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(54) GLIDING CHILD SUPPORT DEVICE

(57) A child support device such as a bassinet (10,300,500) configured to impart a rocking, swaying or gliding motion to soothe a child occupant includes a frame (112) and an infant receiving receptacle (114,14,214,314). In example forms, the frame (112) is movable between a collapsed configuration and an expanded configuration. The infant receiving receptacle (114,14,214,314) is pivotally mounted to the frame (112) such that the infant receiving receptacle (114,14,214,314) is capable of gliding or swaying relative to the frame (112). In some example forms, the infant receiving receptacle (114,14,214,314) is removed from engagement with the frame (112) and capable of rocking on a support surface. In example forms, the child support device provides a gliding motion, with limited or no tilting or rocking.

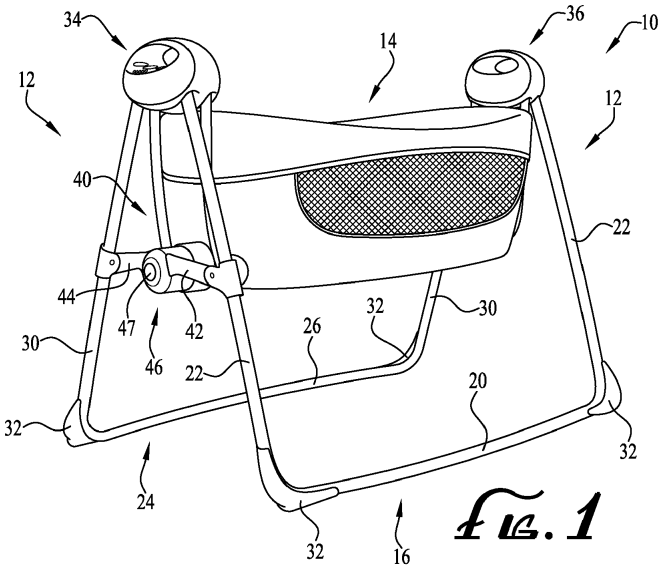

Fig. 1

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Description

Cross-Reference to Related Applications

[0001] This application is a continuation-in-part of U.S. Non-Provisional Patent Application Serial No. 14/722,691 filed May 27, 2015, which claims the benefit of U.S. Provisional Patent Application Serial No. 62/004,266 filed May 29, 2014; this application also claims priority to U.S. Provisional Patent Application Serial No. 62/152,845 filed April 25, 2015, U.S. Provisional Patent Application Serial No. 62/215,793 filed September 9, 2015, U.S. Provisional Patent Application Serial No. 62/215,824 filed September 9, 2015 and U.S. Provisional Patent Application Serial No. 62/215,943 filed September 9, 2015; the entireties of which are hereby incorporated herein by reference for all purposes.

Technical Field

[0002] The present invention relates generally to the field of children's accessories and sleeping apparatuses for children and infants, and more particularly to rocking, swaying and gliding child support devices such as bassinets for infants and children.

Summary

[0003] In example embodiments, the present invention provides a child support device such as a cradling bassinet, an inclined child sleeper, a child seat, or other child support device that can impart a rocking, swaying or gliding motion to relax and soothe a child occupant to encourage sleeping. In one aspect, the present invention relates to a cradling bassinet including a collapsible frame having first and second frame portions pivotally mounted together at first and second pivot couplings, and an infant receiving receptacle pivotally mounted to the first and second pivot couplings for moving in a side-to-side gliding motion relative to the collapsible frame. A pair of swing arms are pivotally mounted to the first and second pivot couplings at first ends thereof, and second ends of the swing arms are pivotally mounted at each end of the infant receiving receptacle, and whereby the swing arms at each end thereof remain substantially parallel to each other throughout the side-to-side motion.

[0004] In example forms, the infant receiving receptacle includes a mattress therein, and wherein the mattress remains substantially horizontal throughout the side-to-side gliding motion. The first and second frame portions are generally U-shaped and each comprise a base portion and upright leg members extending from the base portion. In one example form, a cross brace is provided for connecting together at least one of the upright leg members of each of the first and second frame portions. The cross brace includes a first arm, a second arm, and a pivot coupling for pivotally coupling the first and second arms together. In some example forms, the pivot coupling includes an actuatable lock for permitting or preventing pivotal motion of the first and second arms relative thereto.

[0005] In another aspect, the invention relates to a cradling bassinet including a frame and an infant receiving receptacle pivotally mounted to the frame for swaying in a side-to-side motion along a generally arcuate path. The frame includes first and second U-shaped frame members mounted to first and second hubs. The infant receiving receptacle is pivotally mounted to the hubs, and at least one of the hubs includes a motor for providing the side-to-side movement to the infant receiving receptacle. In some example forms, the frame includes first and second U-shaped frame members pivotally mounted together at first and second pivot couplings. Optionally, the infant receiving receptacle includes a canopy mounted thereto for at least partially covering the infant receiving receptacle and a skirt mounted to an outer periphery thereof.

[0006] In still another aspect, the invention relates to a bassinet including a collapsible frame and an infant receiving receptacle. In example forms, when the infant receiving receptacle is pivotally mounted to the frame, the infant receiving receptacle is movable relative the collapsible frame in a swaying motion along an arcuate path, and wherein when the infant receiving receptacle is removed from pivotal engagement with the collapsible frame and the infant receiving receptacle is resting atop a support surface, the infant receiving receptacle is movable in a rocking motion along an arcuate path relative to the support surface. In example forms, the collapsible frame includes first and second U-shaped frame portions pivotally mounted together at first and second pivot couplings. The first and second U-shaped frame portions include base portions and first and second leg members extending therefrom, respectively. Optionally, one or more of the pivot couplings can include an actuatable member for permitting the collapsing or expansion of the collapsible frame. The infant receiving receptacle includes an infant receiving receptacle frame having pivot coupling receivers configured for pivotally coupling to hub extensions of the first and second pivot couplings. Preferably, the infant receiving receptacle frame includes lower arcuate supports configured for rocking on the support surface.

[0007] In another aspect, the invention relates to a bassinet or other child support device for supporting a child, including a base frame for supporting the child support device on a support surface, a child support unit for receiving and supporting a child on a child support surface of the child support unit, and a swing mechanism movably coupling the child support unit to the base frame. The swing mechanism preferably provides a gliding path of motion to the child support unit relative to the base frame, whereby the angular orientation of the child support surface of the child support unit remains generally constant or consistent throughout substantially the entire path of motion.

[0008] In another aspect, the invention relates to a bassinet or other child support device including a base frame, a child support unit, and a swing mechanism coupling the child support unit to the base frame. The swing mechanism preferably includes two pairs of generally parallel swing arms, the swing arms having first portions pivotally connected to the base frame and second portions pivotally connected to the child support unit. In this manner, the child support unit can swing back and forth through a range of swinging motion relative to the base frame with limited tilting of the child support unit by no more than about 10º through the range of swinging motion.

[0009] In another aspect, the invention relates to a bassinet or other child support device including a base frame for supporting the child support device on a support surface. The base frame preferably includes first and second U-shaped sections pivotally coupled to one another by frame-fold linkages at each end of the bassinet, to allow the base frame to fold between an expanded configuration and a folded configuration. The bassinet preferably also includes a child support unit having a structural frame and a soft-goods covering supported by the structural frame. The structural frame of the child support unit preferably includes first and second end brackets, at least one lower cross-rail connected between lower ends of the end brackets, and first and second upper frame members pivotally coupled between upper ends of the end brackets and reconfigurable between an expanded configuration and a folded configuration. The bassinet preferably also includes a swing mechanism movably coupling the child support unit to the base frame. The swing mechanism preferably includes two pairs of first and second swing arms, a first pair of swing arms at a first end of the bassinet and a second pair of swing arms at a second end of the bassinet opposite the first end. The swing arms preferably have upper portions pivotally coupled to the base frame and lower portions pivotally connected to the child support unit.

[0010] These and other aspects, features and advantages of the invention will be understood with reference to the drawing figures and detailed description herein, and will be realized by means of the various elements and combinations particularly pointed out in the appended claims. It is to be understood that both the foregoing general description and the following brief description of the drawings and detailed description of the invention are exemplary and explanatory of preferred embodiments of the invention, and are not restrictive of the invention, as claimed.

Brief Description of the Drawings

[0011]

FIGURE 1 is an end perspective view of a gliding bassinet according to an example embodiment of the present invention.

FIGURE 2 is a top perspective view of the gliding bassinet of **Figure 1**.

FIGURE 3 is an end perspective view of the gliding bassinet of **Figure 1**, showing the collapsible frame of the bassinet in a folded, compact configuration.

FIGURE 4 is an end perspective view of the gliding bassinet of **Figure 3**, with the soft goods portion removed therefrom for better visibility of the frame components.

FIGURE 5 is an end perspective view of the gliding bassinet of **Figure 4**, showing the collapsible frame and bassinet frame thereof in an unfolded, expanded configuration.

FIGURES 6 and **7** show end perspective views of the gliding bassinet of Figure 1 with directional arrows indicating gliding in a side-to-side motion.

FIGURE 8 is an end perspective view of a swaying bassinet according to another example embodiment of the present invention, showing the bassinet swaying in a first direction.

FIGURE 9 is an end perspective view of the swaying bassinet of **Figure 8**, showing the bassinet swaying in a second direction generally opposite the first direction.

FIGURE 10 is a perspective view of a swaying bassinet according to another example embodiment of the present invention.

FIGURE 11 is a perspective view of the swaying bassinet of **Figure 10**, showing an infant receiving receptacle and frame thereof disengaged from the support frame thereof.

FIGURE 12 is a perspective view of the swaying bassinet of **Figure 11**, showing the infant receiving receptacle detached from the support frame, and with the infant receiving receptacle frame rocking on a support surface, and showing the support frame in a folded configuration.

FIGURE 13 is a perspective view of a swaying bassinet according to another example embodiment of the present invention.

FIGURE 14 is a perspective view of the swaying bassinet of **Figure 13**, showing a skirt coupled to a bottom portion of the infant receiving receptacle according to another example embodiment of the present invention.

FIGURES 15A and **15B** are perspective views of a gliding bassinet according to another example embodiment of the invention, with soft goods of the bassinet shown in FIG. 15A, and soft goods removed to show structural frame elements in FIG. 15B.

FIGURES 16A, 16B and **16C** are end views showing a range of gliding motion of the bassinet of FIGS. 15A and 15B, according to example form.

FIGURES 16D and **16E** show further details of the gliding swing mechanism of the gliding bassinet of FIGS. 15A and 15B, in partial cross-sectional and cutaway view.

FIGURES 16F, 16G and **16H** are detailed views

showing a range of pivotal motion of a lower bearing portion of the gliding bassinet of FIGS. 15A and 15B.

FIGURES 16I, 16J, 16K and **16L** are detailed views of the upper swing arm bearing and drive assemblies of the gliding bassinet of FIGS. 15A and 15B.

FIGURES 17A and **17B** are perspective views showing the folding of the lower support base frame of the bassinet of FIGS. 15A and 15B, according to example form.

FIGURES 17C, 17D, 17E, 17F and **17G** show further details of the frame folding and locking mechanism of the gliding bassinet of FIGS. 15A and 15B, in partial cross-sectional and cutaway view.

FIGURES 18A and **18B** are perspective views showing the folding of the upper bassinet frame of the bassinet of FIGS. 15A and 15B, according to example form.

FIGURES 19A and **19B** are perspective views showing the folding of a bassinet mattress or pad of the bassinet of FIGS. 15A and 15B, according to example form.

FIGURES 20A and **20B** show a gliding bassinet according to another example embodiment of the invention.

FIGURE 21 shows a user carrying a folded gliding bassinet, according to an example mode of use of the invention.

Detailed Description of Example Embodiments

[0012] The present invention may be understood more readily by reference to the following detailed description of the invention taken in connection with the accompanying drawing figures, which form a part of this disclosure. It is to be understood that this invention is not limited to the specific devices, methods, conditions or parameters described and/or shown herein, and that the terminology used herein is for the purpose of describing particular embodiments by way of example only and is not intended to be limiting of the claimed invention. Any and all patents and other publications identified in this specification are incorporated by reference as though fully set forth herein.

[0013] Also, as used in the specification including the appended claims, the singular forms "a," "an," and "the" include the plural, and reference to a particular numerical value includes at least that particular value, unless the context clearly dictates otherwise. Ranges may be expressed herein as from "about" or "approximately" one particular value and/or to "about" or "approximately" another particular value. When such a range is expressed, another embodiment includes from the one particular value and/or to the other particular value. Similarly, when values are expressed as approximations, by use of the antecedent "about," it will be understood that the particular value forms another embodiment.

