsed position shown in FIG. 7D. FIGS. 7B and 7C show the pet containment device 20 in intermediate states between the use and collapsed positions.

[0076] As shown in FIGS. 4-6, a pivoting enclosure 50, such as, without limitation, a fabric member, net, mesh, or panels, extends between the base member 22 and the back member 24. The pivoting enclosure 50 provides a collapsible barrier for enclosing the pet. Peripheral portions of the pivoting enclosure 50 are secured to the U-shape frames of the base member 22 and the back member 24. In one example, the U-shape frames are telescoped through pockets or loops of the pivoting enclosure 50. The pivoting enclosure 50 may include one or more stiffeners 52 connected to the pivot subassembly 30 for pivoting movement. The stiffeners 52 can include U-shape structures (e.g., bows) configured to support the pivoting enclosure 50 in an expanded state. The stiffeners 52 are configured to collapse with the pivoting enclosure 50 when the pet containment device 20 is in the collapsed position.

[0077] The pivoting enclosure 50 can include a plurality of panels, which in some embodiments may comprise mesh panels 54 and/or fabric panels 56. Longitudinal and lateral reinforcement straps 60 and 62 are arranged in a grid or web-like fashion across the pivoting enclosure 50. For example, longitudinal reinforcement straps 60 can be arranged to intersect with lateral reinforcement straps 62 in a perpendicular, substantially perpendicular or angled

arrangement. In some embodiments, the lateral reinforcement straps 62 may be omitted. Although two longitudinal reinforcement straps 60 are illustrated, various embodiments may provide one, two, three, four or more longitudinal reinforcement straps. It will be appreciated that the longitudinal reinforcement straps 60 are securely anchored at both ends to a structural element of the device, for example the base member 22, back member 24, and or a frame element. Generally speaking, the reinforcement straps 60, 62 contribute to a protective loop that encircles the animal occupant, as shown in FIG. 10.

[0078] When installed on a seat of a vehicle, the pivoting enclosure 50, portions of the base member 22 and back member 24, panel 28 and/or surfaces of the seat define an enclosed volume in which a pet can be contained. When the pivoting enclosure 50 is in the deployed position shown in FIGS. 4-6, a pet can be contained within the device 20. The lateral reinforcement straps 60 may be generally aligned with a respective stiffener 52. In this regard, the stiffeners 52 can be coupled to a respective lateral reinforcement strap 62. The stiffeners 52 can be formed of a relatively rigid or strong flexible material, for example plastic rods, nylon webbing, or the like, and can be sewn into the reinforcement straps 60 and/or 62 to give the soft-goods structure. In the illustrated embodiment, each of the reinforcing straps 60 and 62 intersect with one singular webbing strap which is anchored (e.g., grommeted, pinned, or the like) around a pivot point 64 (FIG. 9B). This allows the soft-goods to fold with the rest of the product.

[0079] With additional reference to FIGS. 9A and 9B, the lateral reinforcement straps 62 are coupled to the pivot subassembly 30 on opposite sides with a fastener and grommet at pivot point 64. In some embodiments, the pivoting enclosure 50 is movable independently of the back member 24. In such embodiments, the pivoting enclosure 50 may be moved to a collapsed position (adjacent the back member 24). The collapsed position may be retained by various

means, such as connection of the base member 22 with the back member 24 and/or the upper attachment 70, due to a bias in the pivot subassembly, or the like.

[0080] FIGS. 8A and 8B illustrate the pet containment device 20 in a collapsed state or position with the back member 24 folded parallel or substantially parallel to the base member 22. The pivoting enclosure 50 and stiffeners 52 are omitted in these views for clarity. In an example, the pet containment device 20 can have a thickness of approximately three inches in the collapsed state. The panel 28 is configured to enclose the pivoting enclosure 50 in the collapsed state of the pet containment device 20 and provides a generally uniform support surface when the pet containment device is stowed and/or otherwise not in use, such as in a trunk of a vehicle. This allows for a reduced footprint and easy storage when the pet containment device 20 is in the collapsed state.

[0081] In embodiments, the pet containment device 20 includes latches and a tether configured to cooperate with a vehicle's anchors and/or tether attachment points, such as LATCH (Lower Anchors and Tethers for Children) Restraint System, ISOFIX anchors, or other suitable vehicle anchor point(s). An upper attachment 70 associated with the back member 24 is provided for selectively attaching to an upper securing member 74, such as a tether strap, secured to the vehicle. First and second lower securing members 72, such as anchor members, associated with the pivot assembly 30 are provided for attaching to the lower anchors, such as LATCH anchors, of the of the vehicle. The upper securing member 74 may be securely affixed to the frame of the back member 24 and the lower securing members 72 may be securely affixed to the frame of the base member 22 and/or a portion of the pivot subassembly 30. The lower securing members 72 may typically be coupled together by a latch tube (not shown) which may be integrated with the pivot subassembly 30. In other embodiments, the pet containment device 20 may alternatively or additionally include belt guides or tunnels (not shown) for receiving a vehicle seat belt therethrough to

securely attach the pet containment device to the vehicle. In any embodiment, the various latches, tethers, belt guides, and the like, including upper attachment 70, lower securing member 72, and upper attachment 70 may be retractable or otherwise movable to a non-use position.

[0082] With additional reference to FIGS. 10-12C, the pet containment device is illustrated installed on a seat 80 of a vehicle. The lower securing members 72 can be secured to lower anchors L of the vehicle, while the upper attachment 70 can attach to the upper securing member 74 to be secured between the back member 24 and a tether anchor point L of the vehicle. A tether route R shows manner in which the pivoting enclosure 50 and reinforcing straps 60 and 62 integrate with the upper attachment 70 and upper securing member 74. The tether route R starts with the pivoting enclosure 50 and/or reinforcing straps 60 and 62 being sewn around a rigid latch tube, extending along the base member 22 and around the front/top of the pivoting enclosure 50 to the upper attachment 70 on back member 24. A buckle or other releasable coupling member can be connected to the upper securing member 74 which anchors to the vehicle anchor, such as a LATCH tether anchor or other suitable anchor point of the vehicle. This creates a continuous loop of support that is tied back to the vehicle LATCH anchor points to ensure the animal is held back in a crash or sudden change in vehicle direction or speed.

[0083] In use, the pet containment device 20 is placed on a seating surface of a vehicle seat and secured to the LATCH anchors with lower securing members 72. The panel 28 is then pivoted upward and arranged in an open configuration adjacent the seatback. A dog or other animal can then be loaded into the base member 22 of the pet containment device 20. The pivoting enclosure 50 is then deployed by rotating the back member 24 to a use position against the vehicle seat back and securing the upper securing member 74 to the upper attachment 70 thereby enclosing the pet within the pet containment device 20. In

embodiments where the pivoting enclosure 50 moves independently from the back member 24, the back member 24 may be moved to a use position prior to loading the animal, and then the pivoting enclosure 50 is moved to a closed position after loading the animal and secured either directly to the tether or indirectly to the tether via the back member 24.

[0084] By using the upper securing member 74 to secure the pivoting enclosure 50 in the deployed position, safe and intuitive use of the product is promoted and the animal is contained in a highly visible and breathable enclosure. All webbing reinforcements tie back naturally into the vehicle anchor points.

[0085] Referring now to FIGS. 13A-B, a pet containment device 120 is shown. The pet containment device 120 includes a bottom 122 and a back 124, connected at a pivot subassembly 130, and a pivoting enclosure 150. In embodiments, the bottom 122 may include a base 200 (formed of, e.g., rigid plastic) to provide a support surface for an animal and may contain padding. The back 124 may include or be defined by a pivot tube. The bottom 122 and the back 124 may be fixed in place when installed in a vehicle seat, while the pivot tube may be configured to freely rotate until anchored via a tether strap.

[0086] It will be appreciated that the base 200 may be usable as a pet bed or the like outside of a vehicle and/or without a pivoting enclosure 150. In embodiments, similar to the pet containment device 20, webbing or straps may extend along the bottom 122 and around the device 120 to reach one or both of vehicle LATCH anchors and tether anchors. The webbing may extend outside, through, or inside of the base 200 in various embodiments.

[0087] Each section of the pivoting enclosure 150 may include three panels corresponding to front, left, and right sides. The pivoting enclosure 150 may include one or more reinforcements (e.g., belt webbing, stiffening rods, etc.) extending generally between the bottom 122 and the back 124.

[0088] Embodiments of the disclosed device may include a foot proximate the bottom 122 and/or the base 200 which may be adjustable, such foot designed to raise a rear portion of the device to compensate for an angled seat bottom and make the base of the device closer to horizontal when installed. Embodiments of the disclosed device may have a base that extends forward beyond the seat bottom, and may include a deployable load leg to support a forward portion of the device against the vehicle floor.

[0089] Turning now to FIGS. 14-24, another pet containment device 220 is shown. The pet containment device 220 is similar to the above-described pet containment devices but includes additional features as described below. The pet containment device 220 includes a bottom shell 222 and a top shell (back member) 224, connected to the bottom shell 222 by a pivot subassembly 230, and a pivoting enclosure 250 including a pivot arm 252. Although not shown, the pivoting enclosure 250 can include mesh, fabric and/or other materials secured to the bottom shell 222 and the pivot arm 252 for containing a pet when the pivoting enclosure is deployed.

[0090] The top shell 224 includes recesses 254 in which respective LATCH or ISOFIX arms 258 can be stowed. The arms 258 can be pivotally attached to the top shell 224 and movable between the stowed position shown in FIG. 14 and the deployed position shown in FIG. 15 for connection to vehicle anchor points. In the stowed position, the arms 258 can be retained by magnets in the top shell 224, or by retention features in the recesses 254. FIGS. 14 and 15 show the pet containment device 220 in a fully collapsed configuration for storage and or transport. In the fully collapsed configuration the pet containment device 220 may fit underneath a vehicle seat or in another storage area.

[0091] In FIG. 16, the top shell 224 is pivoted to an upright use position, which may be generally parallel with a seatback of a vehicle seat, for example. The pivoting enclosure 250 remains in the closed or stowed position such that an animal can be placed on the bottom shell 222. In FIG. 17, the pivoting enclosure 250 is moved to the open (use) position at which time

the netting, fabric or other material (not shown in this embodiment) defines a pet enclosure with the bottom shell 222 and the top shell 224. The pet containment device 220 includes a lock mechanism 260 for securing the pivoting enclosure 250 in the closed (stowed) or open (use) positions.

[0092] With additional reference to FIGS. 18-21, the lock mechanism 260 includes a lock body 264 on the pivot subassembly 230. The lock body 264 includes first and second slots 266 and 268 in which respective pins 270 and 272 are received. The pins 270 and 272 are supported for rotation with the pivoting enclosure 250. Each slot 266 and 268 has a central arcuate portion AP and radially extending detent portions DP. In FIG. 18, the lock mechanism 260 is shown with the pivoting enclosure 250 locked in the stowed position. In this position, the pins 270 and 272 are received in the detent portions DP of the slots 266 and 268. Rotation of the pivoting enclosure 250 is restricted as the pins 270 and 272 are constrained within the detent portions DP of the slots 266 and 268.

[0093] To move the pivoting enclosure 250 from the stowed position of FIG. 18, an actuator on the pivoting enclosure 250 is operably coupled to the pins 270 and 272 to radially displace the pins 270 and 272 to a position in line with arcuate portions AP of the slots 266 and 268. As shown in FIGS. 21 and 22, the actuator includes a button 280 that can be rotated between a locked position (FIG. 21) and an unlocked position (FIG. 22). The button 280 is coupled to the pins 266 and 268 by a cable or other linkage such that when the button is rotated to the unlocked position the pins 270 and 272 are radially displaced out of the detent portion DP of the slots 266 and 268 releasing the pivoting enclosure 250 for rotation between the stowed and use positions. FIG. 19 illustrates the lock mechanism 260 in an unlocked state with the pivoting enclosure 250 partially rotated towards the use position. As the pivoting enclosure 250 is rotated to the use position, the pins 170 and 172 engage the detent portions DP thereby locking the pivoting enclosure 250 in the open state. It will be appreciated that the pins 270 and 272 are biased in a directed to engage

the detent portions of the slots 266 and 268, and that the button 280, when actuated, overcomes the bias to displace the pins 270 and 272 radially to a position aligned with the arcuate portions AP of the slots 266 and 268.

[0094] In FIGS. 23 and 24, the bottom shell 222 and top shell 224 includes interlocking features (e.g., detents) for securing the pet containment device 220 in both the closed and open positions. In this aspect, the top shell 224 includes first and second recesses 280 and 282 adapted to receive a protrusion 286 of the bottom shell 222. In FIG. 22, the pet containment unit 220 is in the closed position and the detent 286 is engage with recess 280. In FIG. 23, the pet containment unit 220 is in the open position and the detent 286 is engaged with recess 282.

[0095] In some embodiments, foldable legs can be provided. For example, a pet containment unit 320 is illustrated in FIGS. 25 and 26 includes foldable legs 340. The foldable legs 340 can be used to support the pet containment unit 320 on a stroller 360, for example, as shown in FIGS. 27 and 28. In other embodiments, the foldable legs 340 can be used to support the pet containment unit 320 on other surfaces, such as a car seat base, bicycle rack or the like.

[0096] In one embodiment the pet containment device is designed to contain an animal up to about 30 lb. In such embodiments, the pet containment device is sized to occupy about one seat of a vehicle. As non-limiting examples, the pet containment device may have a length of about 20-30 inches, a width of about 10-20 inches, and a height of about 12-32 inches. In one embodiment, the pet containment device may have a length of about 23-27 inches, a width of about 13-17 inches, and a height of about 20-24 inches.

[0097] FIGS. 29-74 illustrate additional exemplary embodiments and/or features that can be included in the above-described embodiments.

[0098] In FIGS. 29 and 30, a pet containment device 420 includes a bottom shell 422 and a top shell (back member) 424, connected to the bottom shell 422 by a pivot subassembly 430,

and a pivot arm 452 . The pet containment device 420 can include a pivoting enclosure as in previous embodiment.

[0099] The pivot subassembly 430 includes respective LATCH or ISOFIX arms 458 that can be stowed or deployed for connection to LATCH/ISOFIX or other vehicle anchor points. In this embodiment, a carry handle/strap 462 on the bottom shell 422 is configured to release the latch mechanisms of the LATCH arms 458 from engagement with the vehicle anchor points. The carry/handle strap 462 is coupled to respective cables 466 or other linkages supported by the bottom shell 422 that are configured to release the latch mechanisms of the LATCH arms 458. FIGS. 31 and 32 are cross-sectional views taken through a LATCH arm 458 showing a latching mechanism 470 and the manner in which a cable 466 translates a carriage 474 to rotate a locking plate 478 from a locked position (FIG. 31) to an unlocked position (FIG. 32) when the carry/handle strap 462 is pulled. It will be appreciated that various latching mechanism configurations exist, and that aspects of the present embodiment can be used to actuate a wide variety of latching mechanism. A similar carry/handle strap 462 can be provided on a pet crate or other device having LATCH arms configured to be used in connection with vehicle anchor points.

[0100] FIGS. 33-36 illustrate an exemplary pet containment device 520, which may include features of any of the other pet containment devices described herein, configured to be releasably securable to a backpack 560. The pet containment device 520 includes a bottom shell 522 and a top shell (back member) 524, connected to the bottom shell 522 by a pivot subassembly 530, and a pivoting enclosure 532.

[0101] A rear surface of the top shell 524 includes a sleeve 540 adapted to receive an extension 544 of the backpack 560 (or other device to which the pet containment device 520 may be attached, such as a handle of a carry-on luggage bag or the like). The extension 544 of the backpack 560 can be hinged such that when not in use with the pet containment device

520 it can remain flush with the remainder of the backpack 560. The backpack 560 further includes a lock mechanism 548 configured to cooperate with structure on the top shell 524 to restrict withdrawal of the pet containment device 520 from the sleeve 540. The top shell 524 can further include a release mechanism 570 configured to disengage the lock mechanism 548.

[0102] FIG. 37 illustrates an exemplary pet containment device 620 which may include features of any of the other pet containment devices described herein, configured with integral backpack straps 624. The backpack straps 624 can be removable from the pet containment device 620, can be retractable into a portion of the pet containment device 620, or can be permanently or semi-permanently attached thereto.

[0103] FIGS. 38 and 39 illustrate an exemplary pet containment device 720, which may include features of any of the other pet containment devices described herein, including first connectors 724 configured to mate with upper connectors 732 or lower connectors 736 of a stroller 740. The connectors can be, for example, bayonet style connectors, push-pin connectors, or any other suitable and, preferably, locking style of connectors.

[0104] FIGS. 40-49 illustrate an exemplary pet containment device 820, which may include features of any of the other pet containment devices described herein, configured to be used in connection with a stroller 840. The pet containment device 820 includes a bottom shell 822 and a top shell (back member) 824, connected to the bottom shell 822 by a pivot subassembly 830, and a pivoting enclosure 832. The bottom shell 822 includes structures/features generally indicated by reference numeral 836 for interlocking/cooperating with corresponding structure/features on the stroller 840 generally indicated by reference numeral 844 to selectively mount the pet containment device 820 to the stroller 840. In some embodiments, the bottom shell 822 includes one or more bars 850 adapted to be secured to the corresponding features 844 of the stroller 840. The bars 850 can be rigidly secured to the

pet containment device 820, removable from the pet containment device 820 via screws or other fasteners, and/or movable between a deployed/use position and a stowed position.