[0014] Generally described, the present invention relates to a cradling bassinet, child sleeper, child seat, or other child support device, which may be in various forms to impart a rocking, swaying or gliding motion to soothe a child occupant. According to some example forms of the present invention, the child support device is a cradling bassinet providing a first motion in a first configuration and a second motion in a second configuration.

[0015] With reference now to the drawing figures, wherein like reference numbers represent corresponding parts throughout the several views, **Figures 1-7** show a child support device in the form of a cradling bassinet 10 according to an example embodiment of the present invention. In example forms, the cradling bassinet 10 generally comprises a collapsible frame 12 and an infant receiving receptacle 14 pivotally mounted to the collapsible frame 12. The infant receiving receptacle 14 is configured to glide in a side-to-side motion for soothing a child or infant therein. In example forms, the side-to-side movement of the infant receiving receptacle 14 is provided by input from a caregiver, for example, by pushing or pulling the infant receiving receptacle 14. In alternate example forms, the bassinet 10 is configured to be powered by a motor and/or magnetic drive system, for example, which may be connected to a 110V/220V wall outlet or other power source. Optionally, one or more batteries may be provided for powering the motor and/or magnetic drive system.

[0016] In an example embodiment depicted in **Figure 1**, the collapsible frame 12 comprises first and second U-shaped frame portions 16, 24 pivotally coupled together at first and second pivot couplings 34, 36. The first U-shaped frame portion 16 generally comprises a base portion 20, which extends generally horizontally along or near the support surface or floor, and a pair of upright leg members 22. Similarly, the second U-shaped frame portion 24 generally comprises a base portion 26 and upright leg members 30. One or more feet 32 may be mounted to the first and second U-shaped portions 16, 24, for example, near the corners thereof (intersections between base portions 20, 26 and upright leg members 22, 30), to provide a stable footing for resting against a support surface or floor. Optionally, the feet 32 may be positioned as desired on the first and/or second U-shaped portions 16, 24. According to one example form, the base portions of the first and second frame portions 16, 24 are generally arcuate in shape, for example, to provide a rocking base. According to another example form, the collapsible frame 12 is convertible between rocking and stationary, for example, wherein the rocking base or first and second frame portions 16, 24 are movably mounted to flip down and engage the support surface, which would allow for rocking thereof. Preferably, the rocking back could be moved out of engagement with the support surface to provide a stationary footing with the support surface. According to yet another form, the rocking base could be a separate component configured to removably receive a stationary bassinet. Optionally, the base portions 20, 26 and the upright leg members 22, 30 extending therefrom may be shaped as desired.

[0017] In typical example embodiments, a cross brace

40 is provided between the first and second U-shaped portions 16, 24 to limit the extent of the pivotal motion between the first and second U-shaped portions, for example, between an unfolded, expanded configuration (see **Figures 1-2, 5-7**) and a folded, collapsed configuration (see **Figures 3-4**). Generally, the cross brace 40 comprises a first arm 42, a second arm 44, and a pivot coupling 46 therebetween. In example forms, the first arm 42 is mounted to the upright leg member 22 and the pivot coupling 46, and the second arm 44 is mounted to the upright leg member 30 and the pivot coupling 46. Generally, the arms 42, 44 are mounted near the midpoint of the upright leg members 22, 30; however, the arms 42, 44 may be mounted at any position along the upright leg members 22, 30. According to one example form, the pivot coupling comprises a push button 47 to permit pivoting of the arms 42, 44 relative to each other, thereby permitting the first and second frame portions 16, 24 to pivot relative to each other, for example, when it is desired to expand or collapse the collapsible frame 12. Optionally, a twist button or other actuation mechanism may be provided for permitting and preventing movement of the arms 42, 44 relative to each other. Depending on the preferred angle between the first and second frame portions 16, 24, the length of the first and second arms 42, 44 can be shaped and sized accordingly.

[0018] As depicted in **Figure 2**, the infant receiving receptacle 14 generally comprises a soft goods liner that is removably coupled to an infant receiving receptacle frame or bassinet frame 56 (as will be described below, see **Figures 4-5**). In example forms, the soft goods liner is generally formed from a fabric or other textile-like material (with or without padding), which may comprise one or more portions formed from a mesh lining, for example, to provide for allowing an infant or child therein to see through one or more walls of the liner. Optionally, the liner may be flexible (but not soft) like plastic or rubber with a living hinge or comprised of multiple panels. Optionally, the infant receiving receptacle may be formed from a rigid, bucket-style receiving receptacle. The floor of the infant receiving receptacle 14 preferably comprises a mattress 72 formed from one or more panels 74 that are foldable relative to each other to allow the infant receiving receptacle 14 to become compacted for storage (see **Figure 3**).

[0019] **Figures 4-5** show the infant receiving receptacle frame 56 in greater detail. As depicted, a pair of swing arms 52, 54 positioned near each end of the infant receiving receptacle frame 56 movably mount the infant receiving receptacle frame 56 to the collapsible frame 12, for example, to permit the infant receiving receptacle frame 56 to glide in a side-to-side motion. According to one example form, the swing arms 52, 54 are generally L-shaped and pivotally mount to the pivot couplings 34, 36 of the collapsible frame 12 and to a lower or bottom portion of the ends of the infant receiving receptacle frame 56. As depicted in **Figure 4**, the swing arms 52, 54 are generally spaced a distance apart from each other and are substantially parallel with each other. Preferably, first ends of the swing arms 52, 54 are pivotally mounted to an inside portion of the pivot couplings 34, 36 and second ends of the swing arms 52, 54 are pivotally mounted to a portion of end frame members 60 of the infant receiving receptacle frame 56. According to one example form, a recess or pocket is formed on the interior side of the pivot couplings 34, 36 for receiving the first ends of the swing arms 52, 54. As described above, it is preferred that the swing arms 52, 54 are generally spaced apart in a similar manner at both the pivotal connection at the pivot couplings 34, 36 and at the first and second end frame members 60, which imparts the infant receiving receptacle frame 56 to glide in a side-to-side motion along a substantially similar horizontal plane. Thus, the mattress 72 within the infant receiving receptacle 14 remains substantially horizontal when moving in a side-to-side motion.

[0020] In typical example embodiments, the infant receiving receptacle frame 56 comprises the first and second end frame members 60, a lower support frame member 62 (connecting the first and second end frame members 60 together), and first and second upper frame members 64. Preferably, the ends of the upper frame members 64 are provided with pivot fittings 66 for pivotally coupling the ends of the upper frame members 64 to an upper portion of the first and second end frame members 60. Thus, the upper frame members 64 are capable of pivoting relative to the first and second end frame members 60 between a compacted configuration (see **Figure 4**) and an expanded configuration (see **Figure 5**) so that the infant receiving receptacle frame 56 (and collapsible frame 14) can be expanded and compacted, for example, when it is desired to use or store the cradling bassinet 10 in a closet, for packing in a vehicle, etc. As depicted in **Figures 3-4**, the upper frame members 64 are pivoted upward so that the infant receiving receptacle 14 is compact. The first and second pivot couplings 34, 36 may comprise an opening or grasping handles such that the expanded or collapsed cradling bassinet 10 can be easily lifted and carried. In example forms, the first and second end frame members 60 are generally L-shaped support members whereby lower portions thereof provide for receiving the lower support frame member 62 and the upper portions thereof provide for receiving the pivot fittings 66. Furthermore, the lower portions generally comprise a recess or receptacle for receiving the second ends of the swing arms 52, 54 to provide a pivotal connection therewith.

[0021] **Figures 6-7** show the infant receiving receptacle 14 gliding in a side-to-side motion along a substantially similar horizontal plane. As described above, since the upper and lower portions of the swing arms 52, 54 are mounted at a substantially similar distance relative to each other, and with the swing arms 52, 54 being parallel to each other, the infant receiving receptacle 14 and the mattress 72 therein move in a side-to-side motion along a substantially similar horizontal plane. Optionally,

the mounting positions of the pivotal connections of the ends of the swing arms 42, 44 with the pivotal couplings 34, 36 or with the first and second end frame members 60 may be adjustable such that the swing arms are not parallel relative to each other, thereby imparting at least a partial arcuate sway or swing motion. According to one form, the mounting positions of the pivotal couplings of the swing arms 42, 44 with the pivotal couplings 34, 36 can be adjusted as desired. Thus, according to some example forms, the cradling bassinet 10 is adjustable between two different types of side-to-side movement, for example, between a gliding, horizontal movement and a swaying or swinging movement along an arcuate path.

[0022] As described above, the side-to-side motion may be provided by manually pushing or pulling the infant receiving receptacle 14, or may be moved by an electric motor and/or magnetic drive system. In example forms, an electric motor is housed within the pivot coupling 34 and is linked to one or more of the swing arms 52, 54 that are pivotally coupled thereto. Furthermore, a magnetic drive member receiver 70 can be mounted to one of the end frame members 60 for providing interaction with another magnetic drive member of the pivot coupling 46 of the cross brace 40 (see **Figure 3**). Preferably, one or more controls or buttons 80 may be provided on one of the pivot couplings 34, 36 (or provided elsewhere) for controlling the electric motor, magnetic drive system, etc. Optionally, other features including but not limited to a vibration, audible sounds, lights, etc. may be incorporated into the cradling bassinet 10. Optionally, the location of the motive drive force (motor, drive system, or other drive means) can vary, for example, wherein it can be located either wholly or partially in the hubs, legs, below the bassinet, etc.

[0023] **Figures 8-9** show a cradling bassinet 100 according to another example embodiment of the present invention. As depicted, the cradling bassinet 100 generally comprises a frame 112 and an infant receiving receptacle 114 pivotally mounted to the frame. In example forms, the infant receiving receptacle 114 is capable of swinging in a side-to-side motion along an arcuate or curved path, for example, to soothe a child occupant (see directional arrows). The frame 112 generally comprises both a first U-shaped frame portion 116 having a base portion 120, upright leg members 122, and connectors 124coupling the base portion 120 and leg members 122 together, and a second U-shaped frame portion 126 having a base portion 130, upright leg members 132, and connectors 134 coupling the base portion 130 and leg members 132 together. First and second hubs 136 are provided for connecting the first and second U-shaped frame portions 116, 126 together. According to one example form, the ends of the leg members 122, 132 that are coupled to the first and second hubs 136 are generally fixedly mounted thereto, for example, wherein the leg members 122, 132 (and ultimately the first and second U-shaped portions) are incapable of pivoting relative to each other or the hubs 136. Preferably, the leg members 122, 132 are capable of being removed from the hubs 136, but generally remain fixed therein when attached thereto. Optionally, the upright leg members 122, 132 are pivotally mounted to the hubs 136 such that the first and second U-shaped frame portions 116, 126 can pivot relative to each other. As similarly described above, the infant receiving receptacle 114 comprises a soft goods portion removably mounted atop an infant receiving receptacle frame 140. The infant receiving receptacle frame 140 generally comprises an upper frame portion (unshown) for defining the opening of the receptacle, a bottom support portion 142, and upright portions 144 extending from the ends of the bottom support portion 142. Preferably, the ends of the upright portions 144 are pivotally connected to the hubs 136 and define pivots 146. Preferably, an electric motor or magnetic drive system is incorporated within one or both of the hubs 136 to impart the swinging, side-to-side motion of the infant receiving receptacle. Optionally, a caregiver may cause the infant receiving receptacle 114 to move by pushing or pulling the same. Optionally, as described above, the location of the motive drive force (motor, drive system, or other drive means) can vary, for example, wherein it can be located either wholly or partially in the hubs, legs, below the bassinet, etc.

[0024] **Figures 10-12** show a cradling bassinet 200 according to another example embodiment of the present invention. As depicted in **Figure 10**, the cradling bassinet 200 comprises a collapsible frame 212 and an infant receiving receptacle 214 pivotally mounted to the collapsible frame 212. Preferably, the infant receiving receptacle provides a first motion in a first configuration and a second motion in a second configuration. For example, when the infant receiving receptacle 214 is pivotally mounted to the collapsible frame 212, the infant receiving receptacle is movable in a side-to-side swinging or swaying motion along a generally arcuate path (see **Figure 10**). However, when the infant receiving receptacle 214 is disengaged from the collapsible frame 212, the infant receiving receptacle 214 can be placed atop a support surface and is movable in a front-to-back, rocking motion along a generally arcuate path (see **Figure 12**). Thus, according to some example forms, the cradling bassinet 200 is convertible between a swaying or swinging bassinet, moving along a generally arcuate or curved path when pivotally mounted to the collapsible frame 212, and a rocking bassinet pivoting along a generally arcuate or curved path in a front-to-back, rocking motion.