[0105] FIGS. 50 and 51, illustrate an exemplary pet containment device 920, which may include features of any of the other pet containment devices described herein, configured to be used in connection with a rack 940 attachable to a bicycle, motorcycle, or other vehicle. The pet containment device 920 includes a bottom shell 922 and a top shell (back member) 924, connected to the bottom shell 922 by a pivot subassembly 930, and a pivoting enclosure 932. The bottom shell 922 includes structures/features generally indicated by reference numeral 936 for interlocking/cooperating with corresponding structure/features on the rack 940 generally indicated by reference numeral 944 to selectively mount the pet containment device 920 to the rack 940. In some embodiments, the bottom shell 922 includes one or more bars adapted to be secured to the corresponding features 944 of the rack 940. The bars can be rigidly secured to the pet containment device 920, removable from the pet containment device 920 via screws or other fasteners, and/or movable between a deployed/use position and a stowed position. The rack 940 can include a release actuators 950 for releasing the pet containment device 920 from the rack 940. The rack further can further include attachment points 954 for mounting to a vehicle, such as a bicycle or the like.

[0106] FIGS. 52 and 53 illustrate an exemplary pet containment device 1020, which may include features of any of the other pet containment devices described herein. The pet containment device 1020 includes a bottom shell 1022 and a top shell (back member) 1024, connected to the bottom shell 1022 by a pivot subassembly 1030, and a pivoting enclosure 1032. In this embodiment, the pet containment device 1020 is wider than other embodiments and, when installed in a vehicle, occupies more of a seat while providing a larger interior. The pet containment device 1020 can include tethers 1034 and or LATCH arms 1038, as will be appreciated.

[0107] FIGS 54-60 illustrate pet containment devices 1120/1220 having laterally/horizontally adjustable LATCH/ISOFIX arms that can be adjusted to different widths for use in different vehicles having different spacing between the LATCH/ISOFIX anchor points, and or to allow positioning of the pet containment device relative to a first pair of LATCH/ISOFIX anchor points. It will be appreciated that the adjustable LATCH/ISOFIX arms can be provided on any of the pet containment device disclose herein.

[0108] In FIGS. 54 and 55, the pet containment device 1120 includes a bottom shell 1122 in which a pair of LATCH/ISOFIX arms 1130 are supported. The LATCH/ISOFIX arms 1130 are rotatable from the stowed position of FIG. 54 to the deployed/use position of FIG. 55. The LATCH/ISOFIX arms 1130 are supported on a structure such as a rail or bar 1134 for lateral sliding movement along the bar 1134 between a first position (A) and a second position (B), as well as any location therebetween. In other embodiments, the LATCH/ISOFIX arms 1130 are fixed against axial movement along the bar 1134, and the bar 1134 is supported by the bottom shell 1122 for lateral movement relative thereto.

[0109] FIGS. 56-60 illustrate pet containment device 1220 that includes an upper shell 1224 in which two pairs of LATCH/ISOFIX arms 1230 are supported. The pairs of LATCH/ISOFIX arms 1230 are rotatable from a stowed position to a deployed/use position similar to pet containment device 1120. The pairs of LATCH/ISOFIX arms 1230 are each supported on a bar 1234. Each bar 1234 is supported by the upper shell 1124 for lateral sliding movement relative to the upper shell 1224 between first and second positions shown in FIGS. 57 and 58, and points therebetween. along the bar 1134 between a first position (A) and a second position (B), as well as any location therebetween. The pairs of LATCH/ISOFIX arms 1230 may be independently movable relative to the upper housing 1224 within a range of allowable translation 1240.

[0110] FIGS. 61 and 62 illustrate pet containment devices 1320/1420 that can be used in conjunction with a vehicle seatbelt 1450. The pet containment devices 1320/1420 can be used with a vehicle seatbelt in addition to or in place of LATCH/ISOFIX arms.

[0111] In FIG. 61, the pet containment device 1320 includes a bottom shell 1322 and a top shell (back member) 1324, connected to the bottom shell 1322 by a pivot subassembly 1330, and a pivoting arm 1332. The pivoting arm 1332 is configured to move from an unlocked position (A) to a locked position (B). When in the locked position (B), the pivoting arm 1332 latches or otherwise fixes to the top shell 1324 clamping the vehicle seatbelt therebetween. In some embodiments, the pivoting arm 1332 supports a pivoting enclosure such as disclosed in connection with other embodiments of the present application, whereby the pivoting arm 1332 serves as a seatbelt lock-off when enclosing the pet within the enclosure.

[0112] In FIG. 62, the pet containment device 1420 includes a bottom shell 1422 and a top shell (back member) 1424, connected to the bottom shell 1422 by a pivot subassembly 1430, and a seatbelt lock-off arm 1432. The seatbelt lock-off arm 1432 is configured to move from an unlocked position (A) to a locked position (B). When in the locked position (B), the seatbelt lock-off arm 1432 latches or otherwise fixes to a lock-off bar receiver 1444 of the top shell 1424 clamping the vehicle seatbelt therebetween.

[0113] FIGS. 63-74 show various embodiments of pet containment devices having, among other things, structures for supporting the devices including feet and wheels for transport, and a handle for aiding in transport.

[0114] FIGS. 63-65 show a pet containment device 1520 having a bottom shell 1522 configured with sockets 1532 for receiving wheels 1538. The wheels 1538 can be selectively installed in the sockets 1538 to support the pet containment device 1520 for rolling movement over a surface. It which be appreciated that the wheels 1538 may be configured to

be snap-fit or otherwise secured into the sockets 1532. The pet containment device further includes a telescoping handle 1550, described further below.

[0115] FIGS 66 and 67 illustrate a variation of the wheel arrangement of the pet containment device 1520 wherein the wheels are selectively deployable between a retracted position and a deployed/use position. In this regard, each of the wheels 1538a are supported for pivoting movement at a pivot point 1540. In this embodiment, the wheels 1538a pivot fore to aft along a transverse axis of the bottom shell 1522. FIGS. 68 and 69 illustrate an embodiment wherein the wheels 1538a pivot about an axis perpendicular to the transverse axis of the bottom shell 1522. FIG. 71 shows the wheels 1538/1538a in an installed/deployed/use position.

[0116] FIGS. 70-72 illustrate the telescoping handle 1550. The telescoping handle 1550 is supported for sliding movement relative to a subframe 1552 of a top shell 1524 of the poet containment device 1520 between a retracted position in FIG. 70 and a deployed/use position shown in FIGS. 71 and 72.

[0117] As noted, FIG.71 illustrates the wheels 1538/1538a in an installed/deployed/use position. In FIG. 72, two of the wheels (e.g., the front wheels) are replaced with bumpers 1560 such that the pet containment device 1520 may generally resist rolling unless the pet containment device 1520 is tilted to an orientation at which the bumpers are elevated above a support surface allowing the pet containment device 1520 to roll on the (rear) wheels 1538/1538a.

[0118] FIGS. 73 and 74 illustrate a pet containment device 1620 having a bottom shell 1622 with a front foot 1630 and a rear foot 1634. One or both of the front foot 1630 and the rear foot 1634 can be adjustable to change an orientation of the bottom shell 1622 relative to a support surface.

[0119] In general, embodiments of the present disclosure provide various benefits for convenient and safe use in a vehicle along with storage, transport, shipping, and manufacturability. For example, embodiments of the pet containment device may provide a minimal tubular frame structure, easy installation, lightweight structure, compact folded dimensions and the like.

[0120] The term "about" is intended to include the degree of error associated with measurement of the particular quantity based upon the equipment available at the time of filing the application.

[0121] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the present disclosure. As used herein, the singular forms "a," "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, element components, and/or groups thereof.

[0122] While the present disclosure has been described with reference to an exemplary embodiment or embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the present disclosure. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the present disclosure without departing from the essential scope thereof. Therefore, it is intended that the present disclosure not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this present disclosure, but that the present disclosure will include all embodiments falling within the scope of the claims.

CLAIMS

What is claimed is:

1. A pet containment device comprising:

a base member; and

a back member;

wherein the base member and the back member are coupled for pivoting movement relative to each other between a stowed position and a use position;

wherein the base member is connectable to an anchor point in a vehicle; and

wherein the base member and the back member define at least portions of an interior space for receiving a pet/animal when in the use position.

2. The pet containment device according to claim 1, wherein the base member includes a pivot subassembly, and the back member is coupled to the pivot subassembly.

3. The pet containment device according to claim 2, wherein the pivot subassembly includes at least one latch member for coupling with an anchor point in a vehicle.

4. The pet containment device according to claim 3, wherein the latch member is movable relative to the base member.

5. The pet containment device according to claim 1, further comprising a collapsible barrier attached to the base member, the collapsible barrier extending between the base member and the back member when in a deployed position and at least partially defining the interior space.

6. The pet containment device according to claim 5, wherein the collapsible barrier is fixed to the back member.

7. The pet containment device according to claim 5, wherein the collapsible barrier is independently moveable relative to the back member.

8. The pet containment device according to claim 5, wherein the collapsible barrier includes at least one stiffener pivotally attached to the pivot subassembly.

9. The pet containment device according to claim 5, wherein the collapsible barrier includes a net.

10. The pet containment device according to claim 5, wherein the collapsible barrier includes an attachment for securing to a vehicle anchor point.

11. The pet containment device according to claim 5, wherein the collapsible barrier includes a reinforcement member extending from the base member to the back member.

12. The pet containment device according to claim 2, further comprising a collapsible barrier including a pivot arm attached to the base member, the collapsible barrier extending between the base member and the back member when in a deployed position and at least partially defining the interior space, wherein the pivot subassembly includes a lock mechanism for securing the pivot arm in at least one of a stowed or deployed position.

13. The pet containment device according to claim 12, wherein the lock mechanism includes a lock body on the pivot subassembly, the lock body having at least one slot for receiving a pin of the pivot arm, whereby movement of the pivot arm is constrained by the movement of the pin in the at least one slot of the lock body.

14. The pet containment device according to claim 13, wherein the at least one slot includes an arcuate portion and at least one detent portion for locking the pivot arm in a deployed or stowed position.

15. The pet containment device according to claim 14, wherein the pin is biased to engage the at least one detent portion of the slot.

16. The pet containment device according to claim 15, wherein the at least one detent portion of the slot extends in a radial direction from the arcuate portion of the slot.

17. The pet containment device according to claim 16, wherein the lock mechanism further comprises an actuator operatively coupled to the pin for selectively aligning the pin with the arcuate portion of the slot to allow movement of the pivot arm.

18. The pet containment device according to claim 17, wherein the actuator is supported on the pivot arm.

19. The pet containment device according to claim 1, wherein the back member includes an upper attachment for securing to a vehicle anchor point.

20. The pet containment device according to claim 1, wherein the base member and the back member include cooperating features for securing the back member in at least one of the stowed position or the use position.

21. The pet containment device according to claim 20, wherein the cooperating features include a recess associated with one of the base member or the back member and a protrusion associated with the other of the base member or back member.

22. The pet containment device according to claim, 1, further comprising at least one latch member for securing the pet containment device to an anchor of a vehicle.

23. The pet containment device according to claim 22, wherein the base member includes handle, the handle operative to actuate the at least one latch member.

24. The pet containment device according to claim 1, wherein the back member includes a sleeve for receiving a support of an associated luggage item.

25. The pet containment device according to claim 1, wherein the back member includes at least one strap.

26. The pet containment device according to claim 25, wherein the at least one strap includes a pair of backpack straps.

27. The pet containment device according to claim 1, in combination with a stroller, wherein the pet containment device is releasably securable to the stroller.

28. The pet containment device according to claim 1, in combination with a bike mount rack, wherein the pet containment device is releasably securable to the bike mount rack.

29. The pet containment device according to claim 1, further wherein the back member is configured to cooperate with a seatbelt of an associated vehicle.

30. The pet containment device according to claim 29, further comprising a clamping member for clamping the seatbelt of the associated vehicle.

31. The pet containment device according to claim 1, further comprising at least for supporting the base member.

32. The pet containment device according to claim 31, wherein the at least one wheel includes a selectively attachable wheel received in a socket of the base member.

33. The pet containment device according to claim 31, wherein the at least one wheel includes a selectively deployable wheel supported by the base member.

34. The pet containment device according to claim 32, wherein the selectively deployable wheel is supported by the base member at a pivot point and movable between a stowed position and a deployed position.

35. The pet containment device according to claim 1, wherein the back member includes a telescoping handle.

36. The pet containment device according to claim 1, wherein the base member includes at least one adjustable foot.

37. The pet containment device according to claim 1, further comprising at least two latch members for securing the pet containment device to an anchor of a vehicle,

38. A pet containment device comprising:

a base member; and

a back member;

wherein the base member and the back member are coupled for pivoting movement relative to each other between a stowed position and a use position;

wherein the base member and the back member define at least portions of an interior space for receiving a pet/animal when in the use position; and

wherein at least one of the base member or back member includes at least two latch arms connectable to respective anchor points in a vehicle;

wherein a position of the at least two latch arms is adjustable.

39. The pet containment device according to claim 38, wherein the at least two latch arms are supported on a bar, and wherein the bar is movable relative to the base member and the back ember to adjust the position of the at least two latch arms.

40. A pet containment device comprising:

a base member;

a back member; and

a collapsible barrier attached to the base member, the collapsible barrier extending between the base member and the back member when in a deployed position and at least partially defining the interior space;

wherein the base member and the back member are coupled for pivoting movement relative to each other between a stowed position and a use position;

wherein the base member is connectable to an anchor point in a vehicle; and

wherein the base member and the back member define at least portions of an interior space for receiving a pet/animal when in the use position.

41. The pet containment device according to claim 40, wherein the collapsible barrier is fixed to the back member.

42. The pet containment device according to claim 40, wherein the collapsible barrier is independently moveable relative to the back member.

43. The pet containment device according to claim 40, wherein the collapsible barrier includes at least one stiffener pivotally attached to the pivot subassembly.

44. The pet containment device according to claim 40, wherein the collapsible barrier includes a net.

45. The pet containment device according to claim 40, wherein the collapsible barrier includes an attachment for securing to a vehicle anchor point.

46. The pet containment device according to claim 40, wherein the collapsible barrier includes a reinforcement member extending from the base member to the back member.

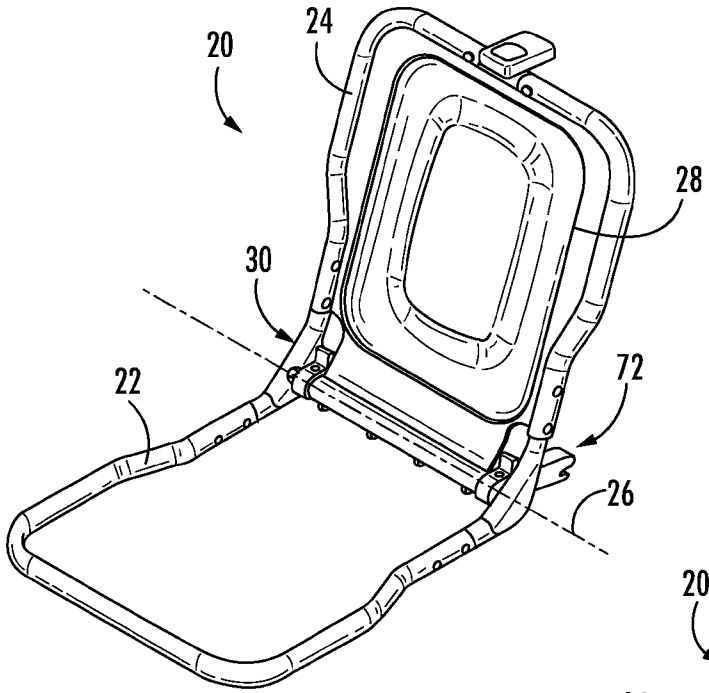

FIG. 1

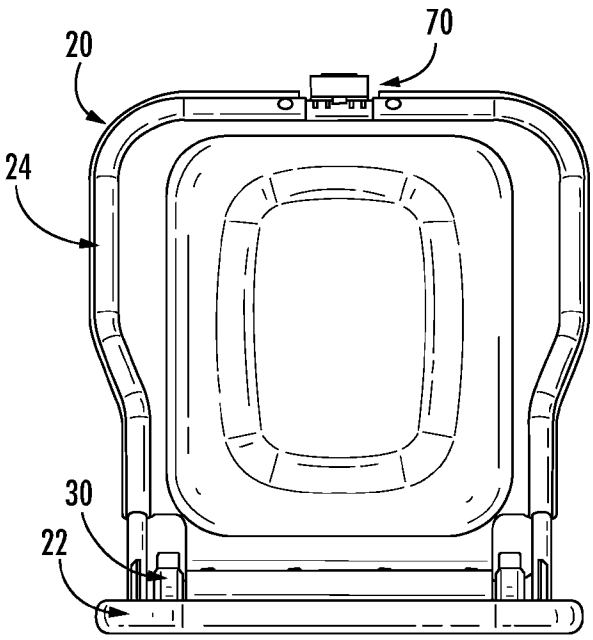

FIG. 2

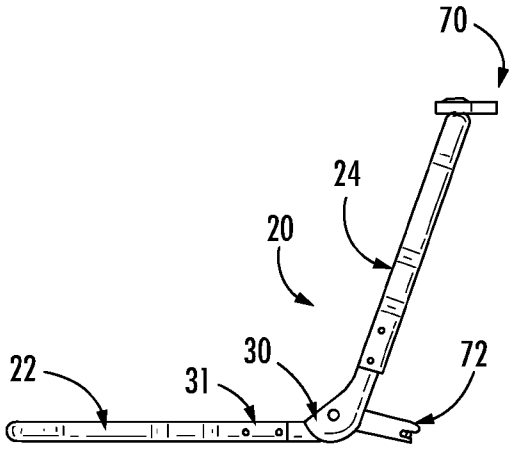

FIG. 3

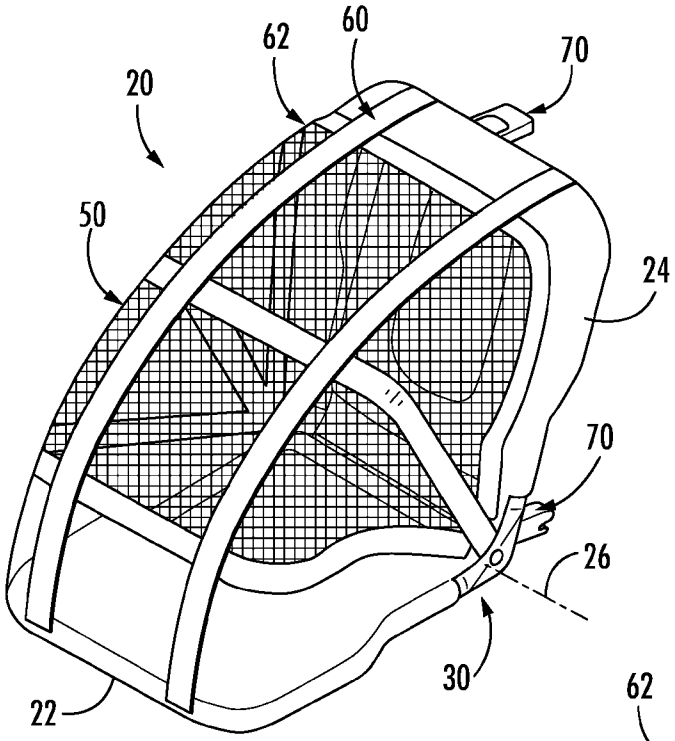

FIG. 4

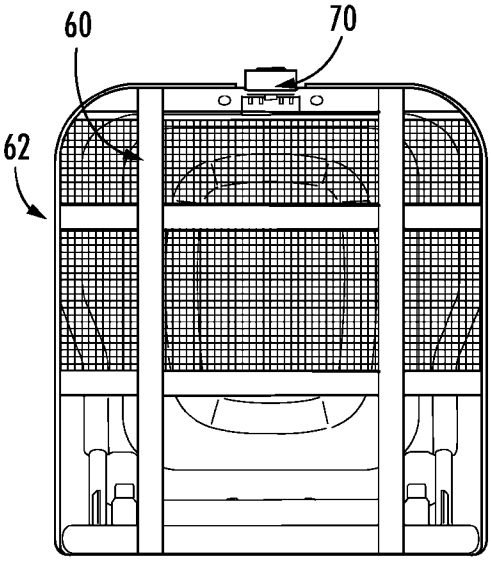

FIG. 5

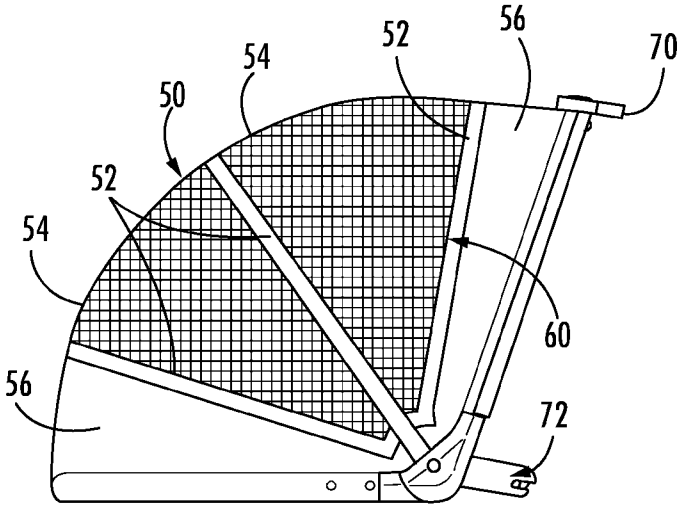

FIG. 6

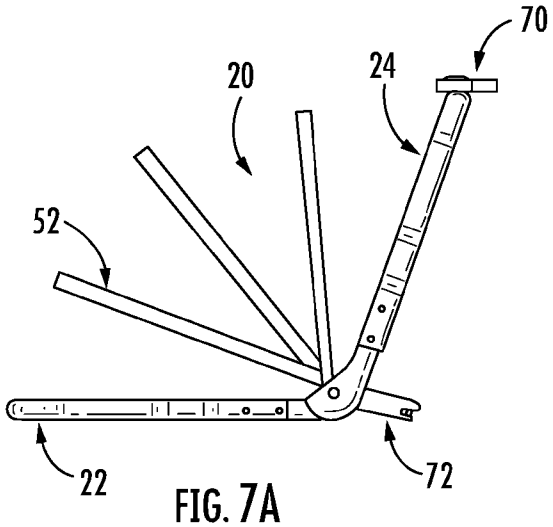

FIG. 7A

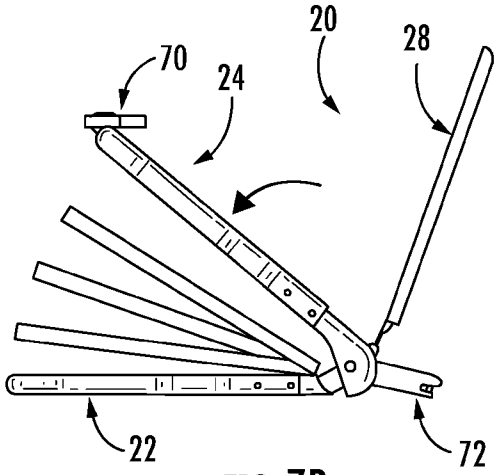

FIG. 7B

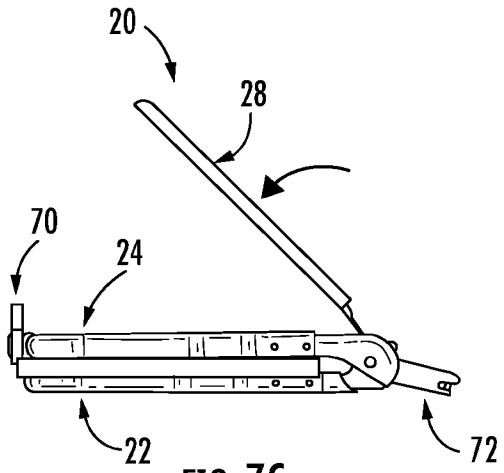

FIG. 7C

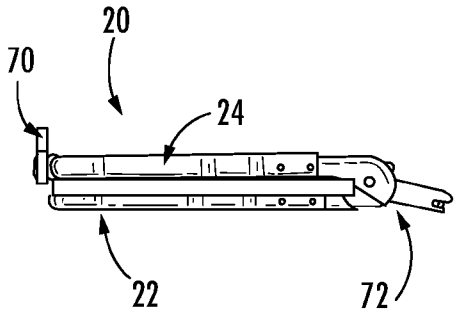

FIG. 7D

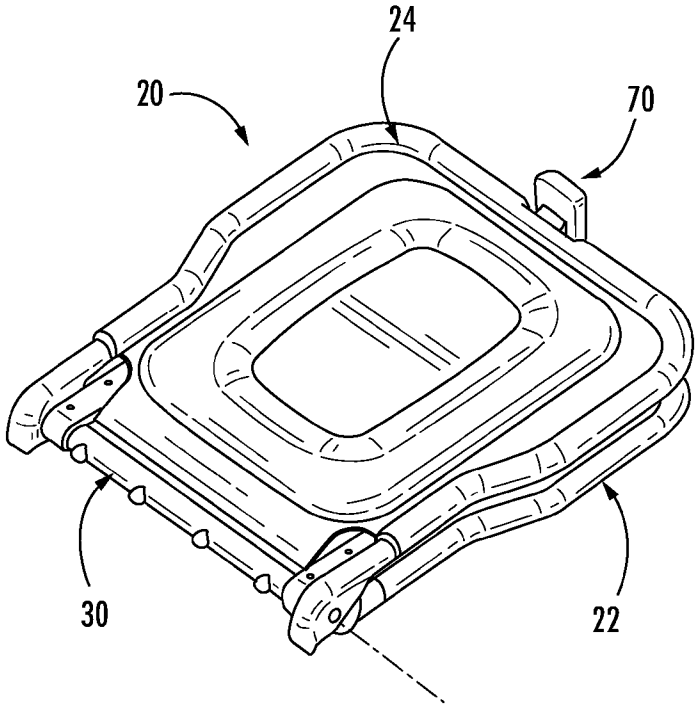

FIG. 8A

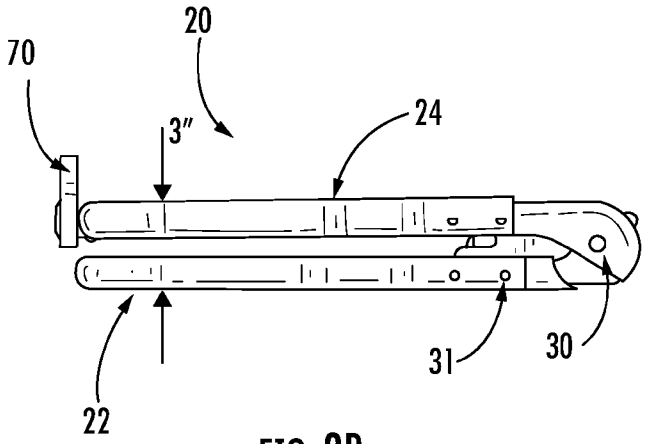

FIG. 8B

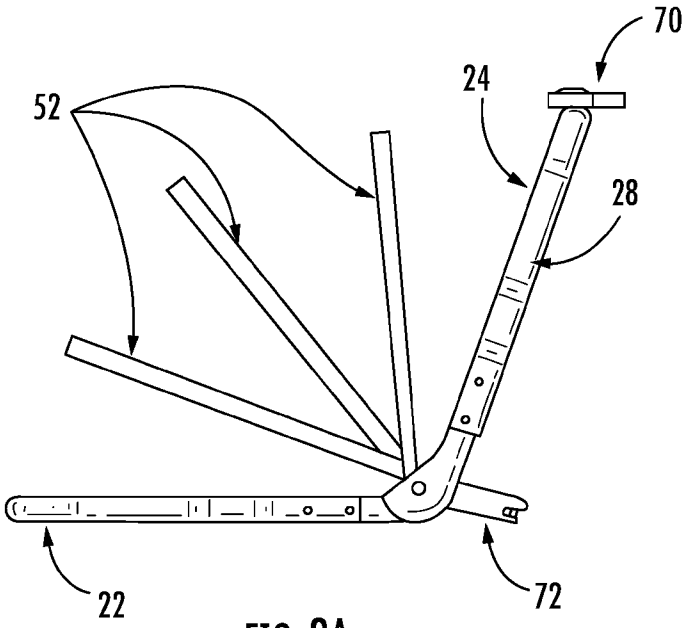

FIG. 9A