[0025] As depicted in **Figures 10-11**, the collapsible frame 212 generally comprises first and second U-shaped frame portions 216, 224 that are pivotally mounted together at first and second pivot couplings 234. The first and second U-shaped portions 216, 224 each comprise base portions 220, 226 and upright leg members 222, 230 extending therefrom, respectively. One or more feet 232 may be provided on each of the U-shaped portions as desired, for example, to provide a stable footing for the collapsible frame 212 atop a support surface. Op-

tionally, a lock or actuatable member 236 may be provided on one or both of the pivot couplings 234 to permit the collapsing or expansion of the collapsible frame 212. The infant receiving receptacle 214 comprises an infant receiving receptacle frame 240 comprising pivot coupling receivers 242, lower arcuate supports 244, and upper frame supports 246. The pivot coupling receivers 242 are preferably provide for pivotal engagement with the first and second pivot couplings 234 (or hub extensions thereof), thereby permitting the infant receiving receptacle to swing or sway side-to-side along an arcuate path relative to the collapsible frame. Optionally, the lock member 236 also provides positive engagement between the pivot coupling receivers 242 and the hub extensions of the pivot couplings 234 to prevent inadvertent detachment in use, and for permitting selective disengagement by an adult caregiver. In example embodiments, the upper frame support 246 and the lower arcuate supports 244 are generally coupled together to form a substantially rigid frame structure and accommodates for receiving a soft goods liner thereon. Optionally, a motive drive force (motor, drive system, or other drive means) may be provided for swinging the infant receiving receptacle in a side-to-side motion. Preferably, the motive drive force can be located either wholly or partially in the hubs, legs, below the bassinet, etc.

[0026] As depicted in **Figure 12**, the infant receiving receptacle 214 may be provided as a rocker, for example, wherein the lower arcuate supports 244 thereof rest against a support surface to provide a front-to-back, rocking motion. In example forms, the collapsible frame 212 may be collapsed and put away while using the infant receiving receptacle 214 as a rocker. Preferably, at least a portion of the infant receiving receptacle frame 240 comprises grasping handles 250 positioned at either end of the receptacle 214 so that a caregiver can lift the receptacle 214 from the support surface, or for lifting the receptacle from the collapsible frame 212. According to some example forms, one or more straps or a harness may be provided within the infant receiving receptacle 214 for safely securing the child occupant within the infant receiving receptacle 214.

[0027] **Figures 13-14** show a cradling bassinet 300 according to another example embodiment of the present invention. As depicted, the cradling bassinet 300 generally comprises a collapsible frame 312 and an infant receiving receptacle 314 pivotally mounted to the collapsible frame 312. The infant receiving receptacle 314 can pivot with respect to the collapsible frame 312 to impart a cradling, swinging or swaying motion to a child occupant. In example forms, the motion can be manually driven or motor driven, for example, wherein a motor is provided within a portion of one or more pivot couplings 334 of the collapsible frame or otherwise located on or within the bassinet 300 or a portion thereof (including the collapsible frame, hubs, etc.). The collapsible frame 312 generally comprises both a first U-shaped frame portion 316 comprising a base portion 320 and upright leg members 322 extending therefrom, and a second U-shaped frame portion 324 comprising a base portion 326 and upright leg members 330 extending therefrom. One or more feet 332 may be provided on one or more of the U-shaped frame portions as desired, for example, to provide a supportive footing for the collapsible frame 312 when resting atop a support surface. In example forms, the infant receiving receptacle 314 comprises an infant receiving receptacle frame for receiving a soft goods liner, which may comprise a mattress therein, and which may have an adjustable angle of inclination. Furthermore, according to some example forms, the infant receiving receptacle comprises a canopy 340 for covering at least a portion of the receptacle and a skirt 324 for hanging around the outer periphery of the receptacle.

[0028] Figures 15A - 20 show a child support device in the form of a gliding bassinet 500 according to another example embodiment of the invention. The bassinet 500 generally comprises a lower base frame 520, a child support unit 560, and a gliding swing mechanism 610 connecting the child support unit to the lower base frame. In alternate embodiments, the child support device may comprise a bassinet, a child sleeper, a child seat, or other form of support device for a child or infant.

[0029] In the depicted embodiment, the lower base frame 520 comprises a pair of generally U-shaped sections 522, 524, each of which comprise first and second support leg portions 526, 528 and a lower cross-member 530 connected between lower ends of the first and second support leg portions. The first and second U-shaped sections 522, 524 are pivotally or hingedly coupled to one another at upper ends of the support legs 526, 528 by frame-fold linkages 534, 536 at each end of the bassinet 500, as described in greater detail below with reference to Figures 17A - 17G. Alternatively, the lower base frame may include one fixed U-shaped section or a fixed first pair of legs attached in a fixed or non-pivotal manner to upper frame members, and one pivotable U-shaped section or a pivotable second pair of legs hingedly or pivotally attached to the upper frame members. The lower base frame 520 optionally further includes ground contacting support feet 540 at corner portions of the U-shaped sections 522, 524, proximal the interface between the support legs 526, 528 and the lower cross member 530. Optionally, one or more of the support feet 540 include rollers 542 such as wheels or casters, to provide improved mobility and transportability to the bassinet 500. An A/C electrical adaptor cord or connector 550 optionally extends from a support foot 540 or other portion of the bassinet 500, to provide power to electronic components of the bassinet.

[0030] The child support unit 560 generally comprises a structural frame (shown in Figure 15B), and a soft-goods covering (shown in Figure 15A) supported by the structural frame, to form an enclosure 562 for receiving an infant or small child. In the depicted example, the enclosure 562 takes the form of an oval bassinet enclosure having sidewalls and a floor. Optionally at least a portion

of the enclosure 562 is formed of a mesh material providing airflow and visibility to and from the enclosure. The structural frame of the child support unit 560 generally comprises first and second end brackets, 570, 572, first and second lower cross-rails 576, 578 connected between lower ends of the end brackets, and first and second upper frame members 582, 584 connected between upper ends of the end brackets. In example embodiments, the first and second upper frame members 582, 584 are foldably or hingedly coupled to the first and second end brackets, 570, 572, allowing the child support unit 560 to be folded, as described in greater detail below with reference to Figures 18A and 18B. In alternate embodiments, the enclosure can take the form of a seat, a chair, a sleeper, a rocker, or other child support unit format. Optionally, the child support unit can be pivotally or rotationally mounted, to allow the enclosure 562 to be turned from side to side, inclined or reclined, or otherwise repositioned. In alternative example embodiments, the child support unit can be detachably coupled for removal from the lower base frame 520, optionally for independent use.

[0031] The gliding swing mechanism 610 is shown in greater detail in Figures 16A -16L. The swing mechanism 610 preferably supports the child support unit 560 suspended from the lower base frame 520, and allows the child support unit to swing or glide laterally back and forth relative to the lower base frame, as shown in Figures 16A, 16B and 16C. The swing mechanism 610 preferably maintains the child-supporting floor of the child support unit in a generally flat and horizontal orientation throughout the range of gliding motion, limiting tilting of the child support unit 560, which could cause a child occupant to slide to one side or the other, potentially causing discomfort or distress to the child. In alternate embodiments, the child-supporting floor of the child support unit is inclined or partially inclined, for example in embodiments wherein the child support unit is an inclined sleeper or child seat having an inclined backrest, and the swing mechanism maintains the child-supporting floor of the child support unit in a generally constant angular orientation throughout the range of gliding motion. For example, the swing mechanism 610 may maintain the child-supporting floor of the child support unit in a generally flat and horizontal orientation, substantially parallel to the ground or other support surface upon which the swing 610 is placed, and limiting tilting to no more than about 10º from horizontal, and more preferably no more than about 5º from horizontal through the range of swinging motion. Alternatively described, the swing mechanism 610 may be configured to maintain the child-supporting floor of the child support unit in generally the same orientation (i.e., horizontal or non-horizontal) throughout the range of swinging motion, for example maintaining a generally consistent angular orientation of the child-supporting floor of the child support unit relative to the ground or other support surface, limiting variation in tilting of the child support unit to no more than about 10º, and more preferably no more than about 5º.

[0032] The swing mechanism 610, according to example embodiments, comprises a four-bar linkage including a pair of swing arms 620, 622 at each end of the bassinet 500. The swing arms 620, 622 are pivotally coupled at their upper ends to a top portion of the base frame 520, and are pivotally coupled at their lower ends to a bottom portion of the end brackets, 570, 572 of the child support unit 560. In the depicted embodiment, four swing arms are provided, a first pair 620, 622 at one end of the child support unit 560and a second pair at the other end of the child support unit. In example embodiments, the swing arms 620, 622 are generally parallel to one another throughout their range of swinging motion, spaced generally equidistant from one another at upper and lower ends thereof. In alternate embodiments, the swing arms 620, 622 may be obliquely oriented relative to one another, spaced a greater distance apart at upper ends and a lesser distance apart at lower ends, or vice versa, to vary the path of the swinging movement, and/or allow for more or less tilting of the child support unit. In example embodiments, the swing arms 620, 622 are generally L-shaped, having an upper portion hanging generally vertically (in an equilibrium position) from the base frame 520 and a lower portion curved or angled at about 90º from the upper portion and extending generally horizontally under the child support unit 560 into engagement with the end brackets, 570, 572 of the child support unit.

[0033] The lower portions of the swing arms 620, 622 are pivotally coupled to the end brackets, 570, 572 of the child support unit 560, for example extending through sleeves or channels formed in the end brackets, into engagement with rocker bearings 700 provided between the ends of the first and second lower cross-rails 576, 578 and the first and second end brackets, 570, 572 of the child support unit 560, as shown in greater detail in Figures 16F, 16G and 16H. The rocker bearings 700 include an upwardly directed V-shaped male bearing strut 702 at the top of each end of the lower cross-rails 576, 578, which is received in a downwardly directed V-shaped female bearing recess 704 formed in the inwardly facing sides of the end brackets, 570, 572. The V-shaped male bearing strut 702 defines a smaller included angle, and the V-shaped female bearing recess 704 defines a greater included angle, thereby allowing the male bearing strut to rock back and forth within the female bearing recess with the upper edge of the male bearing strut contacting the apex of the female bearing recess.

[0034] Figures 16I, 16J and 16K show further details of a pivot tube and bearing arrangement for pivotally connecting the upper portions of the swing arms 620, 622 to the base frame 520. In the depicted embodiment, the upper ends of the support legs 526, 528 of the first and second U-shaped sections 522, 524 of the base frame 520 are connected at each end of the bassinet 500 by bridging strut members 730. The bridging strut members 730 include engagement features for receiving pivot shafts 740, such as a rivet or bolt, about which the swing

arms 620, 622 swing or pivot. A bearing 742 is optionally provided for low-friction rotational motion about one or more of the pivot shafts 740, and is held between a bearing holder 744 and a shaft coupling hub 746, to which the swing arm 620, 622 and an actuation flange 748 are attached by a coupling pin 750. Optionally one or more roller may be provide in place of the bearings 742 at the connections between one or more of the swing arms 620, 622 and the bridging strut members 730 of the base frame 520. For example, a bearing may be utilized on a motor-driven swing arm, as described below, and rollers utilized on the non-driven follower swing arms. Outer housing shells or covers 760 are optionally provided over the bridging strut members 730 to prevent pinch points and for improved aesthetics. Optionally, electronic controls 762 are provided on the covers 760, such as for example an on-off power switch, swing speed or amplitude controllers, a timer, sound and music controls, electronic toys, video displays, projectors, vibration unit, and/or controllers for sound, light, vibration or other features optionally provided in connection with the bassinet 500.

[0035] In example embodiments, the geometrical configuration of the gliding swing mechanism 610 and the points of connection of the swing mechanism with the base frame 520 and the child support unit 560, result in a smooth, laterally gliding swing motion of the child support unit relative to the base frame, with limited or no tilting or rocking of the child support unit relative to the horizontal (i.e., the ground, floor, or other support surface on which the base frame rests). The two swing arms 620, 622 at each end of the bassinet are generally equal in length, and their respective connection points at their top ends to the bridging strut member 730 of the base frame 520 and at their bottom ends to the end bracket 570 or 572 are generally equidistantly spaced, resulting a parallelogram-shaped arrangement through the range of swinging or gliding motion (as shown in example form in Figs. 16A - 16E). The swing arms 620, 622 are pivotally coupled to and supported by the base frame at their upper ends, and the end brackets, 570, 572 which form the base of the child support unit are pivotally coupled to and supported by the lower ends of the swing arms. The relative spacing between the swing arms 620, 622 is generally fixed at the upper and lower ends of the swing arms. In this manner, the lower platform portion of the child support unit (comprising the first and second lower cross-rails 576, 578 and lower ends of the first and second end brackets, 570, 572 between which the lower cross rails are connected) is maintained generally horizontal or parallel to the ground, floor or other support surface upon which the base frame rests through the gliding or swinging range of motion of the child support unit. In alternate embodiments, the configuration, orientation and lengths of the components may be varied to provide different paths or ranges of motion, or can be adjustable to allow a user to selectively vary the paths or ranges of motion provided by the swing mechanism.