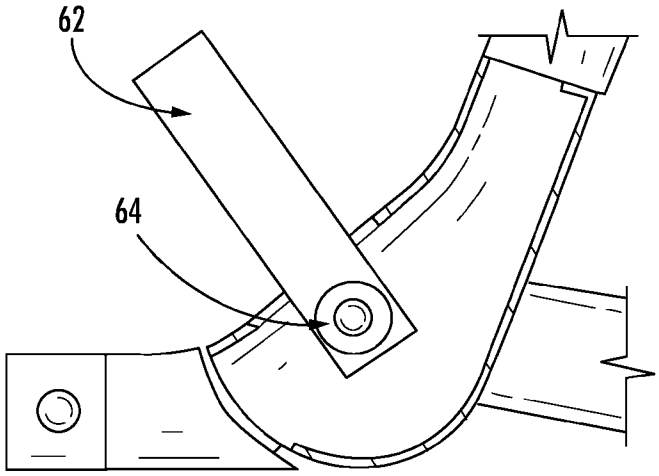

FIG. 9B

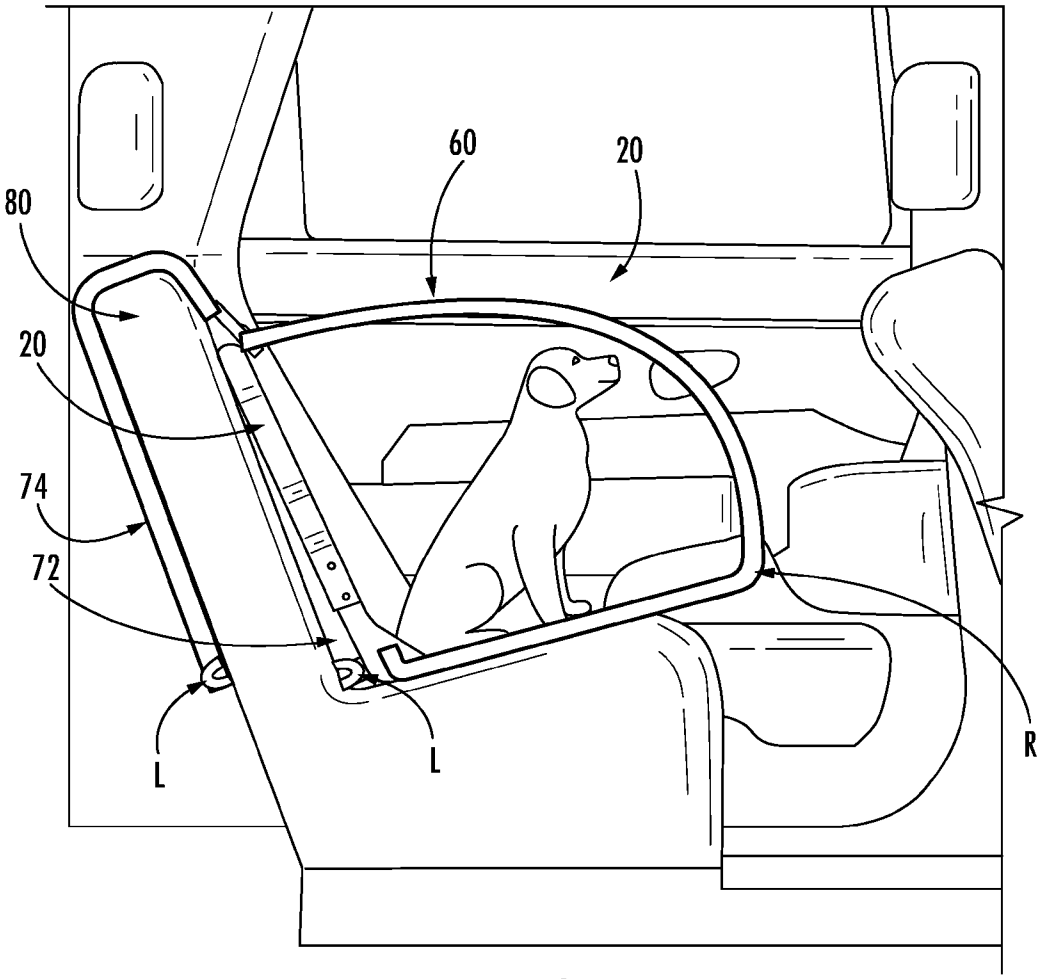

FIG. 10

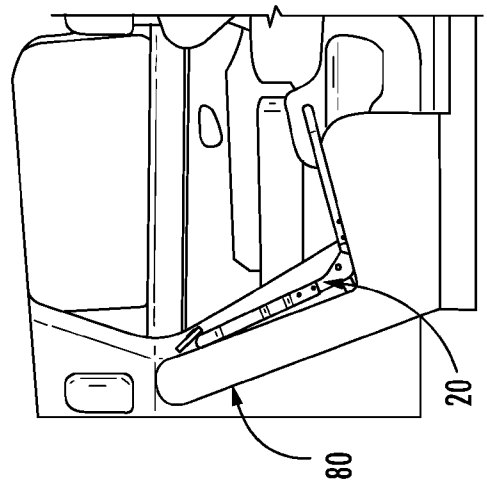

FIG. 11C

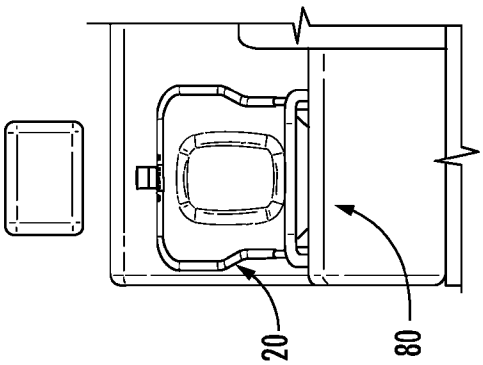

FIG. 11B

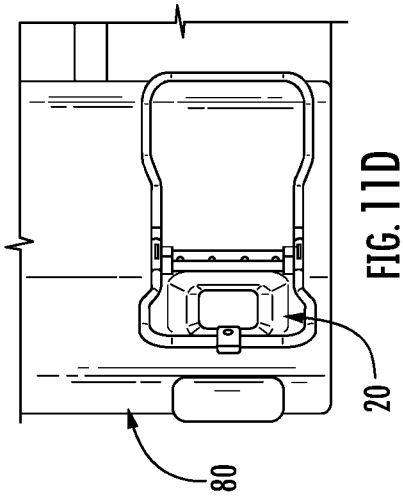

FIG. 11D

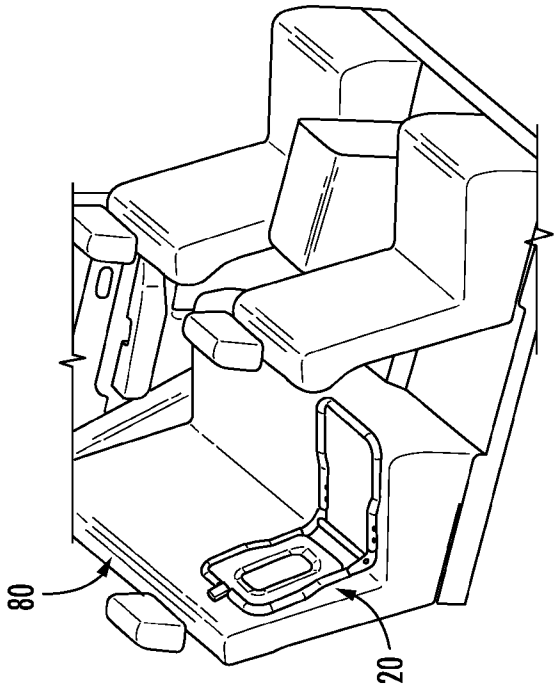

FIG. 11A

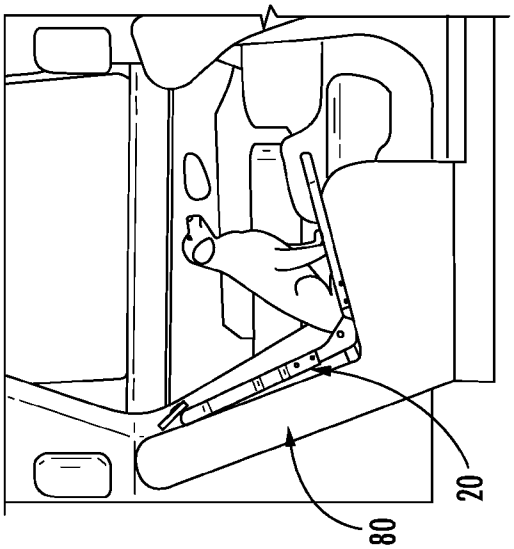

FIG. 12C

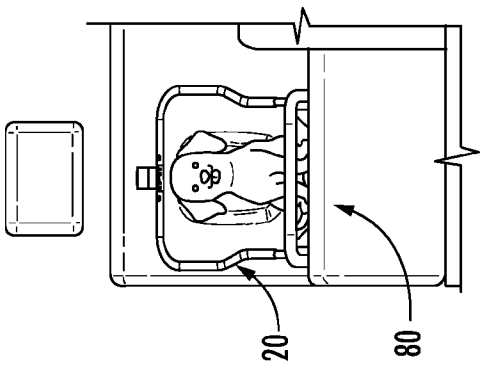

FIG. 12B

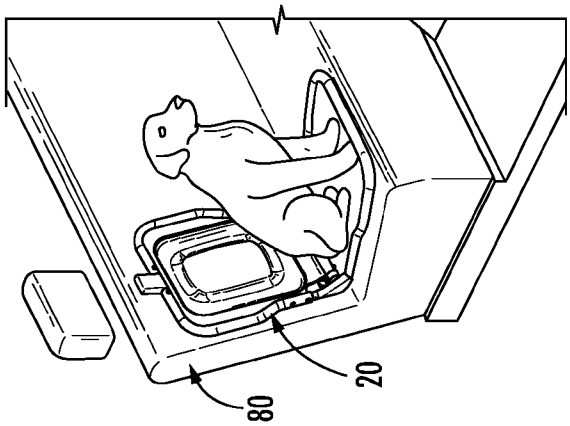

FIG. 12A

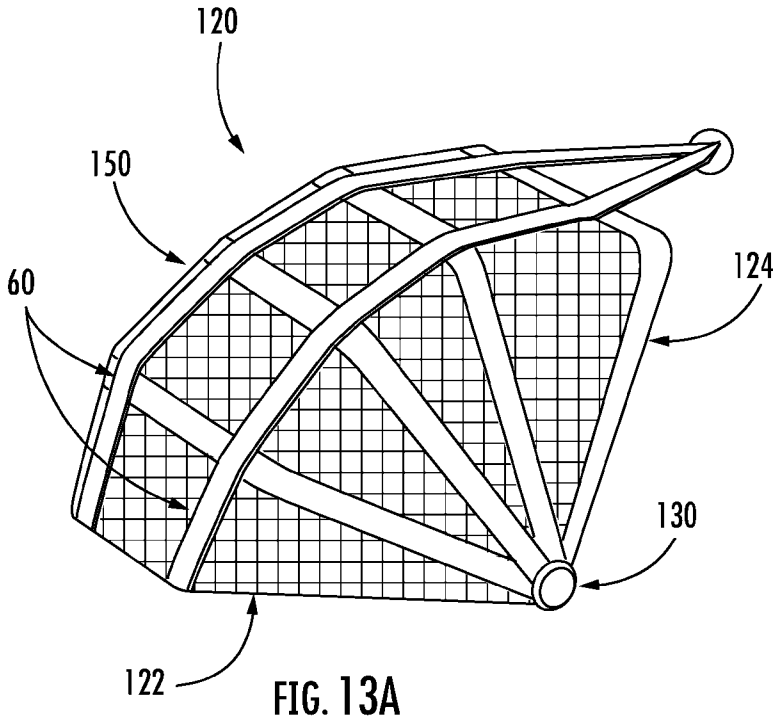

FIG. 13A

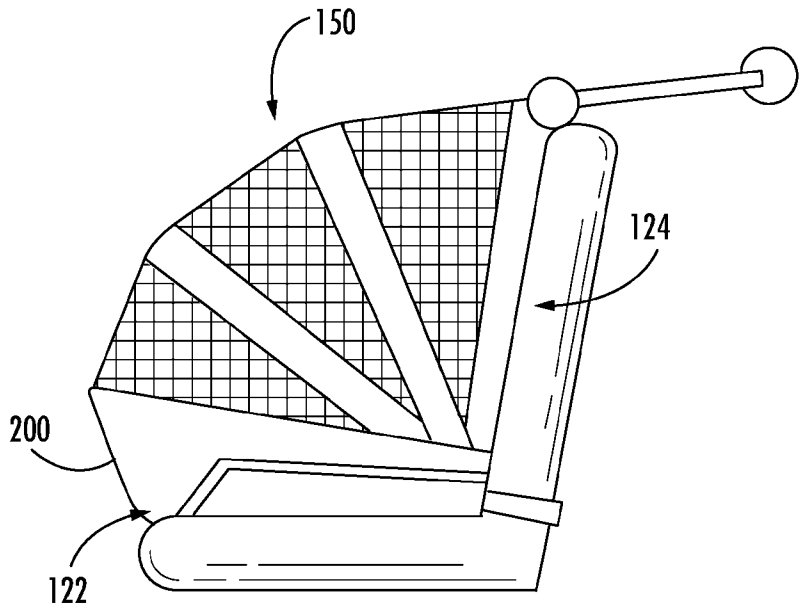

FIG. 13B

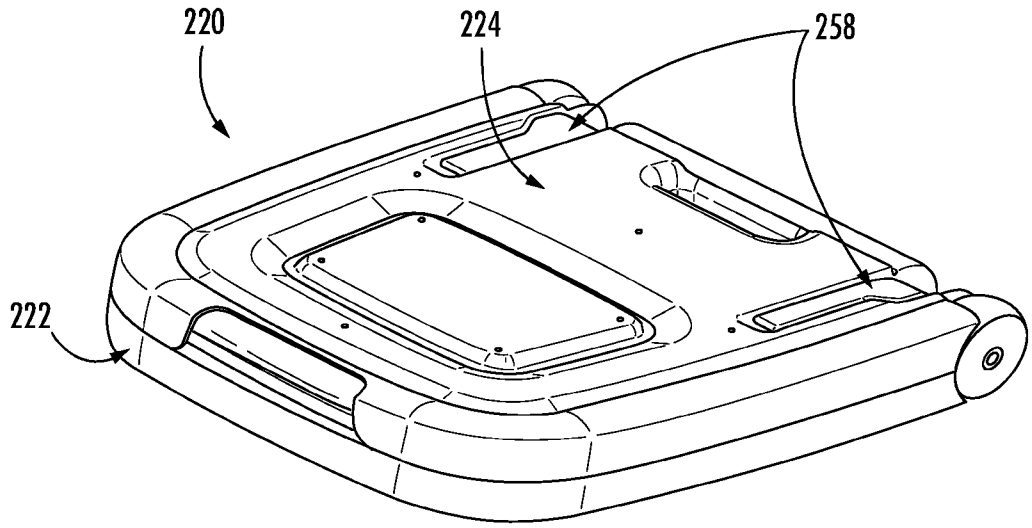

FIG. 14

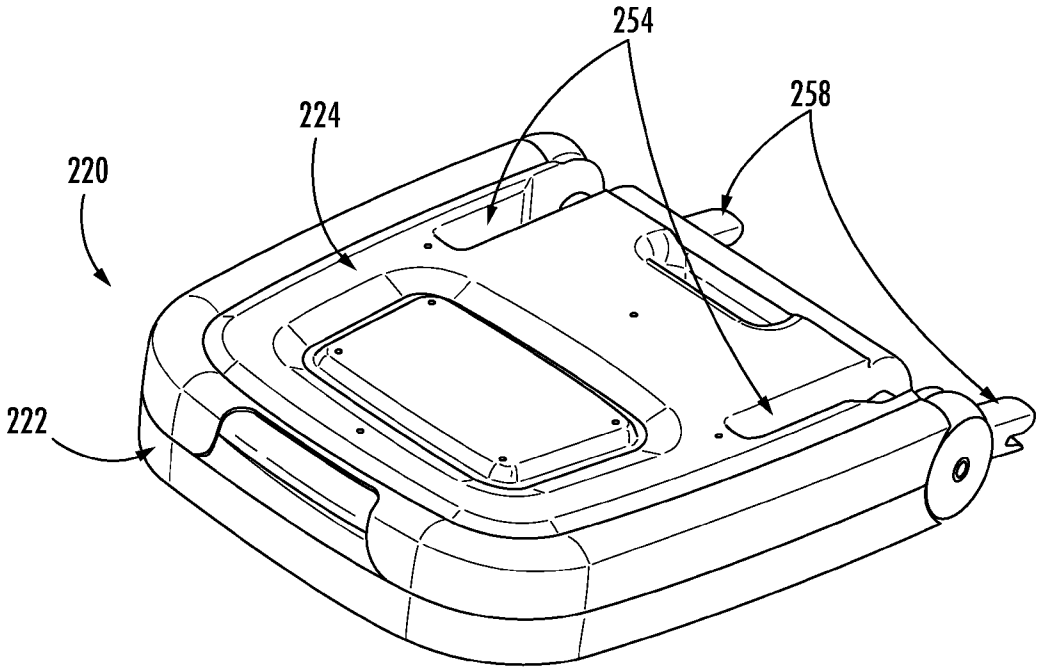

FIG. 15

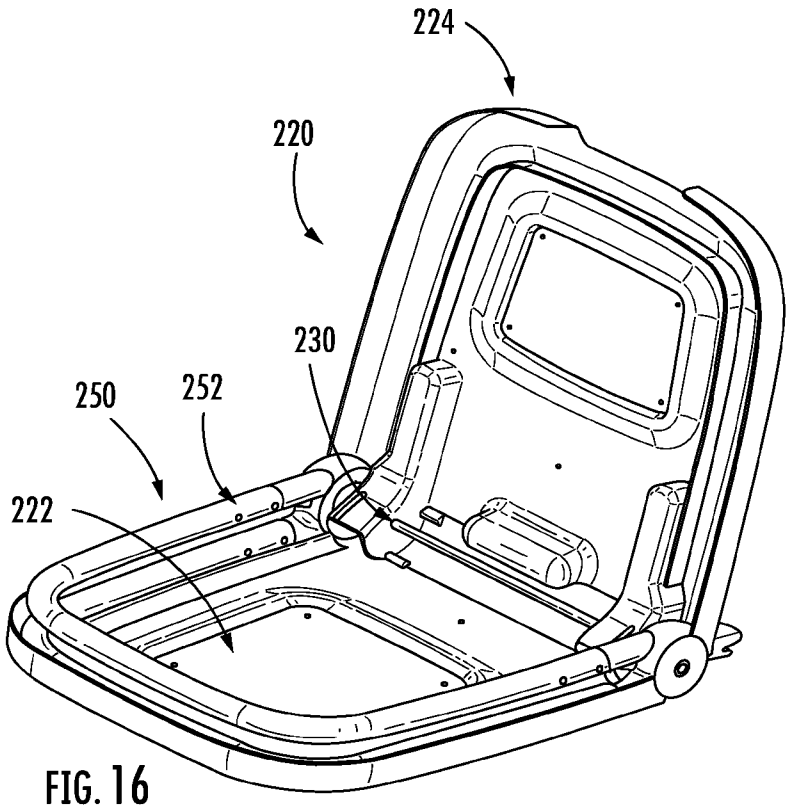

FIG. 16

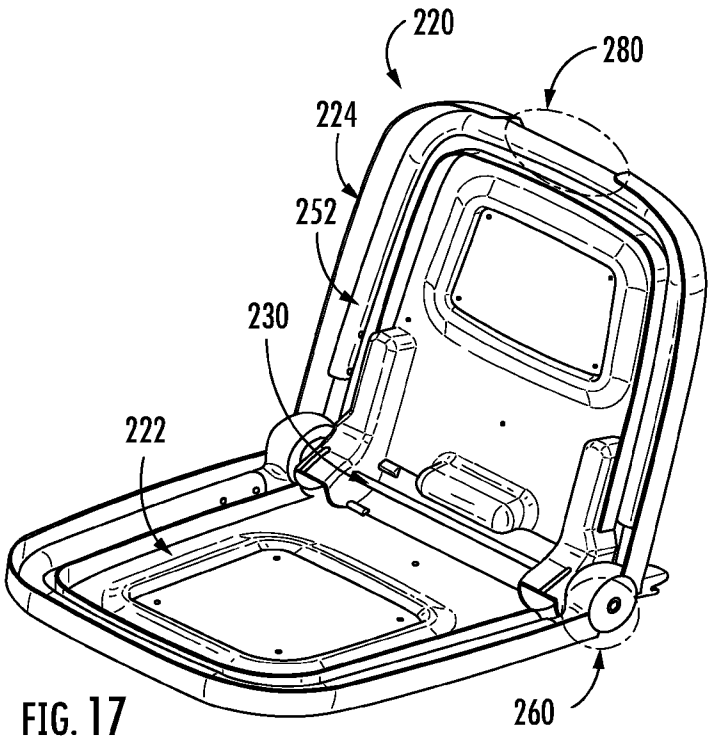

FIG. 17

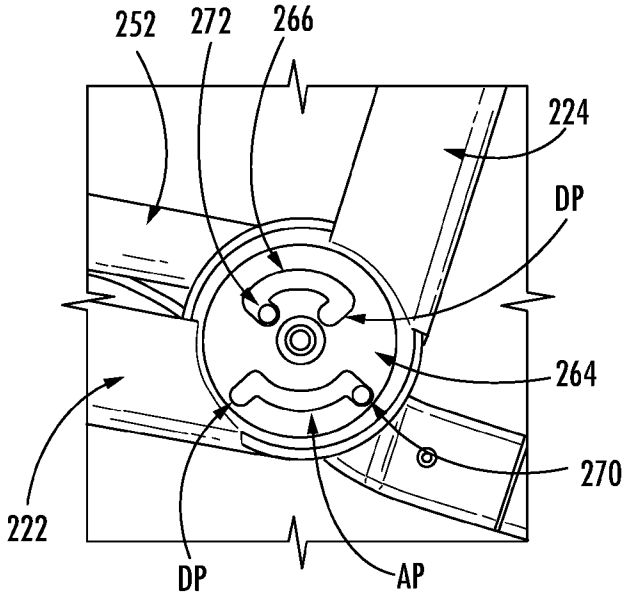

FIG. 18

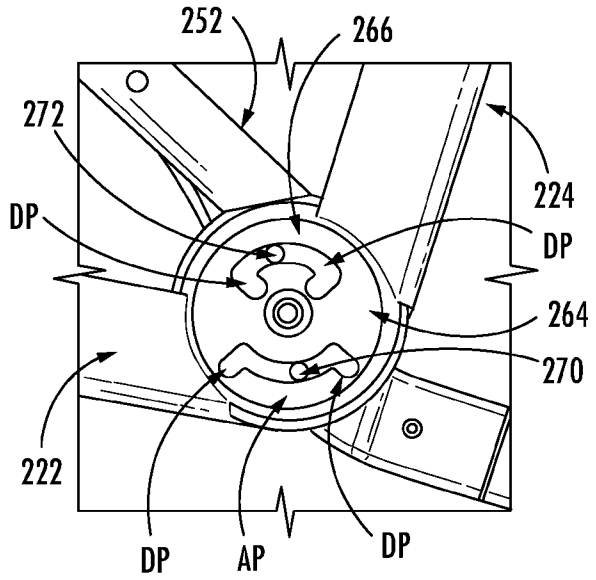

FIG. 19

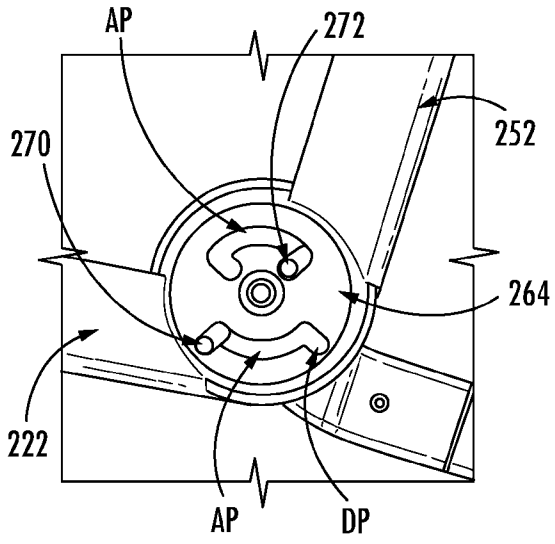

FIG. 20

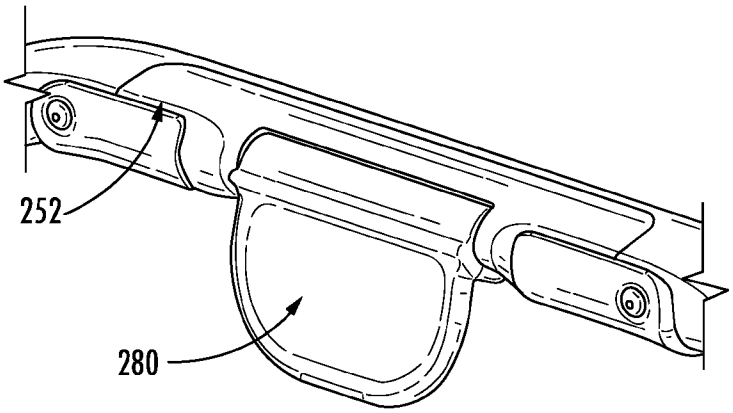

FIG. 21

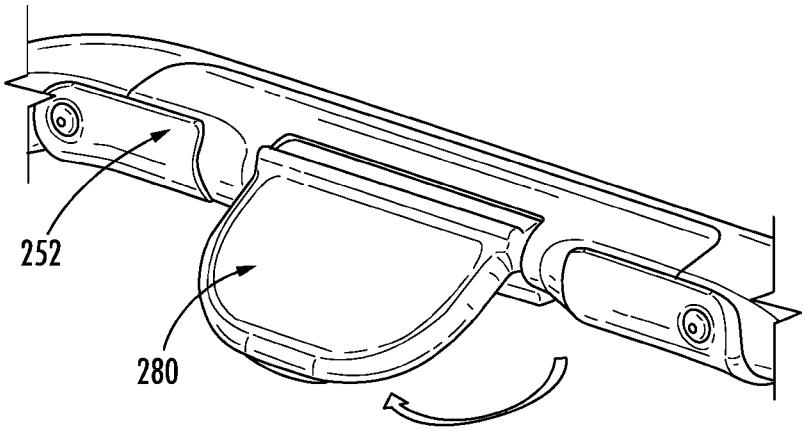

FIG. 22

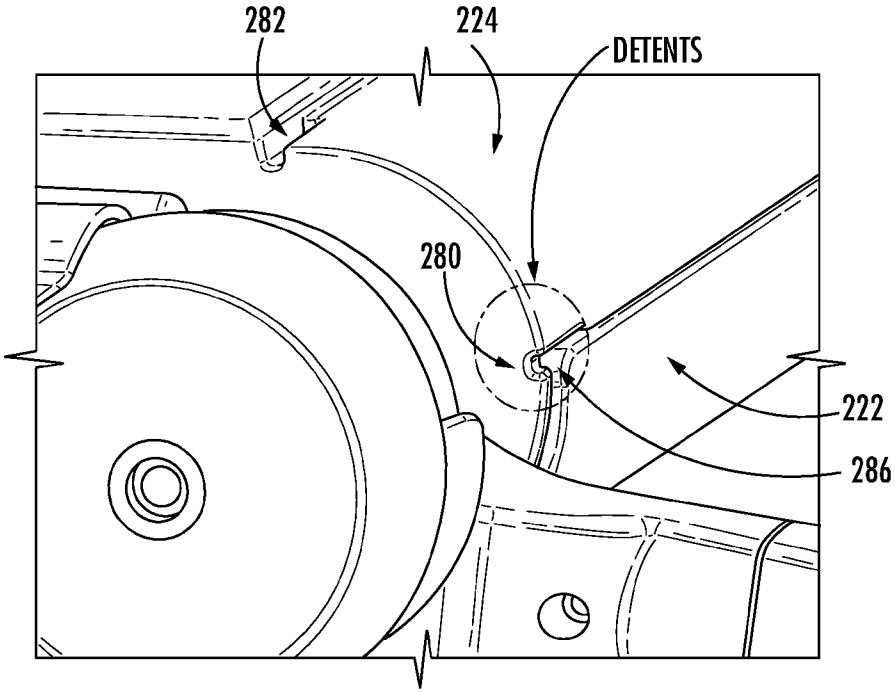

FIG. 23

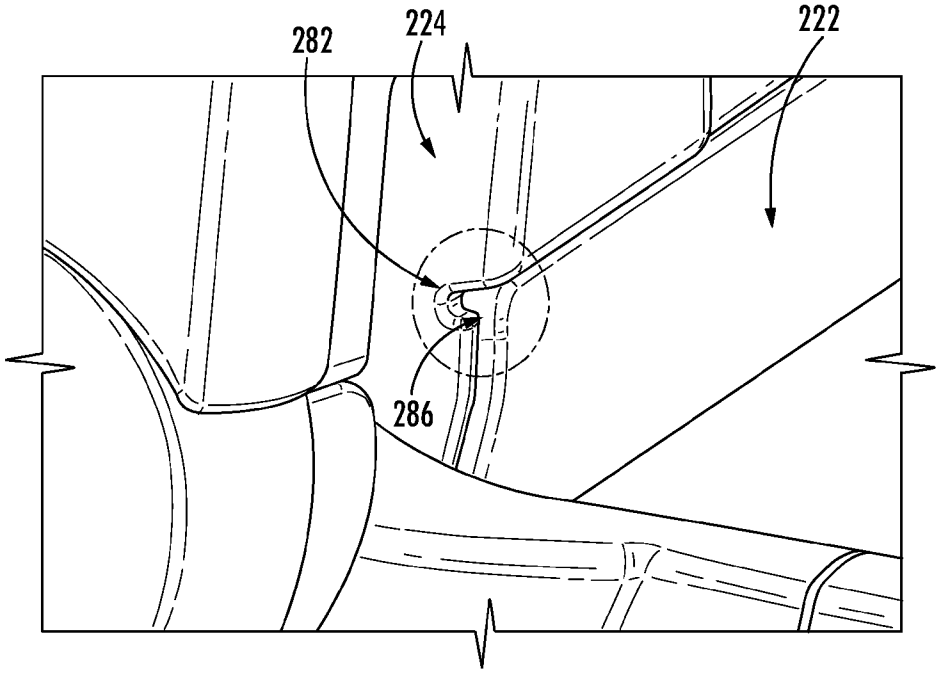

FIG. 24

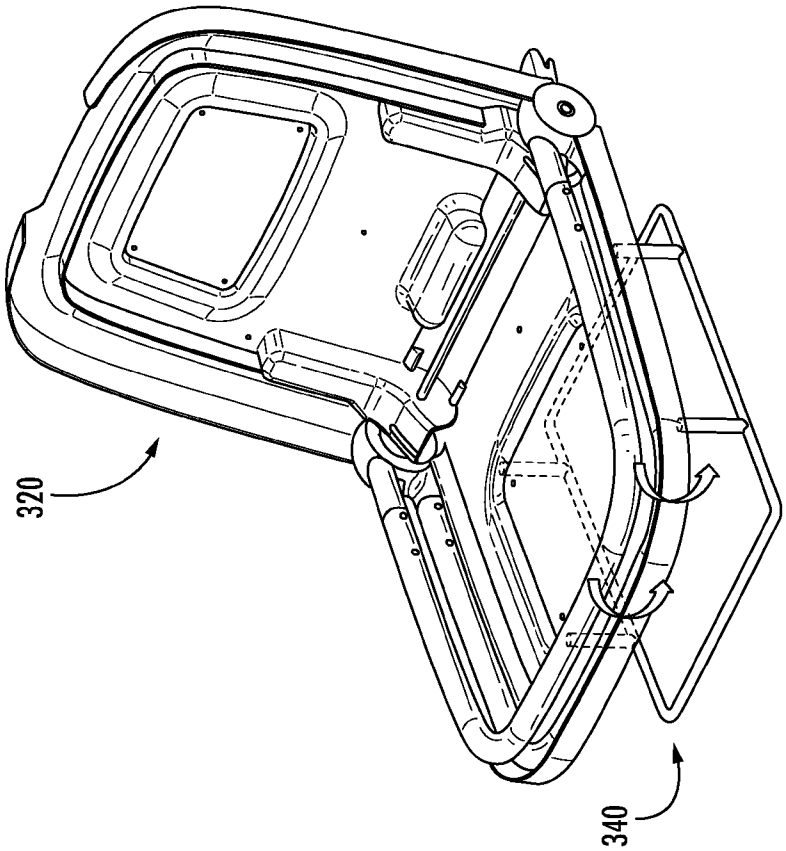

FIG. 26

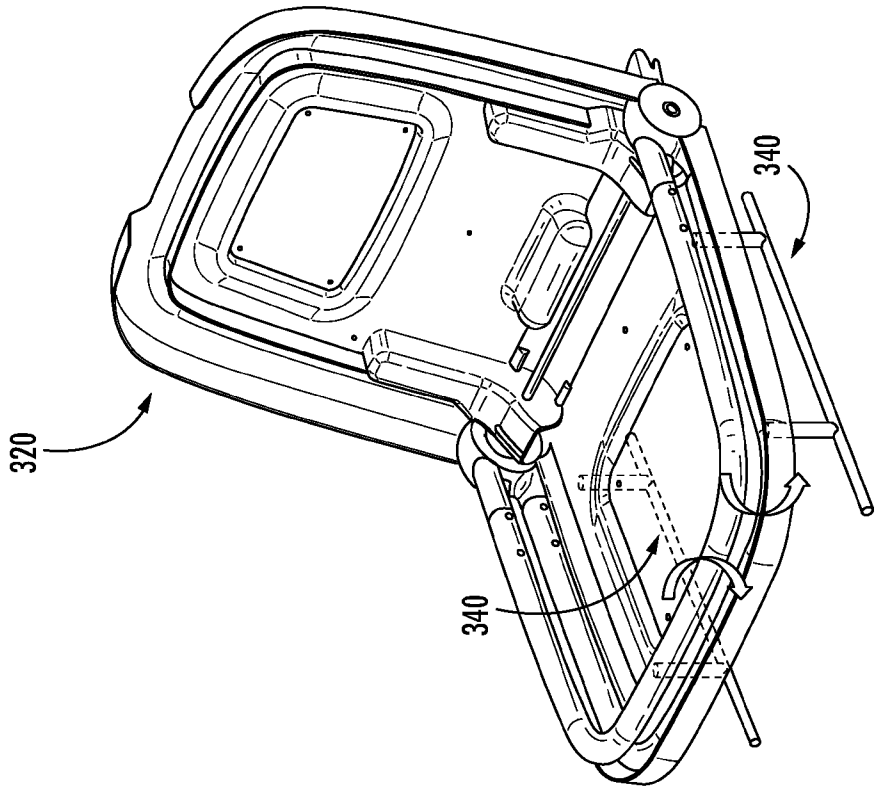

FIG. 25

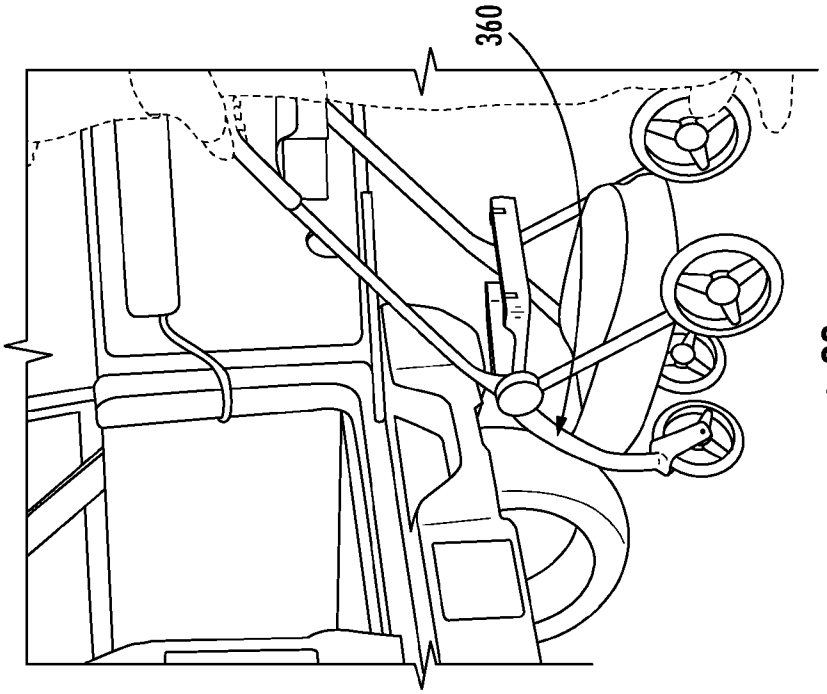

FIG. 28

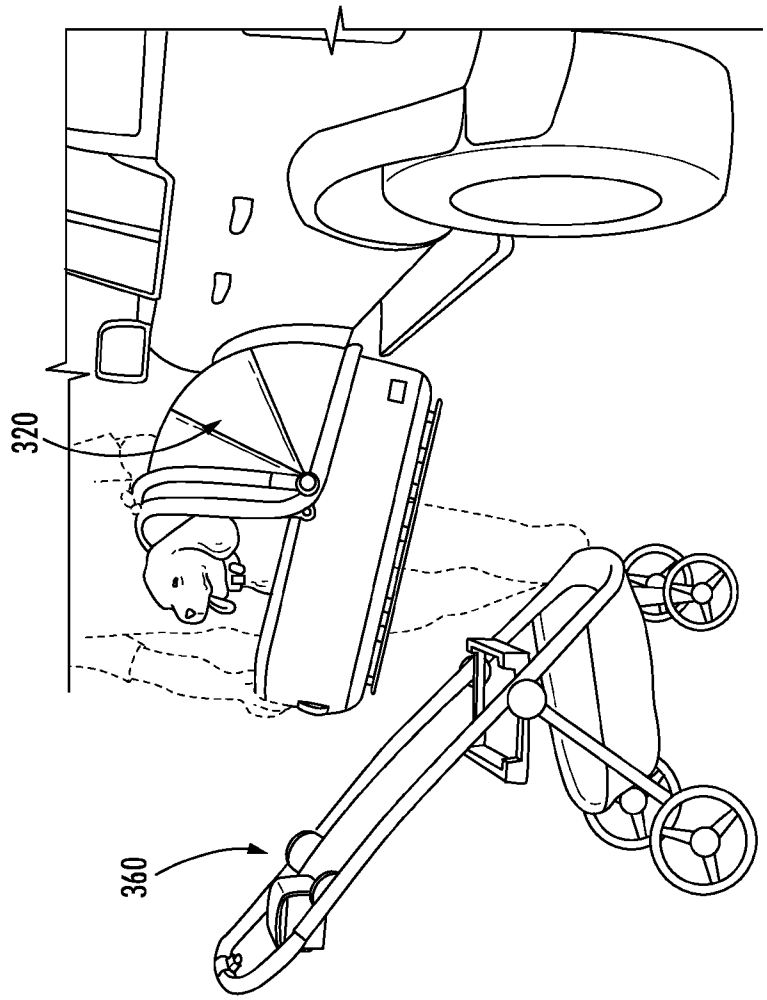