[0036] An electric motor or electro-magnetic drive system 780 is optionally provided to drive one or more of the swing arms 620, 622 to swing the child support unit 560 relative to the base frame 520. For example, a motor and gearbox with encoder wheel assembly is optionally mounted to one of the bridging strut members 730 to drive one of the swing arms (the driven arm), and the other three swing arms (the follower arms) follow the motion of the driven arm due to the linkage therebetween. In alternate embodiments, a drive system can be provide in each of the frame hubs or bridging strut members 730, to drive two or more of the swing arms 620, 622. Alternatively, the swing motion can be manually actuated by a user. Figure 16L shows a motor drive system 780 according to an example embodiment, and includes an electric drive motor 784, a gear box 786, connection gears and clutch mechanism 788, linking the drive motor to the pivot shaft 740 of the driven swing arm. An encoder wheel 790 and sensor assembly 792 are optionally provided for reading position and speed of the swinging motion. Wired or wireless connections are optionally provided between the motor drive system 780, the sensors(s) 792 associated therewith, and the electronic controls 762, and wires or other electrical power conduits connect between the AC adaptor 550, batteries or other power source, and the motor drive system 780 and electronic controls 762, to allow user input to control operation of the bassinet 500. Optionally, a remote controller is provided for wireless communication of control signals to the electronic controls of the bassinet.

[0037] Figures 17A - 17G show further details of the frame-folding functionality of the base frame 520, according to example forms of the invention. In the depicted embodiment, the upper ends of the legs 526, 528 of each of the are pivotally coupled to the bridging strut members 730 at each end of the bassinet 500, and movable between an expanded or unfolded configuration for use (Figs. 17A and 17C) and a compact or folded configuration for storage and transport (Figs. 17B and 17D). In the expanded or unfolded configuration, the base frame 520 forms a stable and strong A-frame configuration, preferably having a base width equal to or greater than the range of swinging of the child support unit 560. A connecting linkage 810 extends between the upper ends of the legs 526, 526' and 528, 528', with a follower pin-and-slot connection between its links and the bridging strut members 730, coupling the pivotal motion of the first and second U-shaped base frame sections 522, 524 to move in tandem. A locking finger 820 projecting from the connecting linkage 810 engages within a hooked locking collar 822 mounted to one of the swing arms 620, 622 as the base frame 520 is folded into its compact or folded configuration (Fig. 17D), thereby locking the position of the swing arms relative to the base frame, and retaining the first and second U-shaped base frame sections 522, 524 in the compact or folded configuration until released, for ease of transport.

[0038] In example embodiments, a fold latch member 840 provides releasable engagement between at least

one of the legs 526, 528 and the bridging strut member 730 to which the leg is pivotally attached, to retain the base frame 520 in its expanded or unfolded configuration until released by a user to fold the frame. The fold latch member 840 comprises a body portion 842 having pivot hubs 844 extending transversely from opposed sides at a medial location on the body, a push-button 846 extending laterally in a first direction proximal a first end of the body, a latch pin 848 extending laterally in an opposite second direction proximal a second end of the body, and a spring arm 850 extending laterally in the first direction from a medial location on the body toward the second end of the body. In the locked state (Fig. 17E), the spring arm 850 biases the latch pin 848 through the leg 526 into a latch opening 860 in the bridging strut member 730, to lock the base frame with the legs 526, 528 extended in the expanded or unfolded configuration. When a user presses the push-button 846 inwardly (Fig. 17F), the body 842 toggles about a rotational axis defined by the pivot hubs 844, retracting the latch pin 848 out of engagement with the latch opening 860 against the bias of the spring arm 850, to release the base frame to be folded into its compact or folded configuration.

[0039] In example embodiments, the child support unit 560 is also foldable between an expanded or unfolded configuration for use (Fig. 18A) and a compact or folded configuration for storage and transport (Fig. 18B). The first and second upper frame members 582, 584 of the child support unit 560 are outwardly curved, and are foldably or hingedly coupled to top corners on either side of the first and second end brackets, 570, 572, allowing the child support unit 560 to be folded, as shown in Figure 18B. The pivot couplings between the first and second upper frame members 582, 584 and the first and second end brackets, 570, 572 optionally include positional retainers to hold the frame members in the folded configuration, and stop members to limit the range of motion at the unfolded configuration. The outwardly curved profiles of the upper frame members 582, 584 combine to form an oval, elliptical or rounded rectangular opening at the top of the child support unit 560 in the expanded configuration, and align generally parallel to one another in the compact configuration, substantially closing the top of the child support unit. In example embodiments, the child support unit 560 has a width in the expanded configuration of at least about two times its width in the compact configuration. The soft goods covering 562 of the child support unit 560 is preferably flexible to allow folding with the upper frame members 582, 584. Optionally, the soft goods covering 562 is configured such that the weight of a child positioned in the child support unit 560 will resist or prevent folding of the child support unit when a child is in the bassinet. Optionally, openings are provided in the soft goods covering 562 at central portions of the upper frame members 582, 584, to allow exposed sections of the frame members to serve as handles for grasping and moving the folded bassinet.

[0040] The child support unit 560 optionally also comprises a foldable mattress or sleeping pad 900, an example embodiment of which is shown in Figures 19A and 19B. The mattress 900 includes two or more lengthwise extending padded sections, with fabric or other material forming a living hinge or foldable segment between adjacent padded sections. For example, in the depicted embodiment, first and second side padded sections 902, 904 extend from opposite sides of a center padded section 906, with hinged portions 908, 910 between adjacent padded sections. The mattress or sleeping pad 900 is foldable in its widthwise dimension, between an unfolded configuration and a folded configuration, as shown in Figure 19B.

[0041] In further example embodiments, the bassinet 500 of the present invention is height adjustable and/or depth adjustable, for example including telescopingly extending sections of the legs 526, 528 of the base frame 520 and/or the frame of the child support unit; and/or can include a recline adjustment mechanism. The bassinet 500 optionally includes an electronic entertainment or soothing device to calm a child, such as for example an audio speaker, music player, audio unit, vibration unit, projector, display or the like, an electronic mobile, a toy bar, or other entertainment features. In alternative embodiments, the child support unit 560 is detachably coupled to the base frame 520 or the swing mechanism 610, and can be used independently as a portable sleep solution. Further example embodiments allow the child support unit 560 to be rotated between two or more different seat facing orientations relative to the base frame 520. The child support unit 560 optionally includes a harness or restraint system for holding a child in place therein.

[0042] Figures 20A and 20B show a gliding bassinet 500' according to another example embodiment of the invention. The bassinet 500' is similarly configured to that described above, and includes a removable canopy 950. Resilient clips 952 are optionally provided at each side of the canopy 950, configured to releasably engage upper frame members of the bassinet in its expanded configuration. A toy, toy bar, audio unit, video player, light display or other entertainment feature 954 is optionally attached to the canopy 950. Additionally, a first pair of wheels 970 having a first alignment orientation are provided at one end of the bassinet 500', and a second pair of wheels 980 having a second alignment orientation different from the first alignment orientation are provided at the other end of the bassinet. For example, wheels 970 are aligned transversely to allow the bassinet to roll in a side-to-side direction, whereas wheels 980 are aligned axially to allow the bassinet to roll in a lengthwise direction. In use, a user can alternatively lift one end or the other of the bassinet 500' to roll the bassinet in the direction of the wheels remaining on the ground.

[0043] In example methods of use according to the present invention, the bassinet 500 is positioned in it expanded configuration (Figure 15A) for use. An infant or small child may be placed within the child support unit 560 for rest or play. The child support unit 560 can be

swung back and forth, either manually or by the motor drive system 780. The linkage configuration of the swing arms 620, 622 relative to the base frame 520 and the end brackets, 570, 572 of the child support unit 560 maintain the floor of the child support unit generally horizontal, with limited or no tilting, throughout the range of swinging motion, resulting in a gliding motion, rather than a rocking motion. When use is complete, the child is removed, and the base frame 520 and the child support unit 560 can be folded for more compact storage. If provided, the folding mattress 900 folds along with the child support unit 560, contained by the soft-goods covering 562 of the child support unit. The user may transport the bassinet 500 by carrying or rolling, either in its expanded or its compact configuration, for example as shown in Figure 21.

[0044] While the invention has been described with reference to preferred and example embodiments, it will be understood by those skilled in the art that a variety of modifications, additions and deletions are within the scope of the invention, as defined by the following claims.

[0045] For the avoidance of doubt, the present application extends to the subject-matter described in the following numbered paragraphs (referred to as "Para" or "Paras"):

1. A support device for supporting a child, comprising:

    a base frame for supporting the device on a support surface;
    a child support unit for receiving and supporting a child on a child support surface of the child support unit; and
    a swing mechanism movably coupling the child support unit to the base frame, the swing mechanism providing a gliding path of motion to the child support unit relative to the base frame, whereby the angular orientation of the child support surface of the child support unit remains generally constant throughout substantially the entire path of motion.

2. The support device of Para 1, wherein the base frame comprises a pair of U-shaped sections, each of which comprise first and second support leg portions and a lower cross-member connected between lower ends of the first and second support leg portions.

3. The support device of Para 2, wherein at least one of the first and second U-shaped sections are pivotally coupled relative to the other of the first and second U-shaped sections at upper ends of the support legs by frame-fold linkages at each end of the bassinet, to allow the base frame to fold between an expanded configuration and a folded configuration.

4. The support device of Para 3, wherein at least one of the frame-fold linkages comprises a connecting linkage extending between the upper ends of the support legs, the connecting linkage coupling the pivotal motion of the first and second U-shaped sections.

5. The support device of Para 4, wherein the connecting linkage comprises a locking finger that engages with a hooked locking collar of the swing mechanism as the base frame is folded into its folded configuration to lock the position of the swing mechanism relative to the base frame and retain the first and second U-shaped sections in the folded configuration.

6. The support device of Para 5, further comprising a fold latch member providing releasable engagement of the base frame in its expanded configuration.

7. The support device of Para 6, wherein the fold latch member comprises a body portion, pivot hubs extending transversely from opposed sides at a medial location on the body, a push-button extending laterally in a first direction proximal a first end of the body, a latch pin extending laterally in an opposite second direction proximal a second end of the body, and a spring arm extending laterally in the first direction from a medial location on the body toward the second end of the body.

8. The support device of any preceding Para, wherein the child support unit comprises a structural frame and a soft-goods covering supported by the structural frame for receiving and supporting the child.

9. The support device of Para 8, wherein the structural frame of the child support unit comprises first and second end brackets, at least one lower cross-rail connected between lower ends of the end brackets to support the child support surface of the child support unit, and first and second upper frame members connected between upper ends of the end brackets.

10. The support device of Para 9, wherein the first and second upper frame members are pivotally coupled to the first and second end brackets, and selectively reconfigurable between an expanded configuration and a folded configuration.

11. The support device of Para 10, wherein the child support unit further comprises a foldable sleeping pad.

12. The support device of any of Paras 9-11, comprising first and second lower cross-rails connected between lower ends of the end brackets, the first and second lower cross-rails extending generally parallel to one another and spaced a distance apart from one another.

13. The support device of any preceding Para, wherein the swing mechanism comprises two pairs of first and second swing arms, a first pair of swing arms at a first end of the bassinet and a second pair of swing arms at a second end of the bassinet opposite the first end, the swing arms having upper portions pivotally coupled to the base frame and lower portions pivotally connected to the child support

unit.

14. The support device of Para 13, wherein the first and second swing arms are maintained generally parallel to one another as the child support unit moves through the path of motion.

15. The support device of Para 13 or 14, wherein the lower portions of the swing arms are pivotally connected to the child support unit by rocker bearings having a V-shaped male bearing strut received in a V-shaped female bearing recess, whereby the male bearing strut rocks back and forth within the female bearing recess as the child support unit swings through its path of motion.

16. The support device of any of Paras 13-15, wherein the base frame comprises two pairs of support legs and first and second bridging strut members coupled between the two pairs of support legs, and wherein the upper portions of the swing arms are pivotally coupled to the bridging strut members.

17. The support device of Para 16, wherein the pivotal coupling between the upper portions of the swing arms and the bridging strut members comprises at least one bearing.

18. The support device of any of Paras 13-17, wherein the swing mechanism further comprises a motor drive system for driving swinging motion of at least one of the swing arms.

19. The support device of Para 18, wherein the motor drive system comprises an electric motor, a gearbox, an encoder wheel and a position and speed sensor.

20. The support device of any preceding Para, wherein the child support unit comprises a detachable canopy.

21. The support device of any preceding Para, wherein the child support unit further comprises at least one entertainment feature.

22. The support device of any preceding Para, wherein the base frame further comprises at least one wheel for rolling contact with the support surface.

23. The support device of Para 22, wherein the base frame comprises a plurality of wheels, at least one of the wheels having a first alignment orientation, and at least another of the wheels having a second alignment orientation different from the first alignment orientation.

24. The support device of any preceding Para, wherein the angular orientation of the child support surface of the child support unit varies by no more than about 10º throughout the path of motion of the swing mechanism.

25. The support device of any preceding Para, wherein the angular orientation of the child support surface of the child support unit varies by no more than about 5º throughout the path of motion of the swing mechanism.

26. The support device of any preceding Para, wherein the child support unit comprises a bassinet.

27. A child support device comprising a base frame, a child support unit, and a swing mechanism coupling the child support unit to the base frame, wherein the swing mechanism comprises two pairs of generally parallel swing arms, the swing arms having first portions pivotally connected to the base frame and second portions pivotally connected to the child support unit, whereby the child support unit can swing back and forth through a range of swinging motion relative to the base frame with limited tilting of the child support unit by no more than about 10º through the range of swinging motion.

28. The child support device of Para 27, wherein the child support unit swings back and forth with limited tilting of no more than about 5º through the range of swinging motion.

29. The support device of Para 27 or 28, wherein the child support unit comprises a bassinet.

30. A child support device comprising:

a base frame for supporting the child support device on a support surface, the base frame comprising first and second U-shaped sections pivotally coupled to one another by frame-fold linkages at each end of the child support device, to allow the base frame to fold between an expanded configuration and a folded configuration; a child support unit comprising a structural frame and a soft-goods covering supported by the structural frame, the structural frame of the child support unit comprising first and second end brackets, at least one lower cross-rail connected between lower ends of the end brackets, and first and second upper frame members pivotally coupled between upper ends of the end brackets and reconfigurable between an expanded configuration and a folded configuration; and a swing mechanism movably coupling the child support unit to the base frame, the swing mechanism comprising two pairs of first and second swing arms, a first pair of swing arms at a first end of the bassinet and a second pair of swing arms at a second end of the bassinet opposite the first end, the swing arms having upper portions pivotally coupled to the base frame and lower portions pivotally connected to the child support unit.

Claims

1. A support device for supporting a child, comprising:

a base frame for supporting the device on a support surface;

a child support unit for receiving and supporting a child on a child support surface of the child support unit; and

a swing mechanism movably coupling the child

support unit to the base frame, the swing mechanism providing a gliding path of motion to the child support unit relative to the base frame, whereby the angular orientation of the child support surface of the child support unit remains generally constant throughout substantially the entire path of motion.

2. The support device of claim 1, wherein the base frame comprises a pair of U-shaped sections, each of which comprise first and second support leg portions and a lower cross-member connected between lower ends of the first and second support leg portions.

3. The support device of claim 2, wherein at least one of the first and second U-shaped sections are pivotally coupled relative to the other of the first and second U-shaped sections at upper ends of the support legs by frame-fold linkages at each end of the bassinet, to allow the base frame to fold between an expanded configuration and a folded configuration.

4. The support device of claim 3, wherein at least one of the frame-fold linkages comprises a connecting linkage extending between the upper ends of the support legs, the connecting linkage coupling the pivotal motion of the first and second U-shaped sections;
optionally, the connecting linkage comprises a locking finger that engages with a hooked locking collar of the swing mechanism as the base frame is folded into its folded configuration to lock the position of the swing mechanism relative to the base frame and retain the first and second U-shaped sections in the folded configuration.

5. The support device of claim 3 or 4, further comprising a fold latch member providing releasable engagement of the base frame in its expanded configuration;
optionally, the fold latch member comprises a body portion, pivot hubs extending transversely from opposed sides at a medial location on the body, a push-button extending laterally in a first direction proximal a first end of the body, a latch pin extending laterally in an opposite second direction proximal a second end of the body, and a spring arm extending laterally in the first direction from a medial location on the body toward the second end of the body.

6. The support device of any preceding claim, wherein the child support unit comprises a structural frame and a soft-goods covering supported by the structural frame for receiving and supporting the child;
optionally, the structural frame of the child support unit comprises first and second end brackets, at least one lower cross-rail connected between lower ends of the end brackets to support the child support surface of the child support unit, and first and second upper frame members connected between upper ends of the end brackets.

7. The support device of claim 6, wherein the first and second upper frame members are pivotally coupled to the first and second end brackets, and selectively reconfigurable between an expanded configuration and a folded configuration.

8. The support device of claim 6 or 7, comprising first and second lower cross-rails connected between lower ends of the end brackets, the first and second lower cross-rails extending generally parallel to one another and spaced a distance apart from one another.

9. The support device of any preceding claim, wherein the swing mechanism comprises two pairs of first and second swing arms, a first pair of swing arms at a first end of the bassinet and a second pair of swing arms at a second end of the bassinet opposite the first end, the swing arms having upper portions pivotally coupled to the base frame and lower portions pivotally connected to the child support unit;
optionally, the swing mechanism further comprises a motor drive system for driving swinging motion of at least one of the swing arms, the motor drive system may comprise an electric motor, a gearbox, an encoder wheel and a position and speed sensor.

10. The support device of claim 9, wherein:

the first and second swing arms are maintained generally parallel to one another as the child support unit moves through the path of motion; and/or
the lower portions of the swing arms are pivotally connected to the child support unit by rocker bearings having a V-shaped male bearing strut received in a V-shaped female bearing recess, whereby the male bearing strut rocks back and forth within the female bearing recess as the child support unit swings through its path of motion.

11. The support device of claim 9 or 10, wherein the base frame comprises two pairs of support legs and first and second bridging strut members coupled between the two pairs of support legs, and wherein the upper portions of the swing arms are pivotally coupled to the bridging strut members, the pivotal coupling between the upper portions of the swing arms and the bridging strut members may comprise at least one bearing.

12. The support device of any preceding claim, wherein the child support unit comprises a detachable can-

opy and/or at least one entertainment feature.

13. The support device of any preceding claim, wherein the base frame further comprises at least one wheel for rolling contact with the support surface;
optionally, the base frame comprises a plurality of wheels, at least one of the wheels having a first alignment orientation, and at least another of the wheels having a second alignment orientation different from the first alignment orientation.

14. The support device of any preceding claim, wherein the angular orientation of the child support surface of the child support unit varies by no more than about 10º throughout the path of motion of the swing mechanism and/or wherein the angular orientation of the child support surface of the child support unit varies by no more than about 5º throughout the path of motion of the swing mechanism.

15. The support device of any preceding claim, wherein the child support unit comprises a bassinet and/or a foldable sleeping pad.

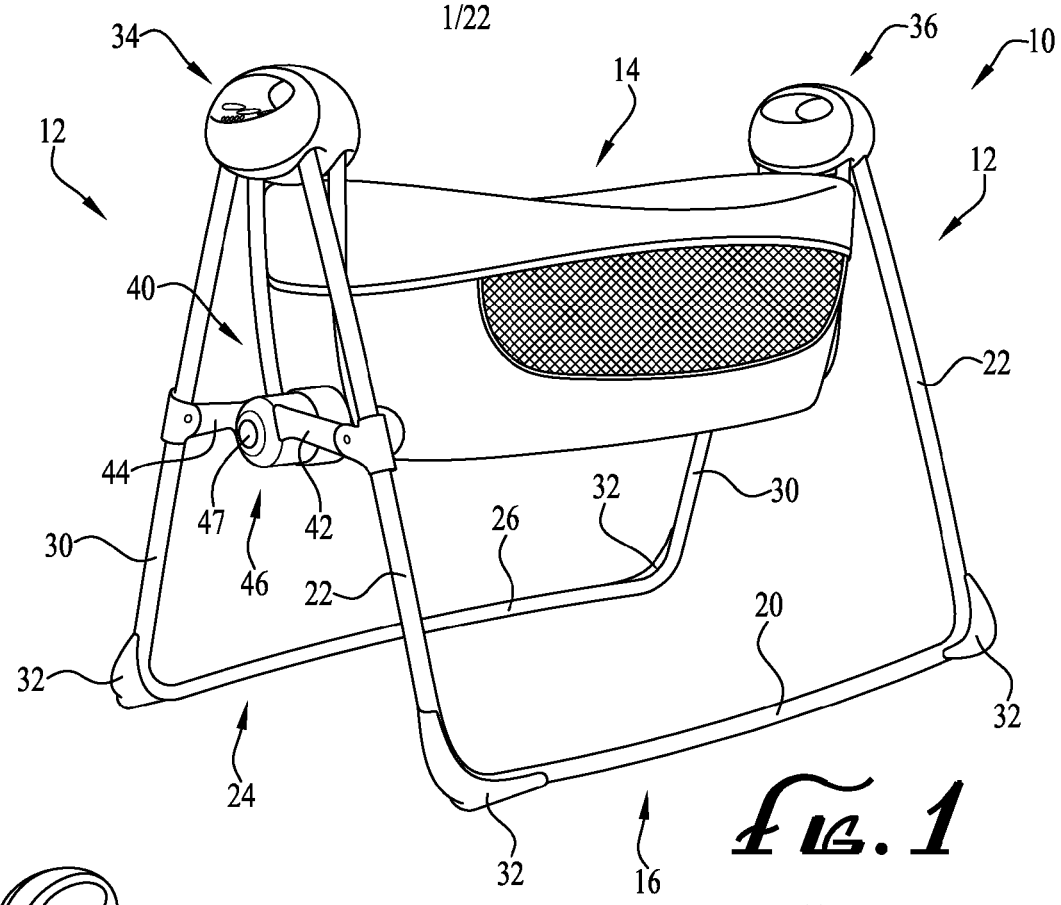
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FIG. 1

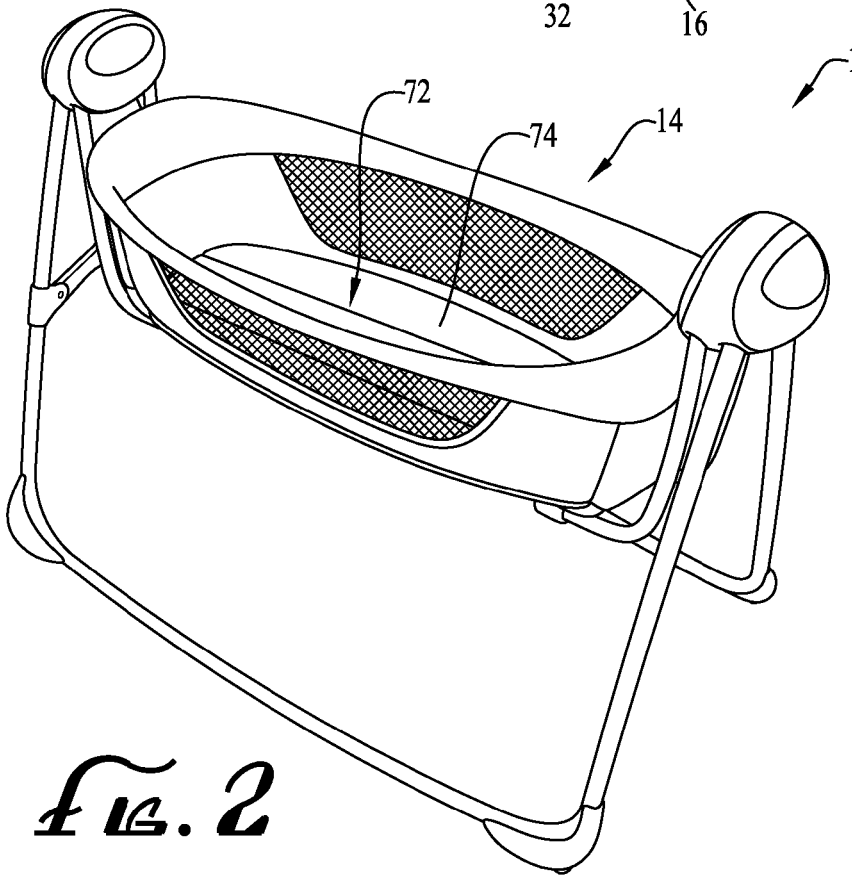
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FIG. 2