FIG. 27

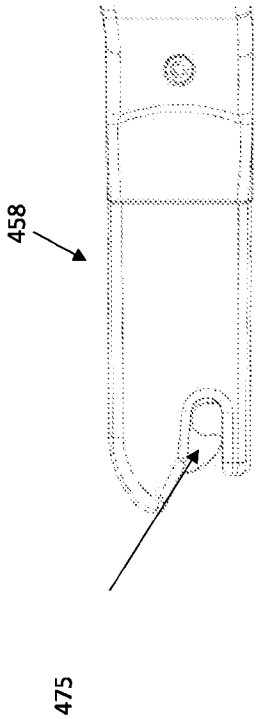

FIG. 30

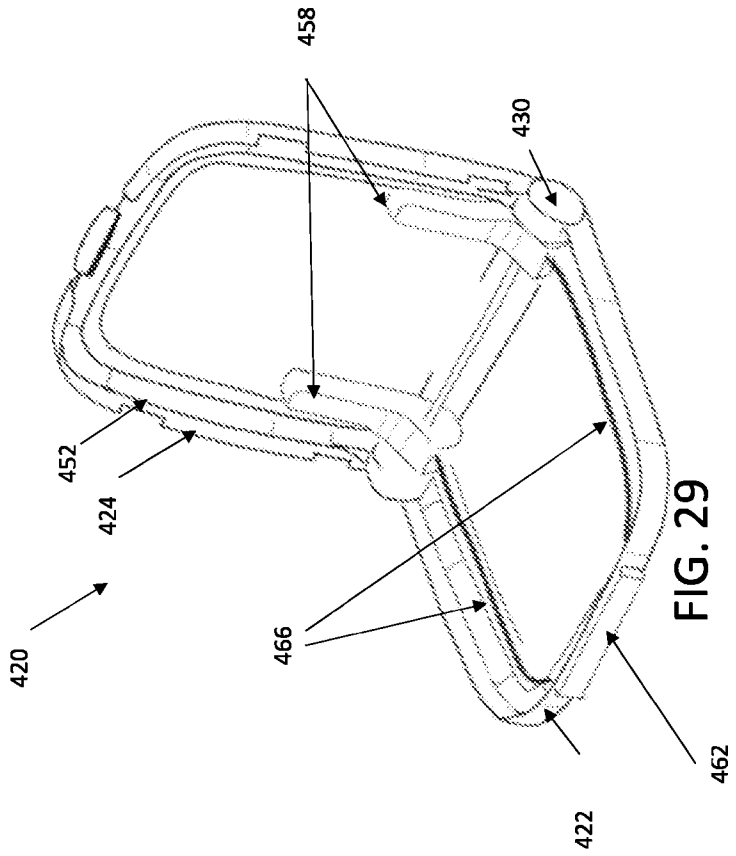

FIG. 29

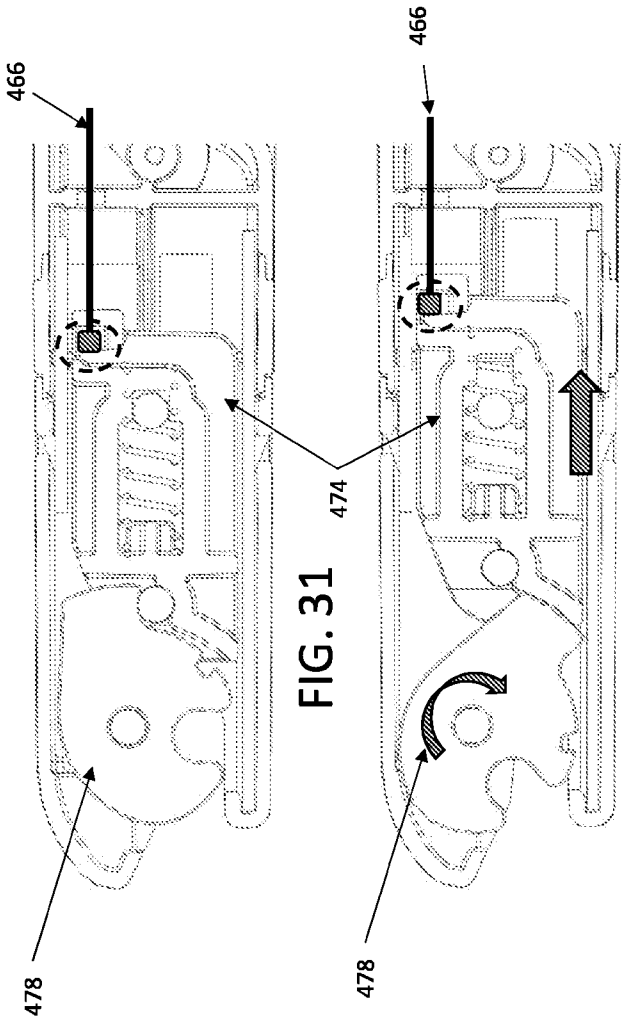

FIG. 31

FIG. 32

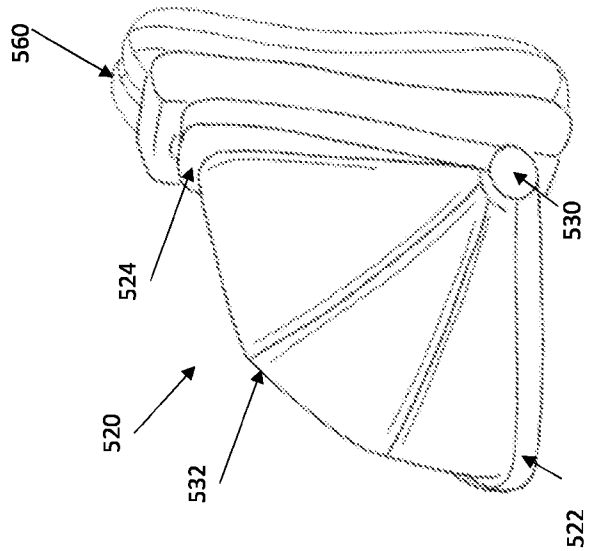

FIG. 36

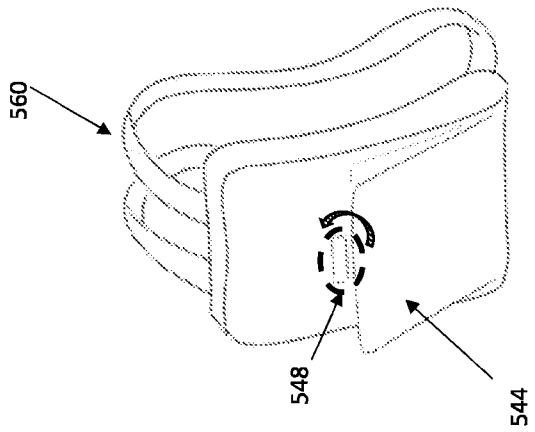

FIG. 35

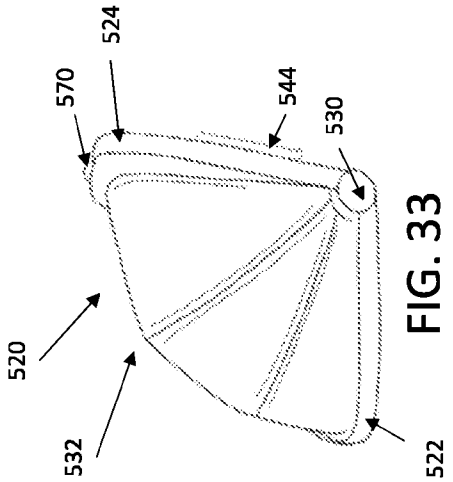

FIG. 33

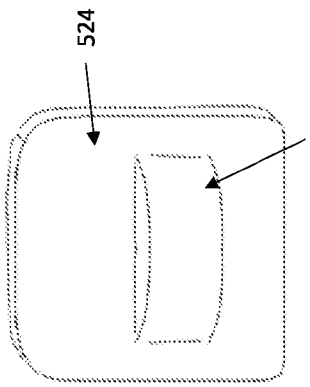

FIG. 34

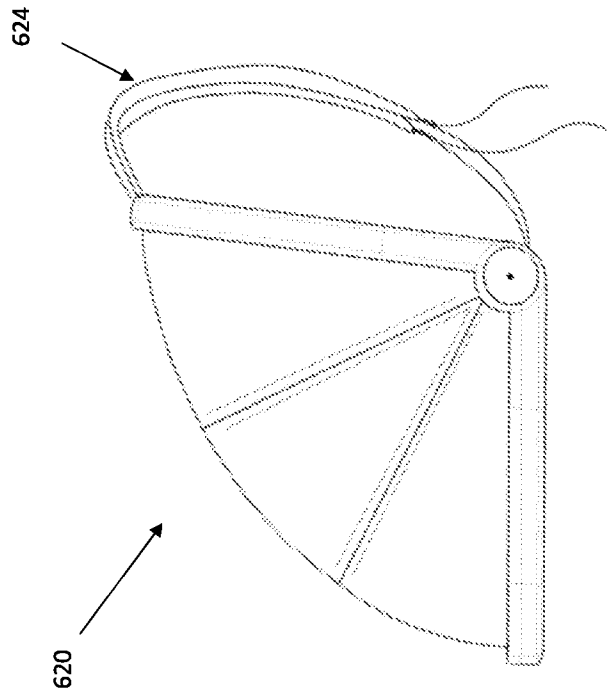

FIG. 37

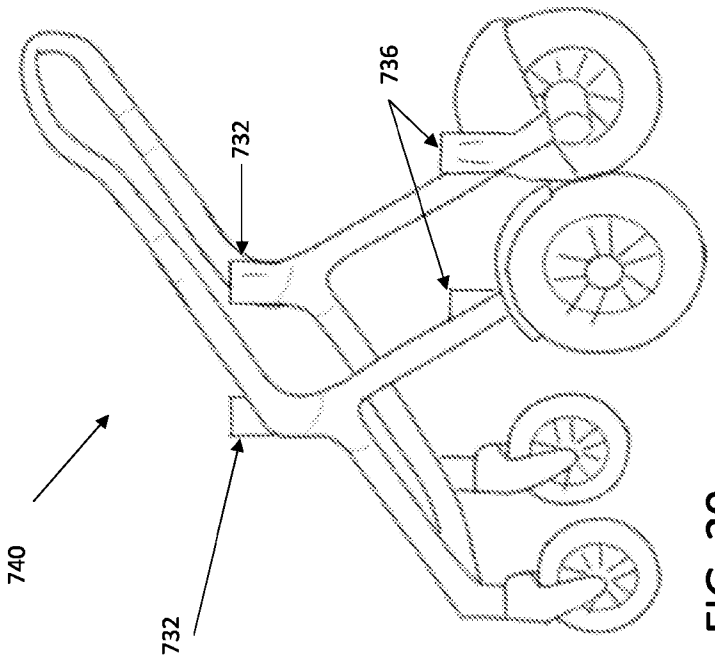

FIG. 39

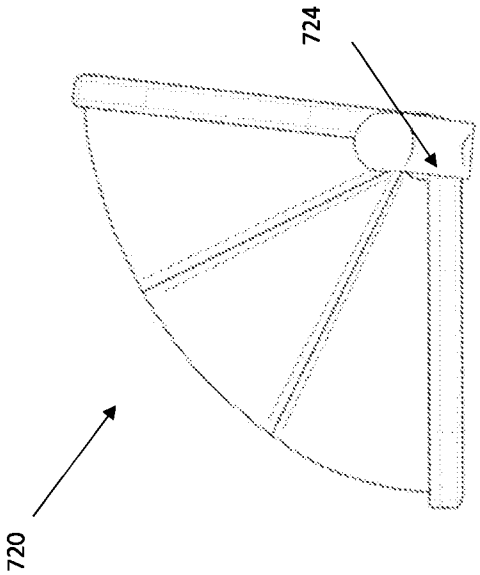

FIG. 38

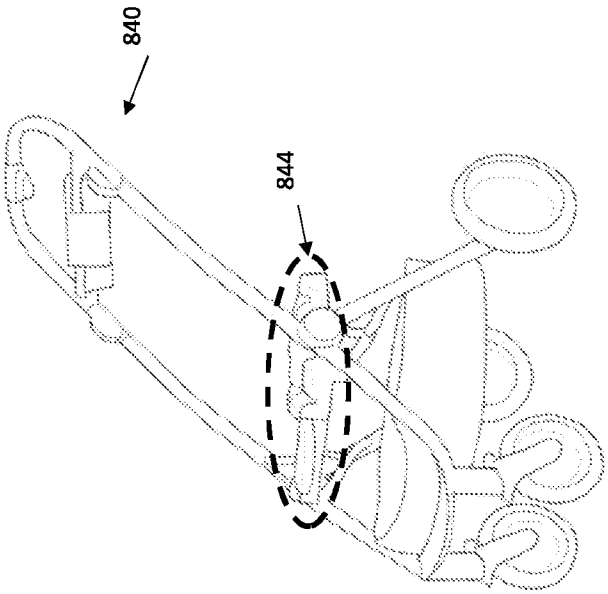

FIG. 42

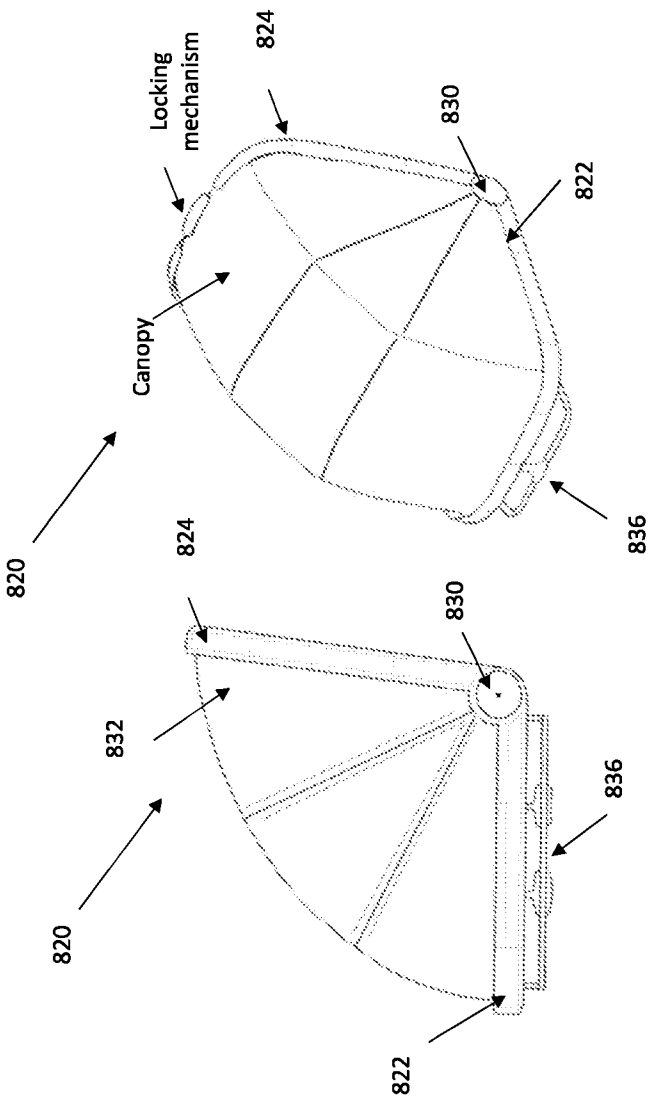

FIG. 41

FIG. 40