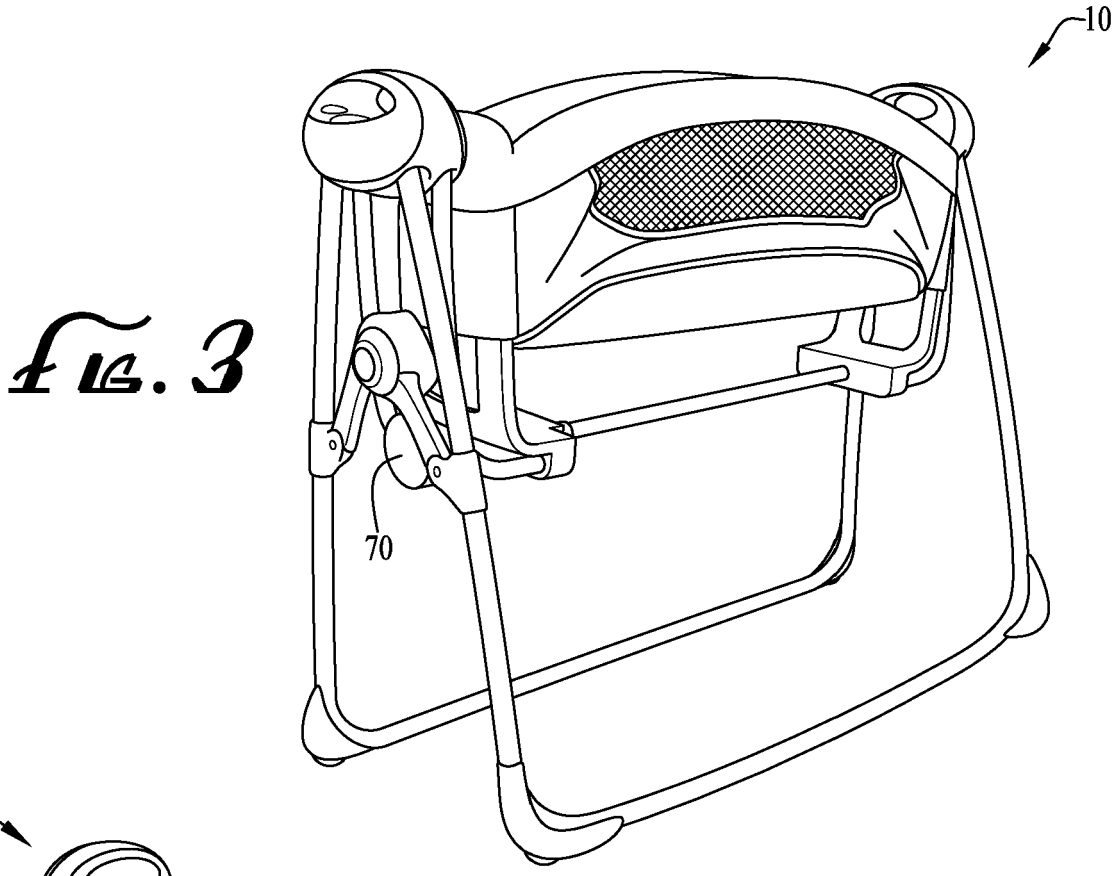

FIG. 3

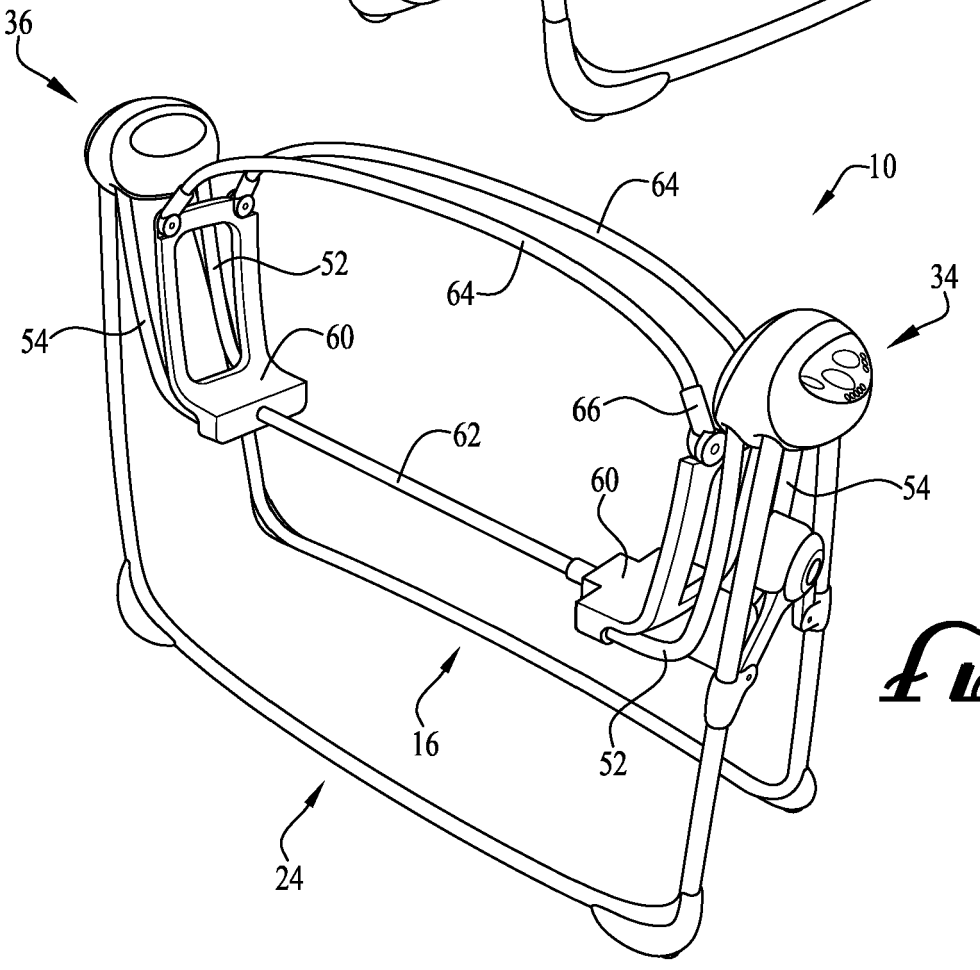

FIG. 4

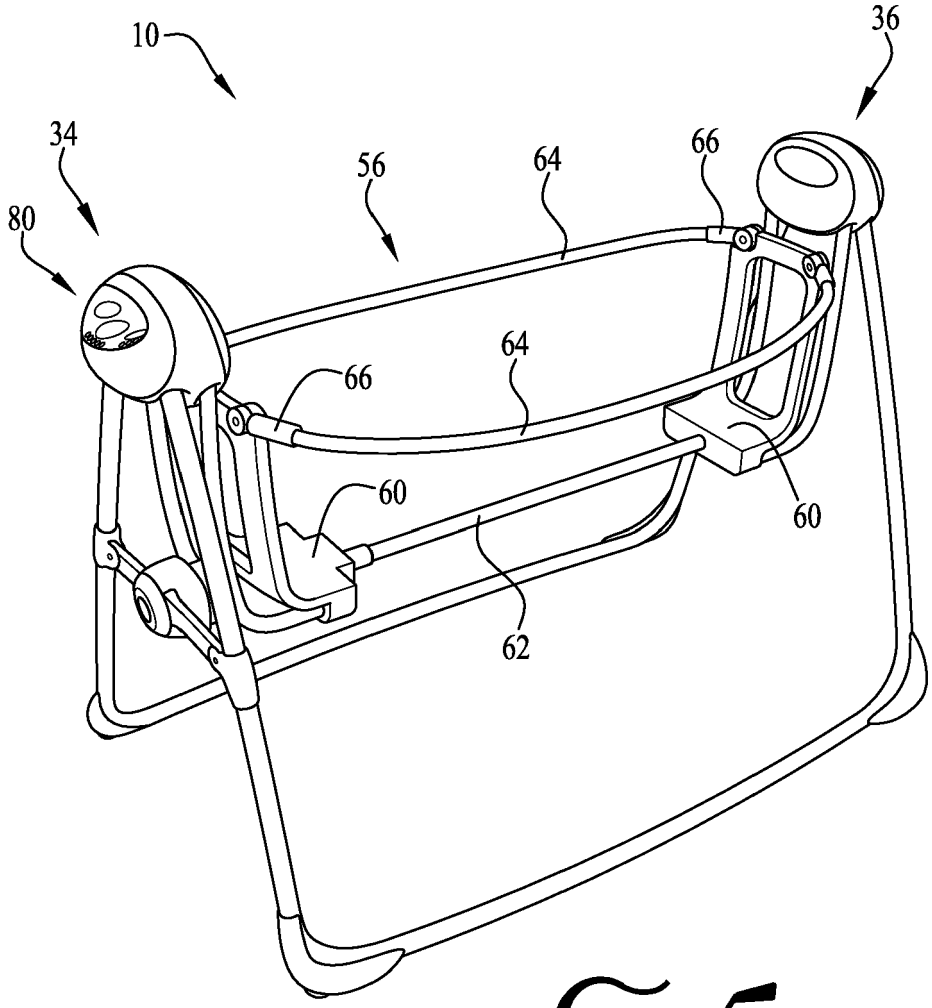

FIG. 5

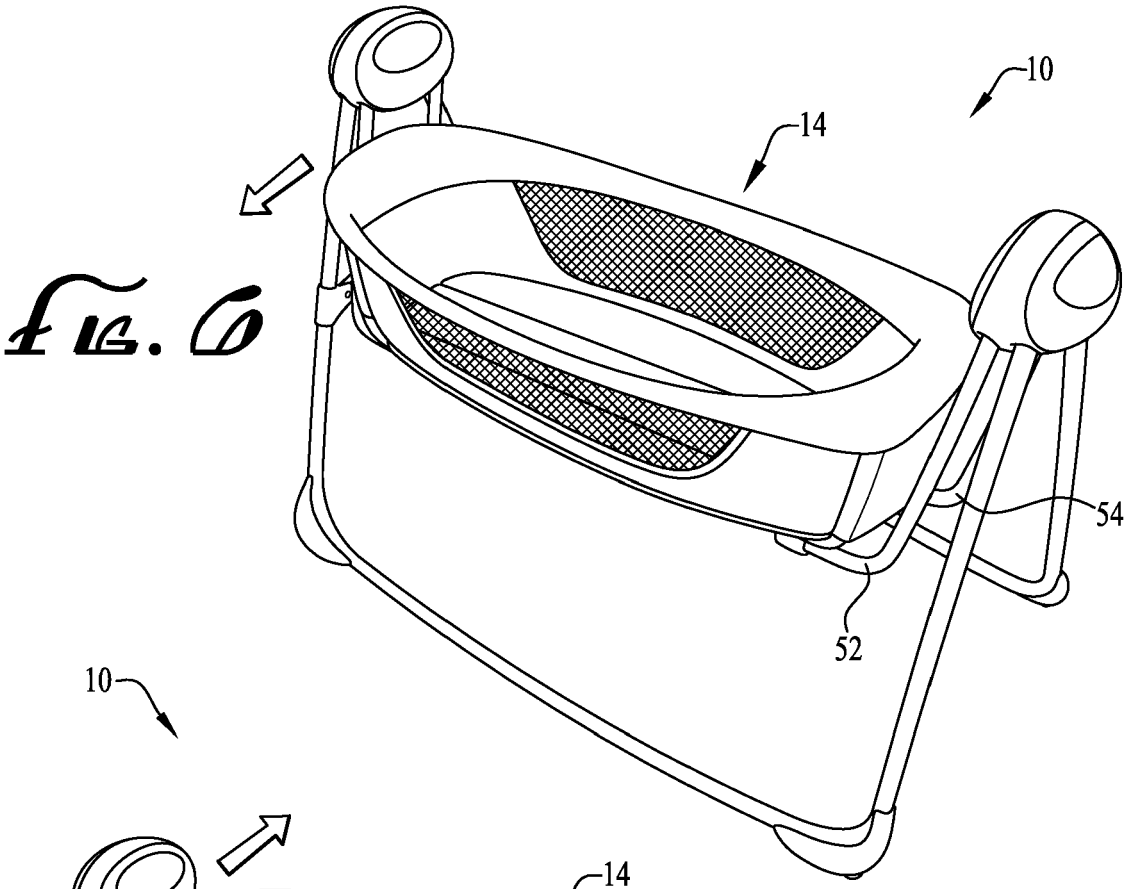

FIG. 6

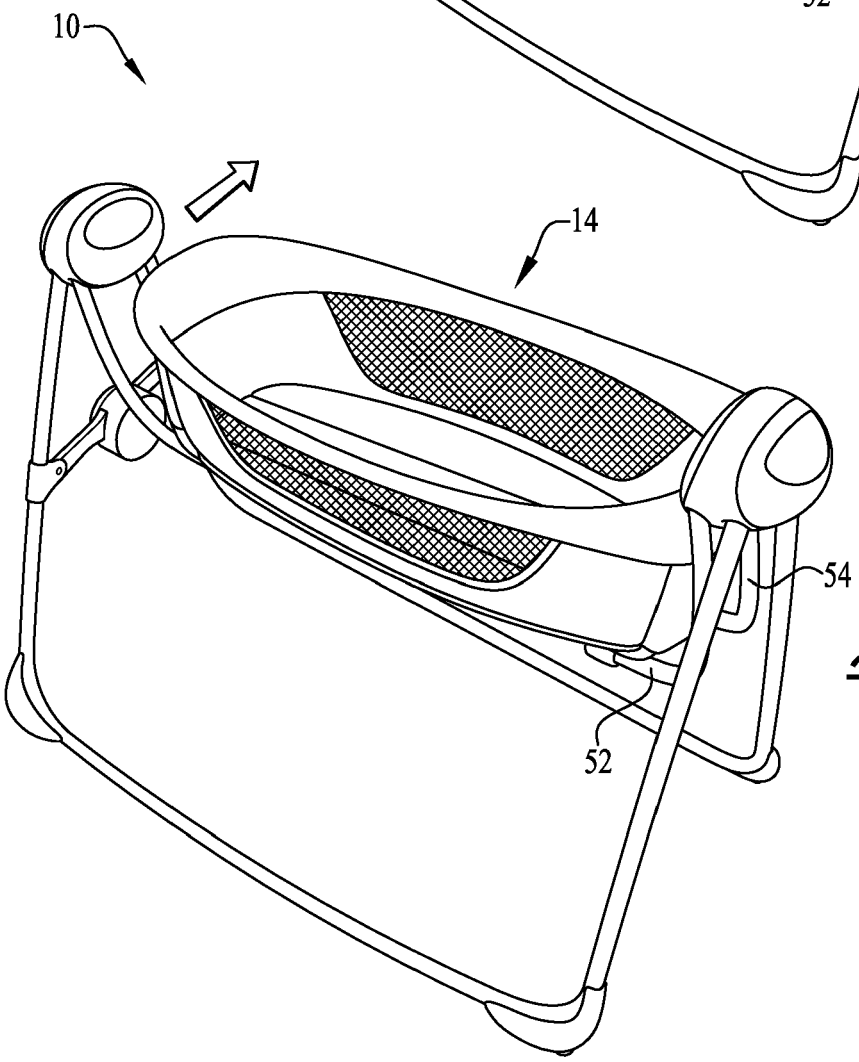

FIG. 7

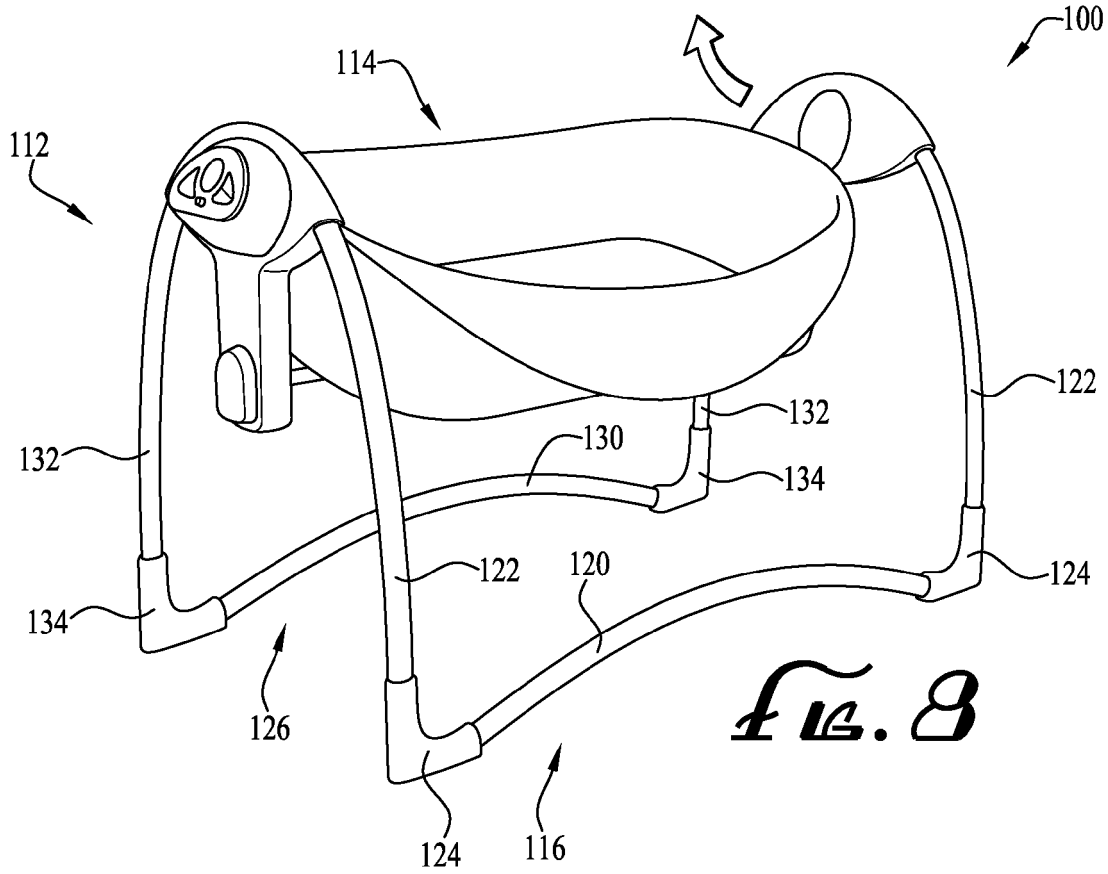
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FIG. 8

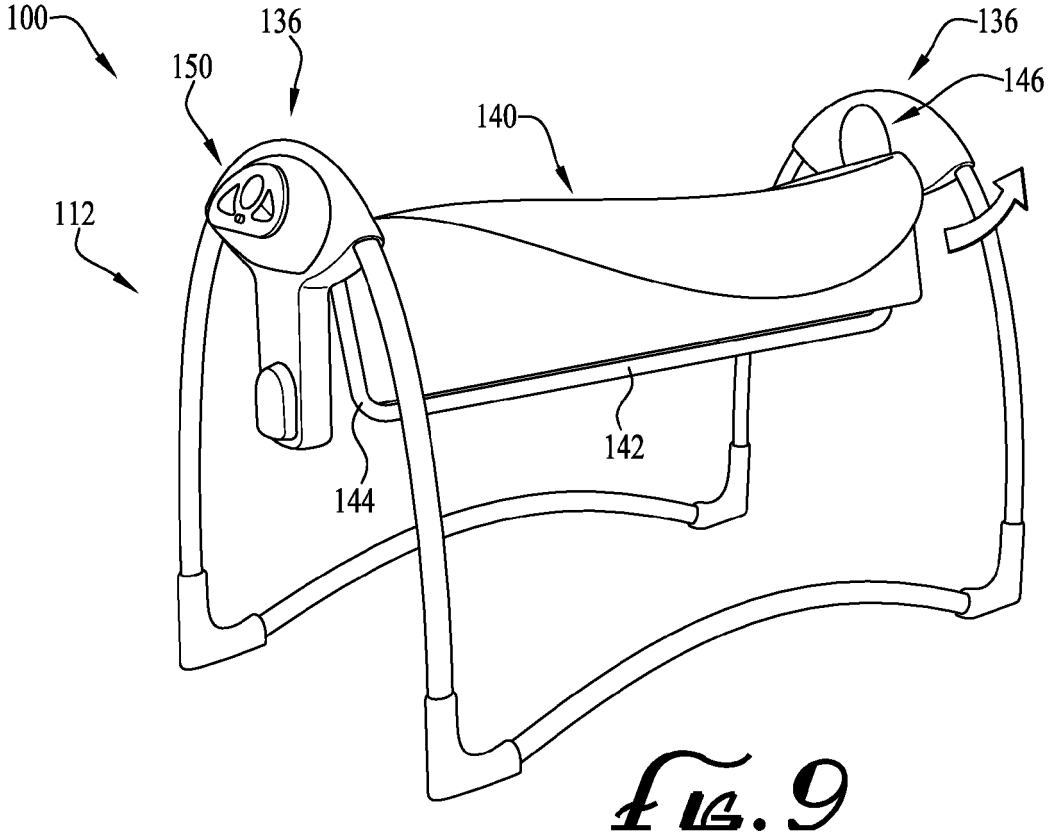
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FIG. 9

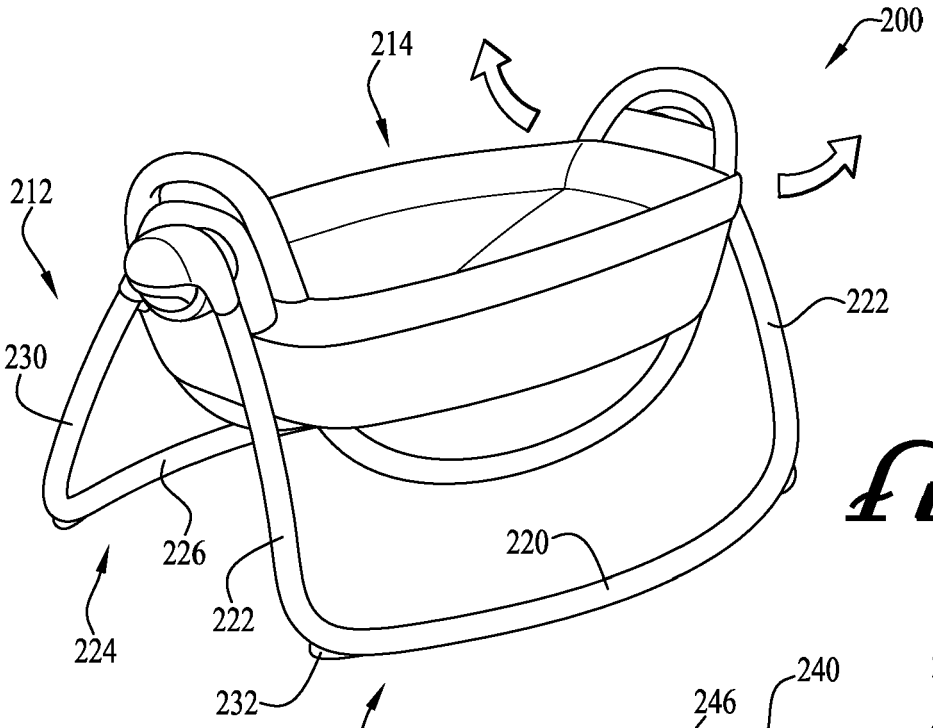
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FIG. 10