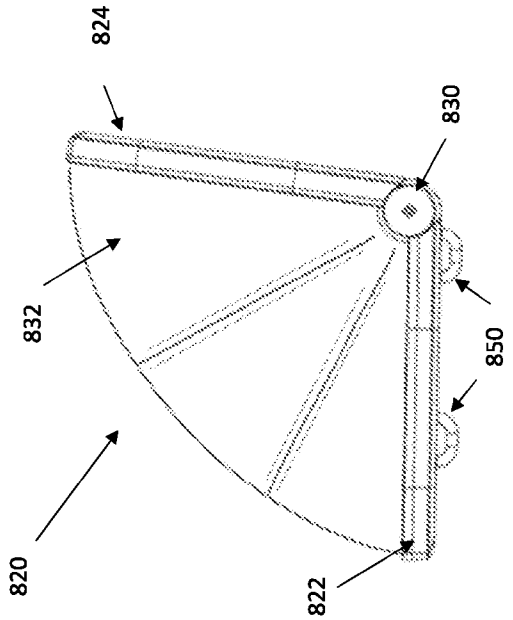

FIG. 45

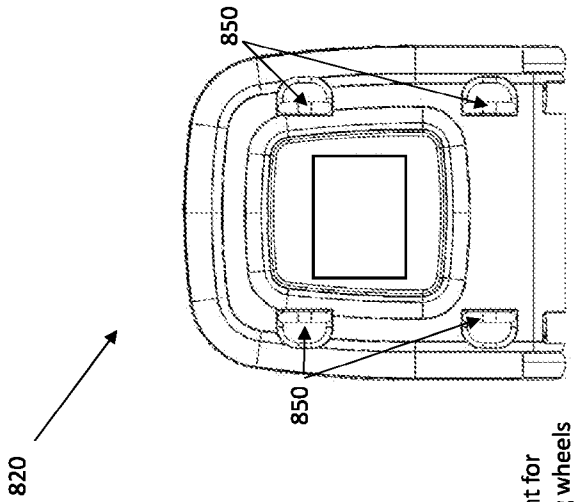

FIG. 44

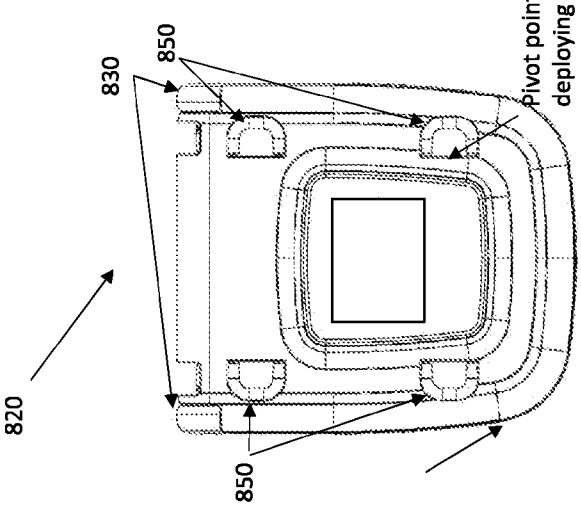

FIG. 43

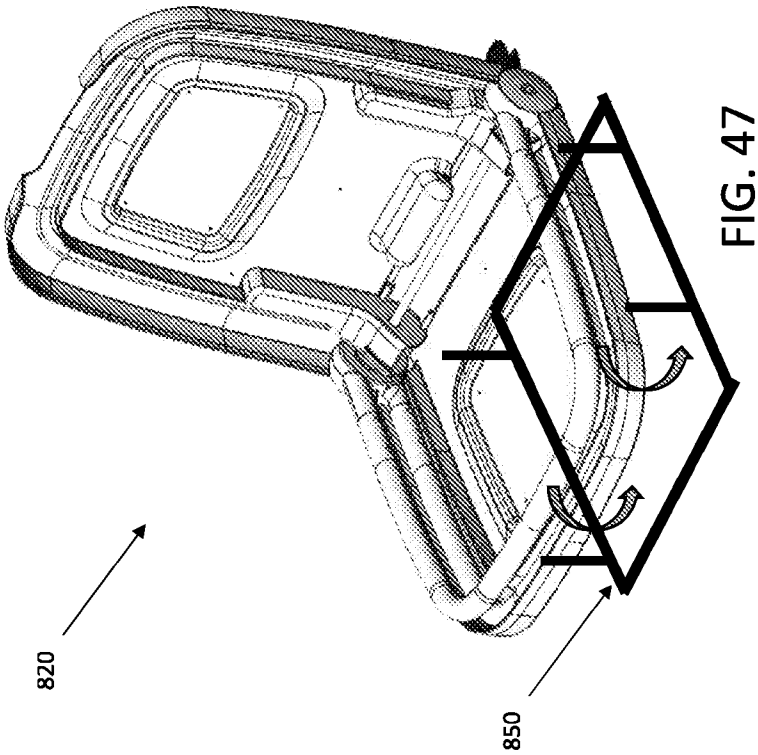

FIG. 47

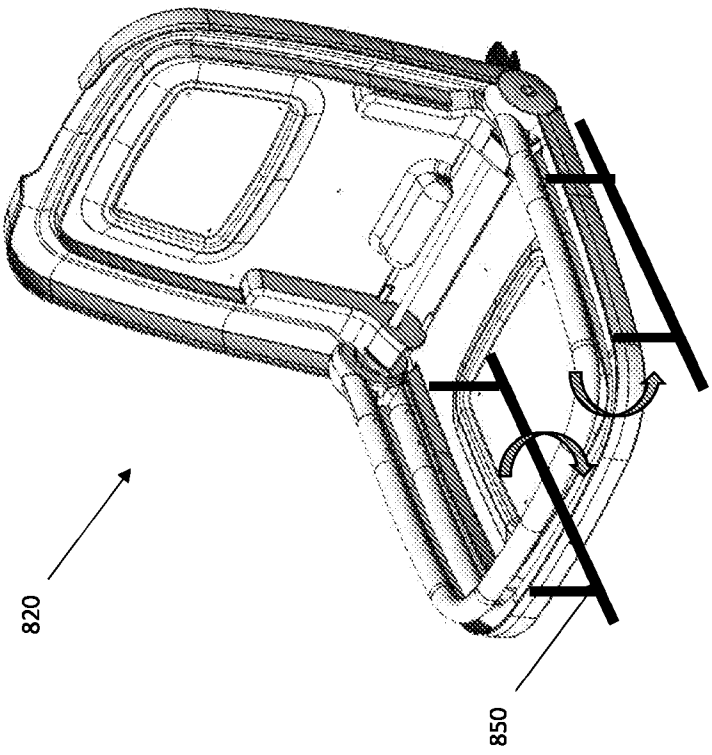

FIG. 46

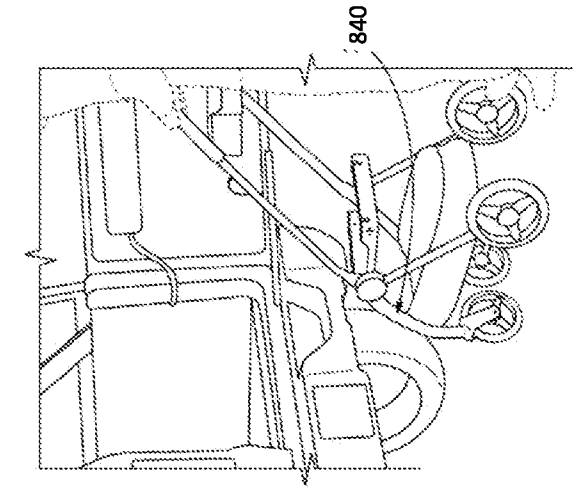

FIG. 49

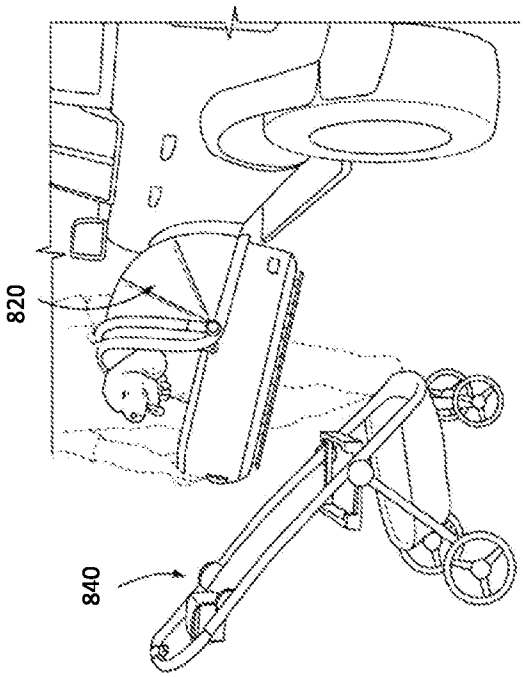

FIG. 48

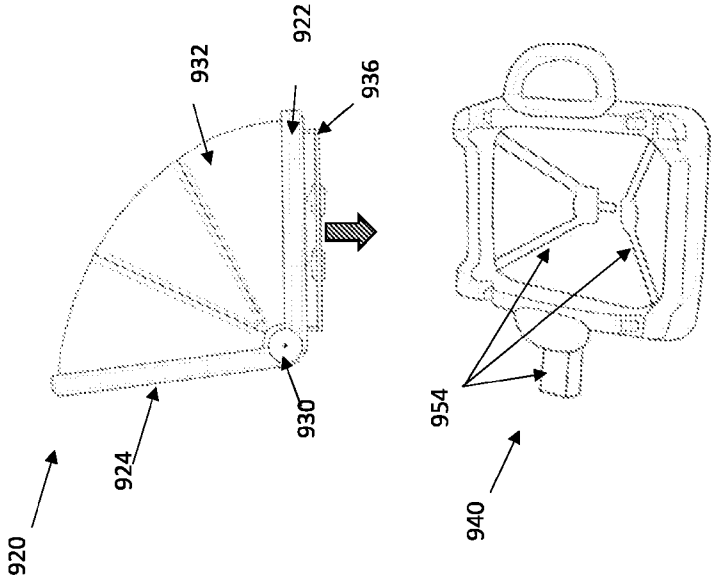

FIG. 51

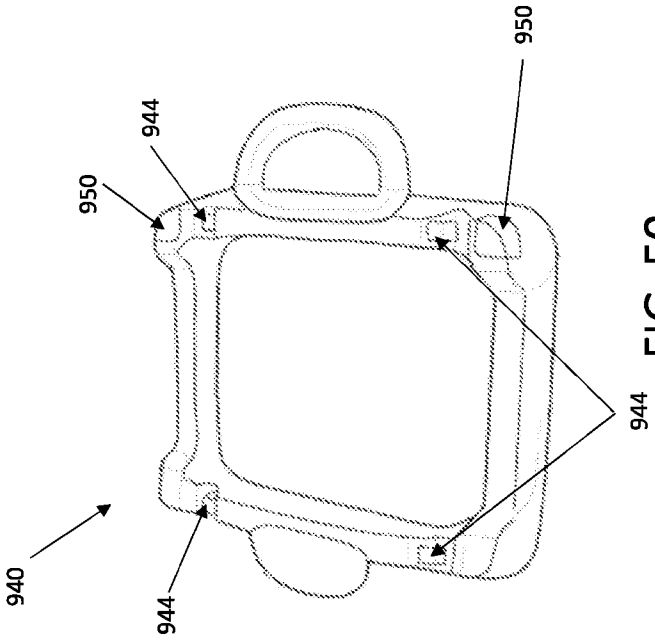

FIG. 50

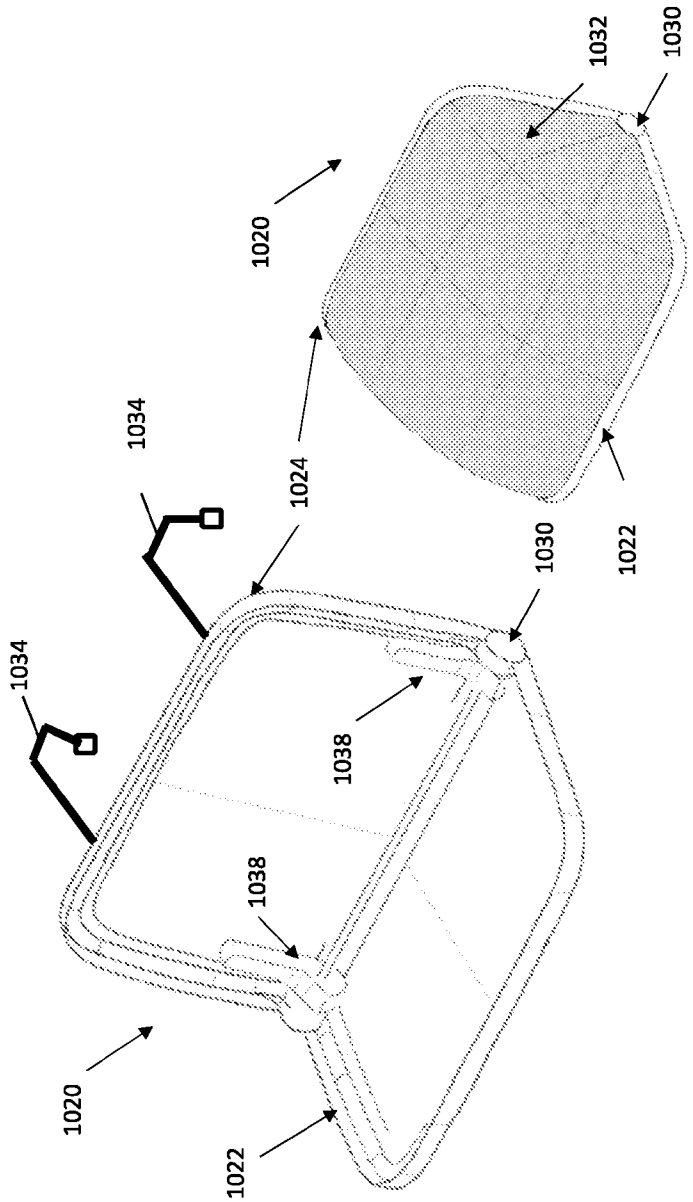

FIG. 53

FIG. 52

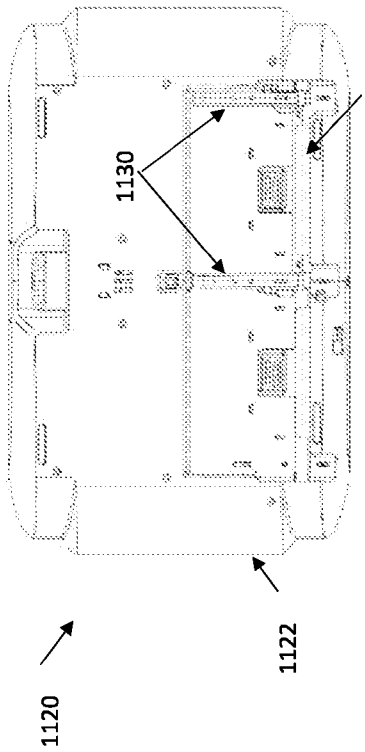
1120
1122
1130
1134

FIG. 54

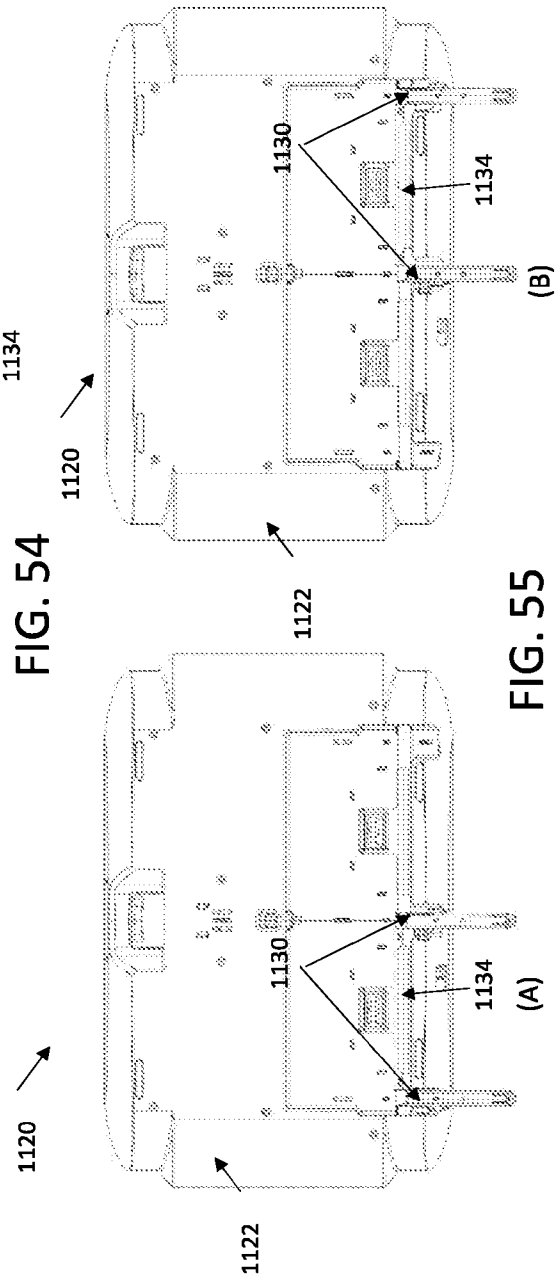
1120
1122
1130
1134
(A)
1120
1122
1130
1134
(B)

FIG. 55

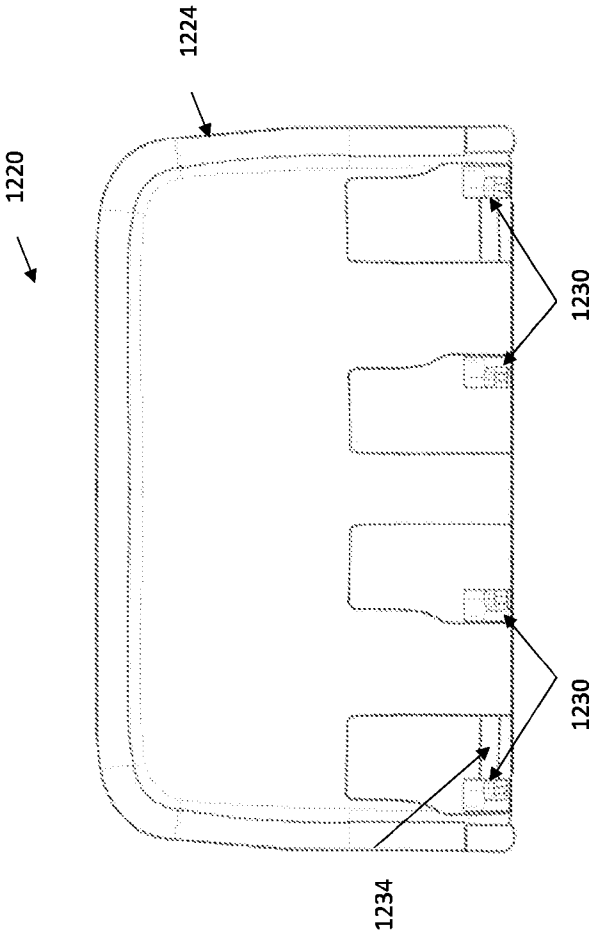

FIG. 56

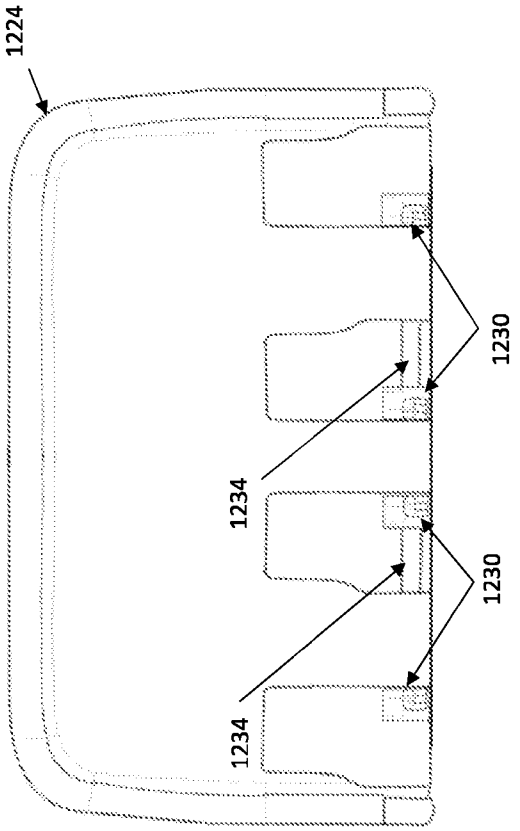

FIG. 58

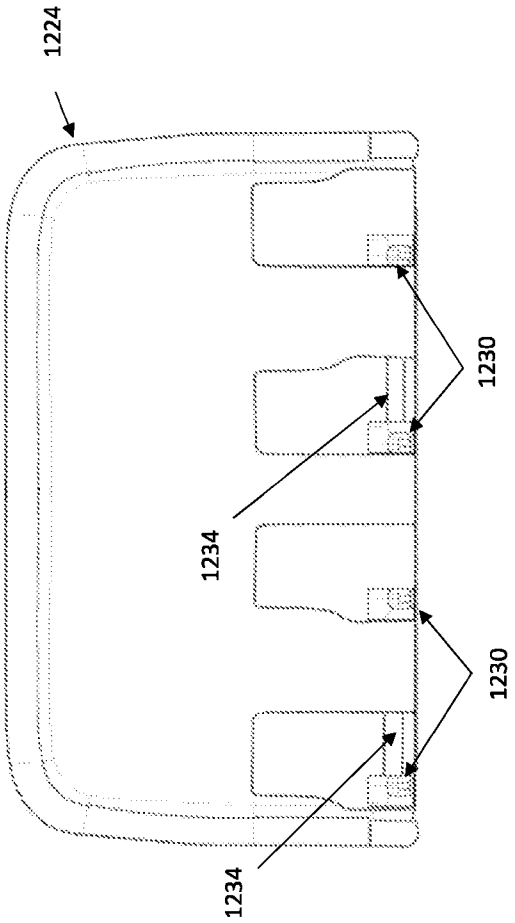

FIG. 57

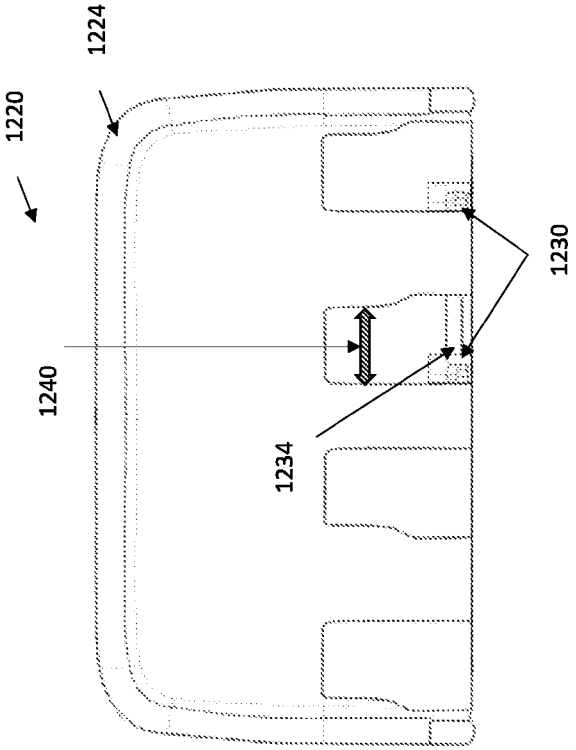

FIG. 60

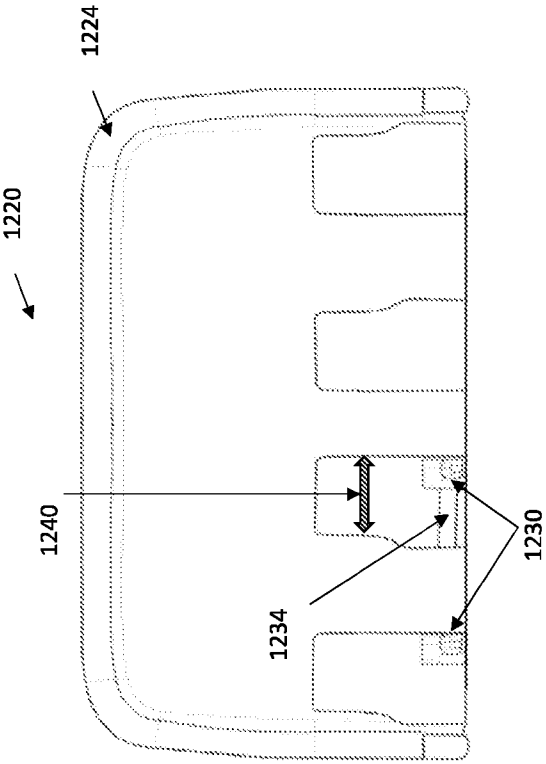

FIG. 59

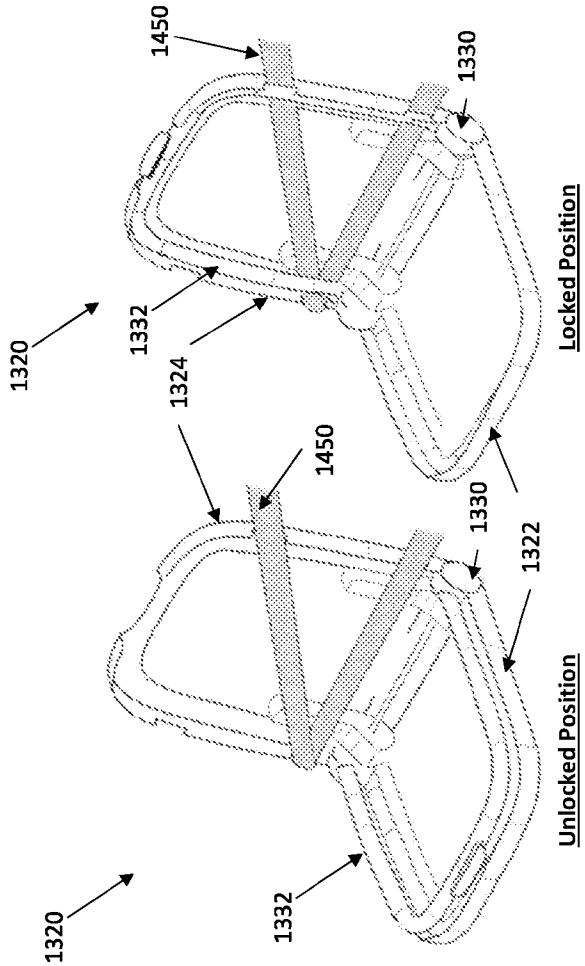
1450
1330
1320
1332
1324
Locked Position
(B)
1450
1330
1322
Unlocked Position
(A)
1320
1332

FIG. 61

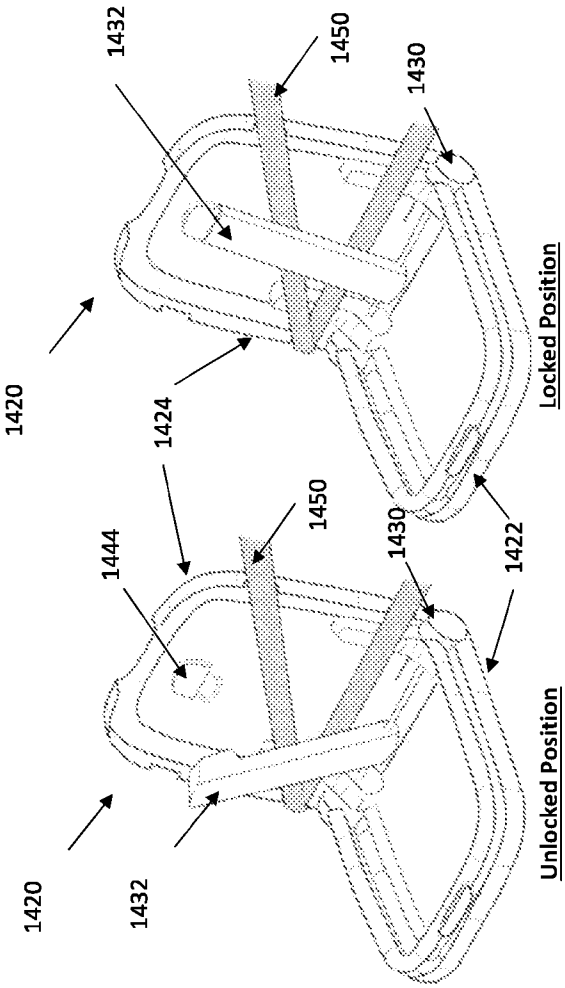
1420
1432
1450
1430
1424
Locked Position
(B)
1420
1444
1450
1430
1422
1432
Unlocked Position
(A)

FIG. 62

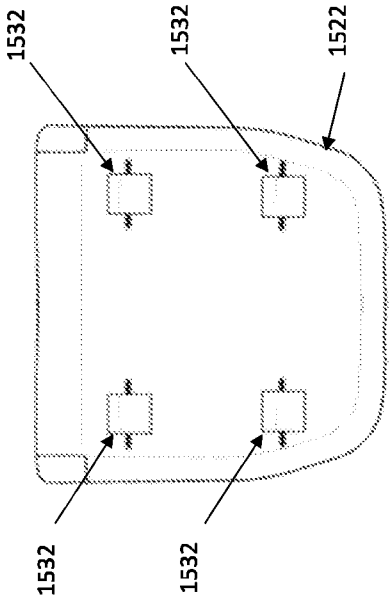

FIG. 65

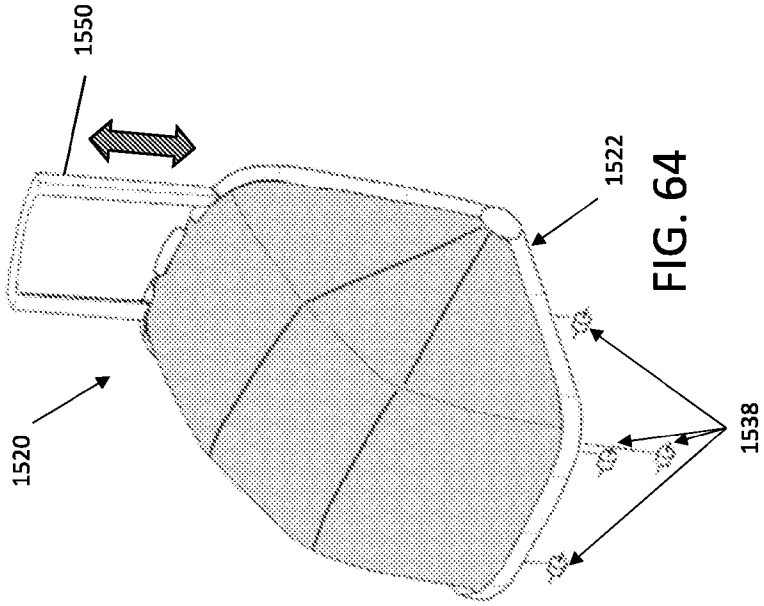

FIG. 64

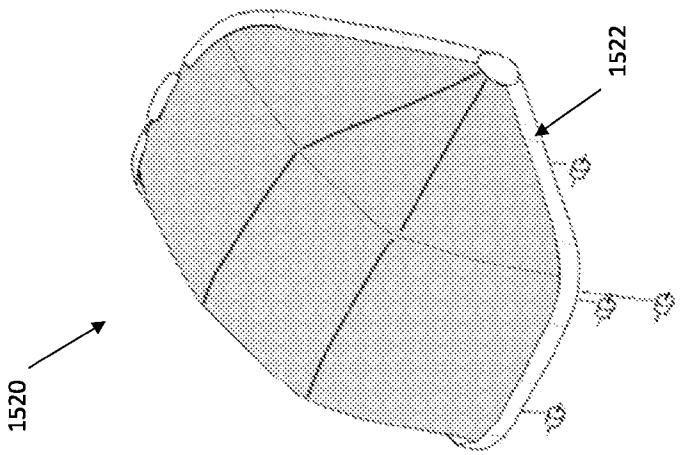

FIG. 63

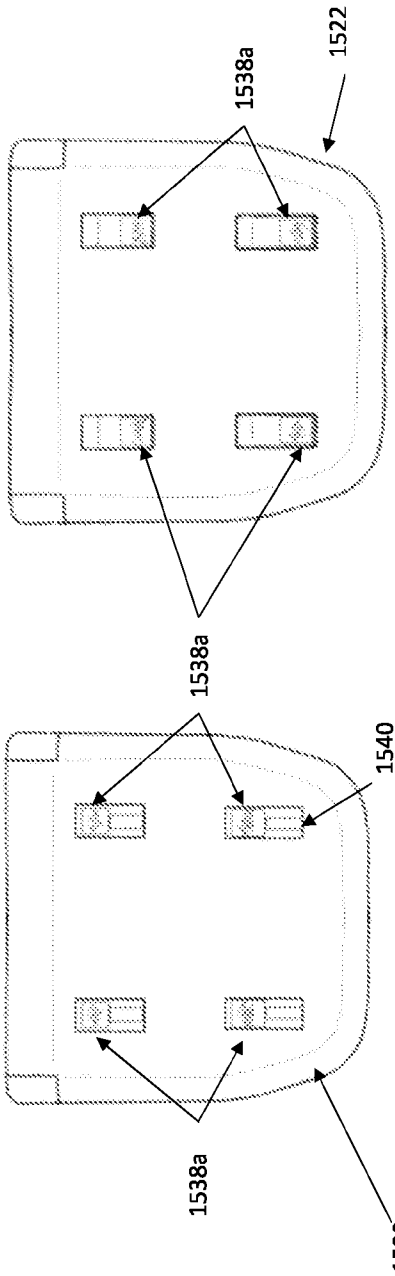

FIG. 67

FIG. 66

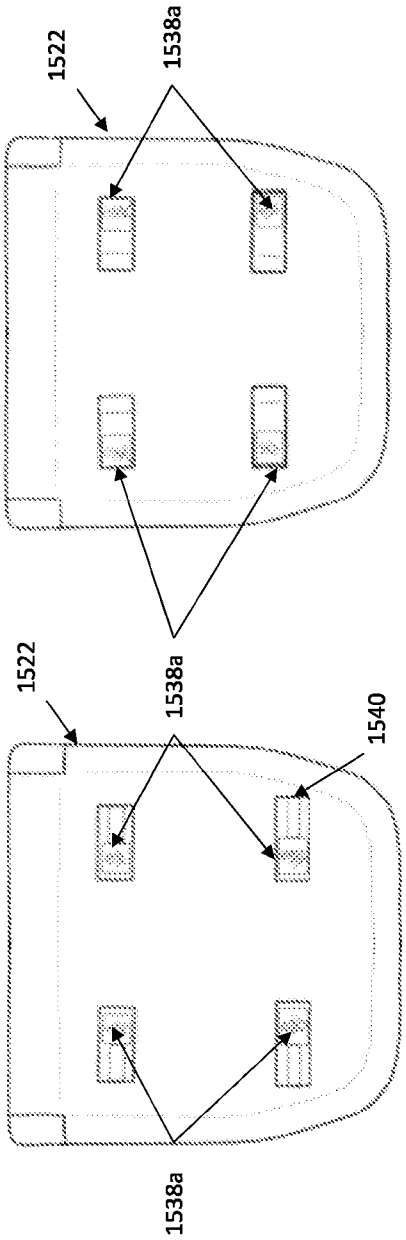

FIG. 69

FIG. 68

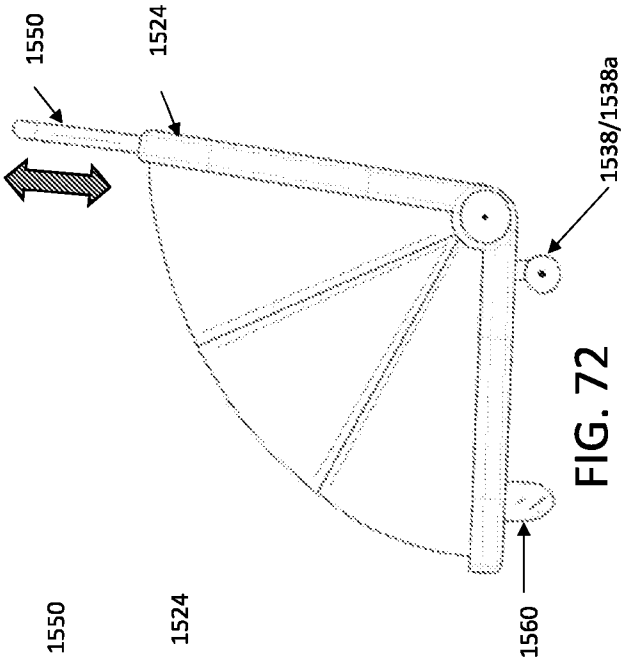

FIG. 72

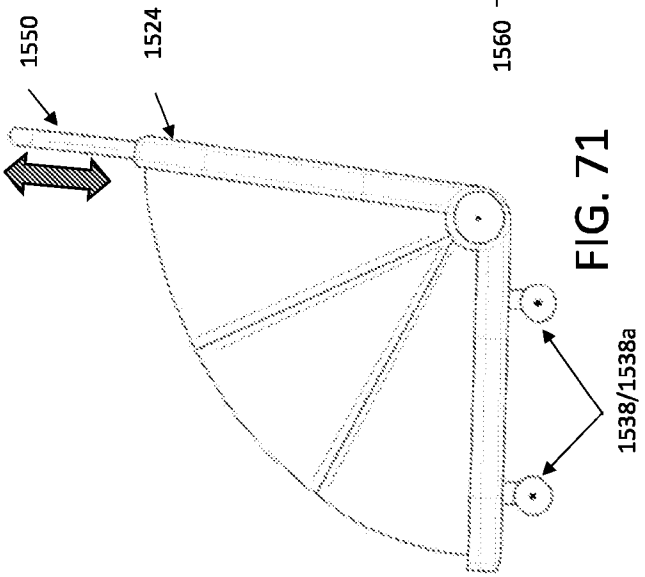

FIG. 71

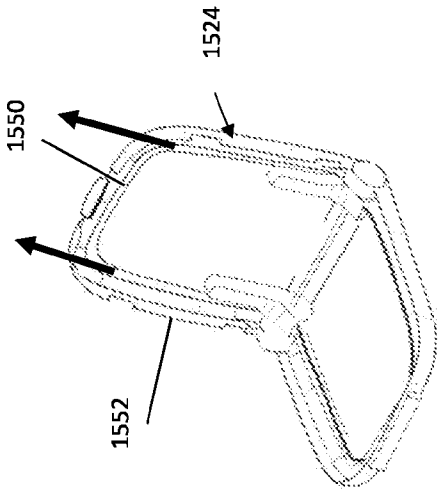

FIG. 70

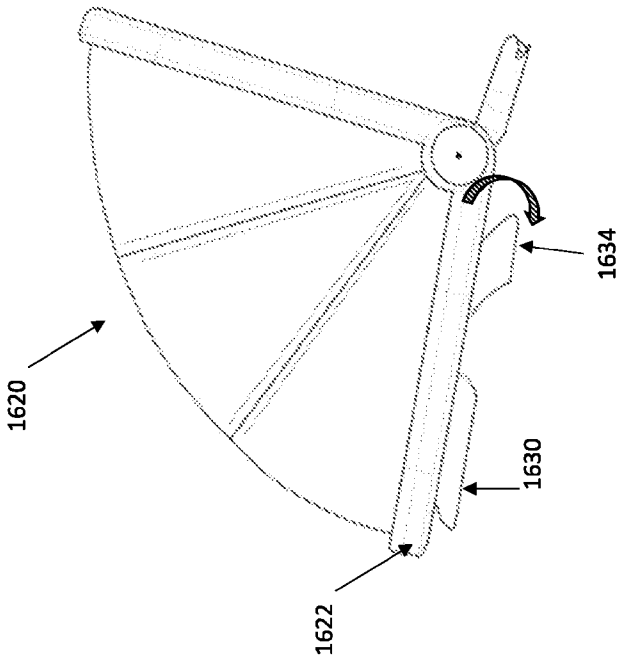

FIG. 74

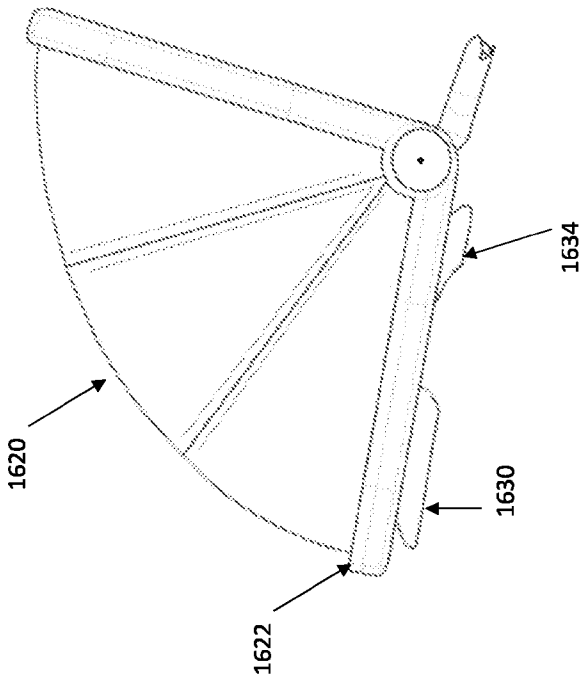

FIG. 73