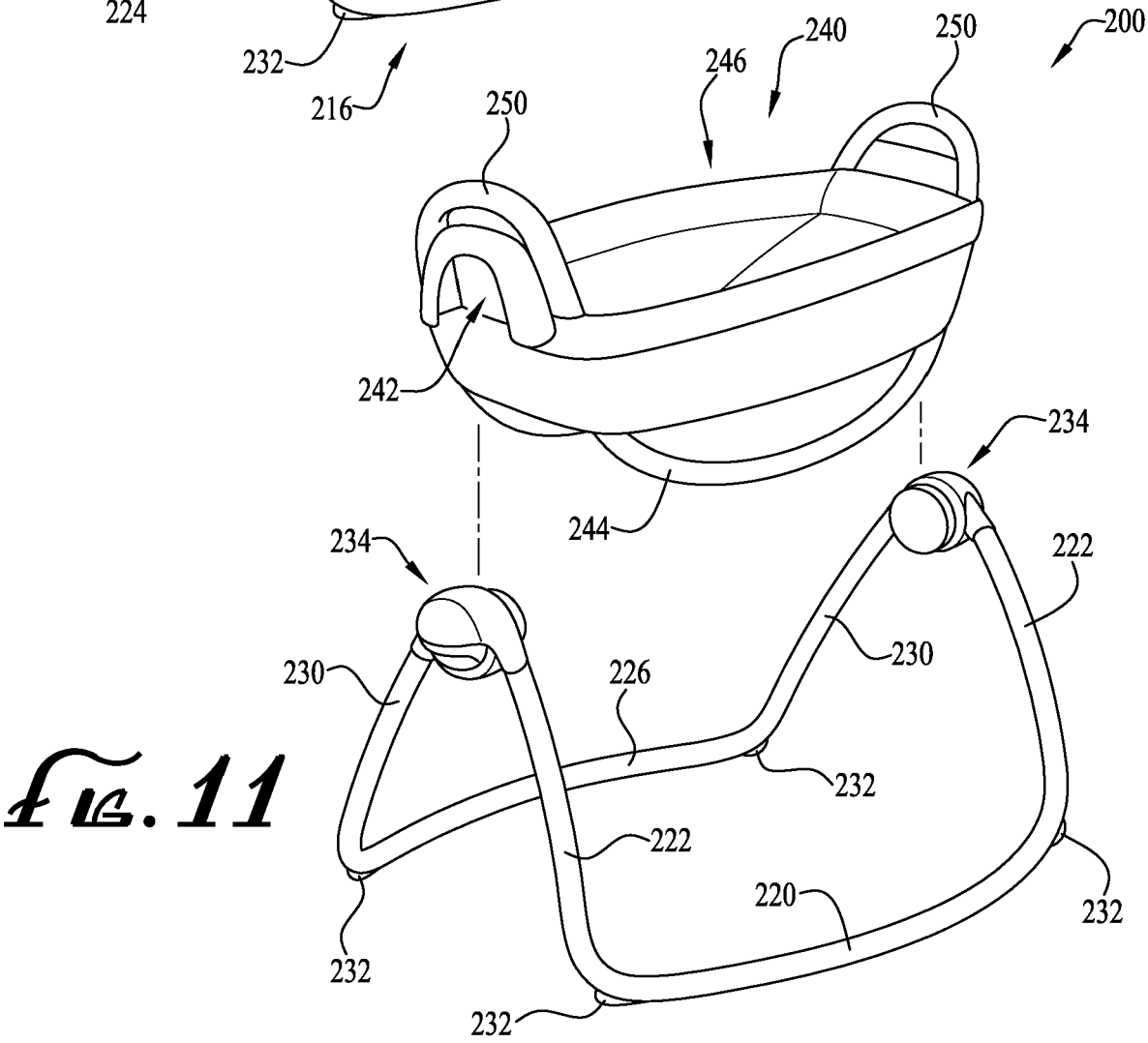
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FIG. 11

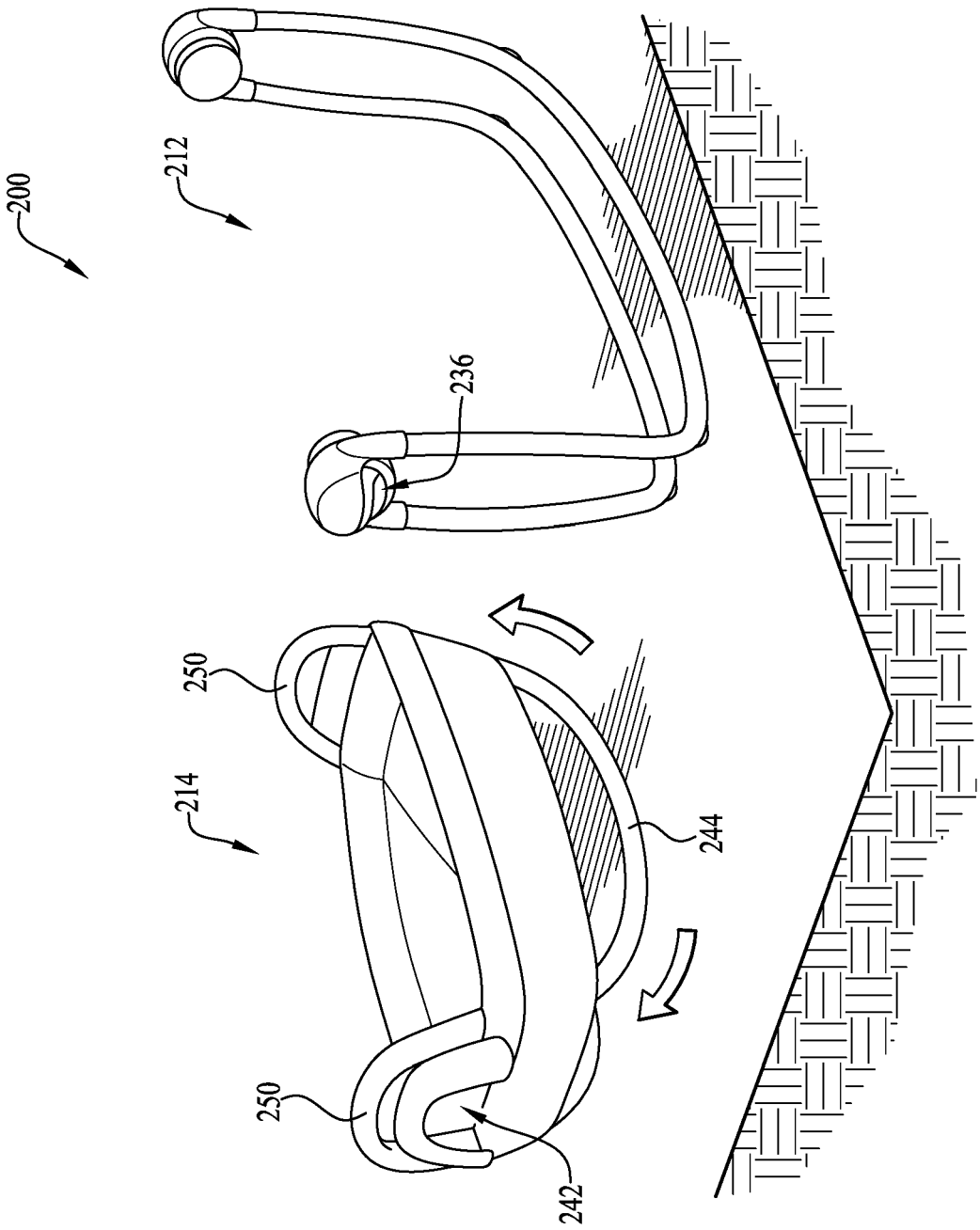

Fig. 12

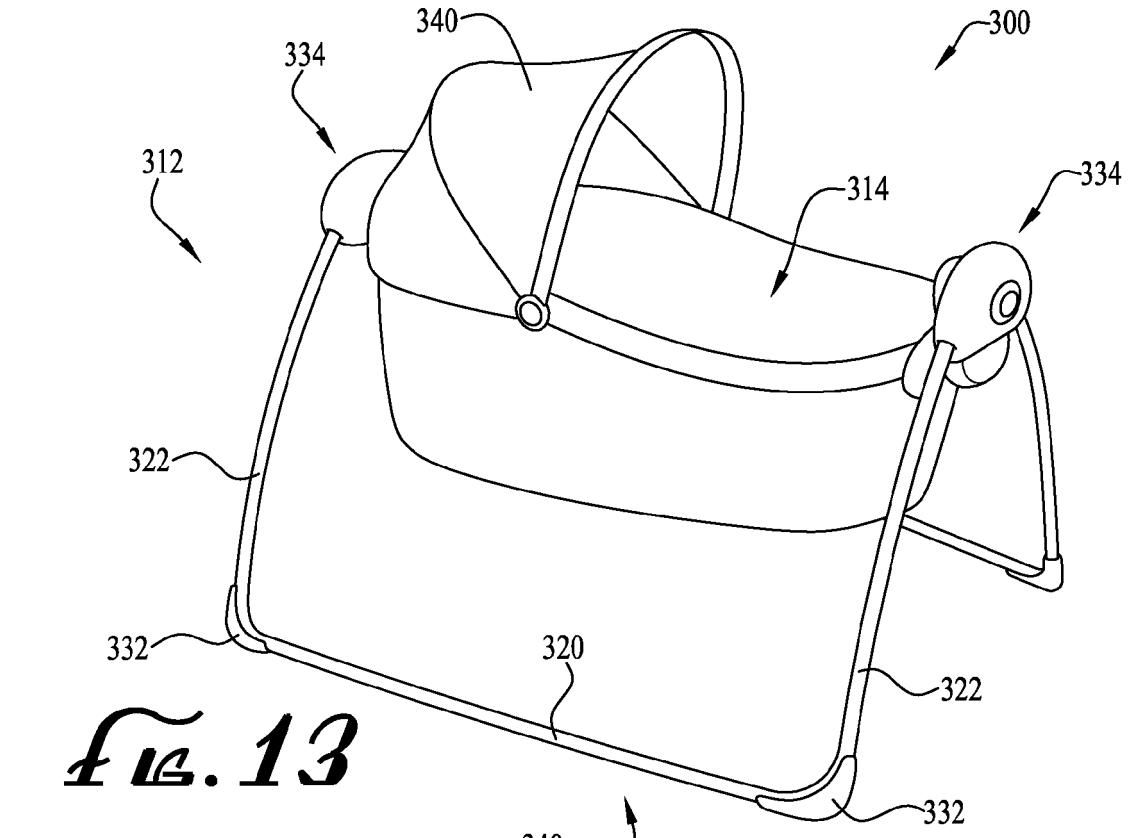
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FIG. 13

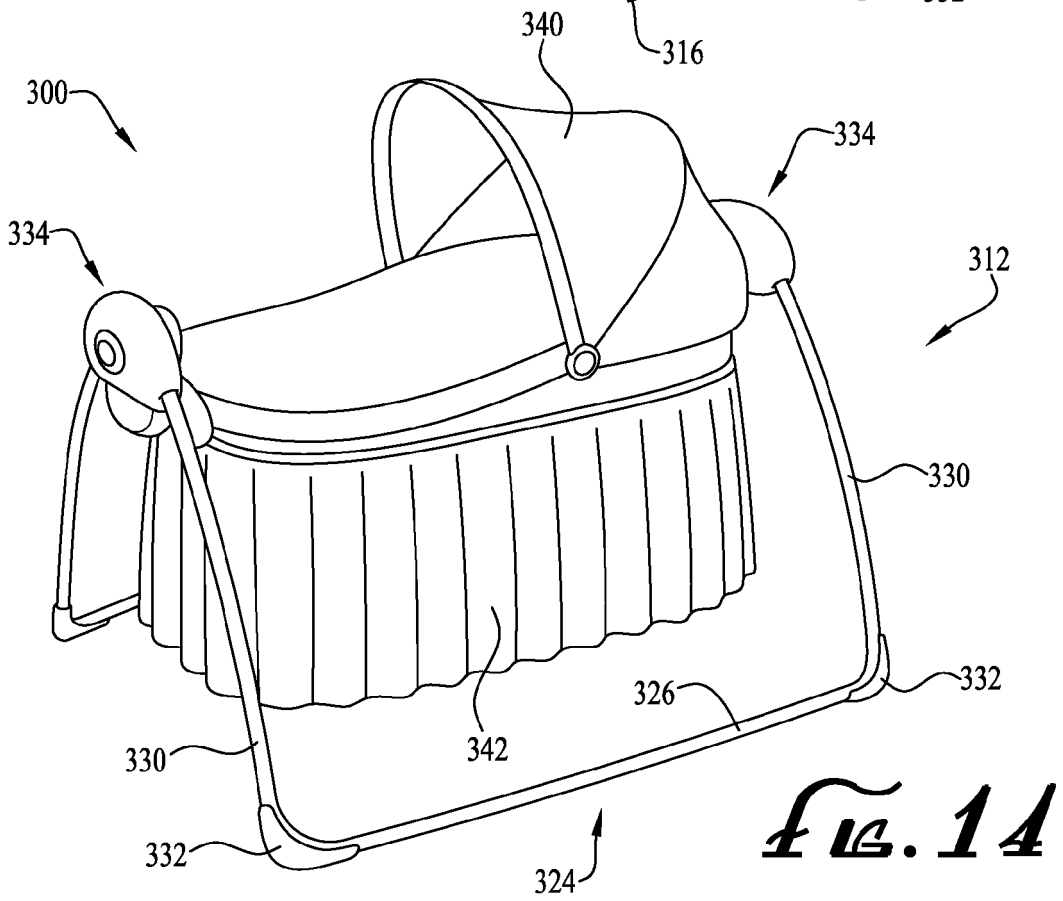
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FIG. 14

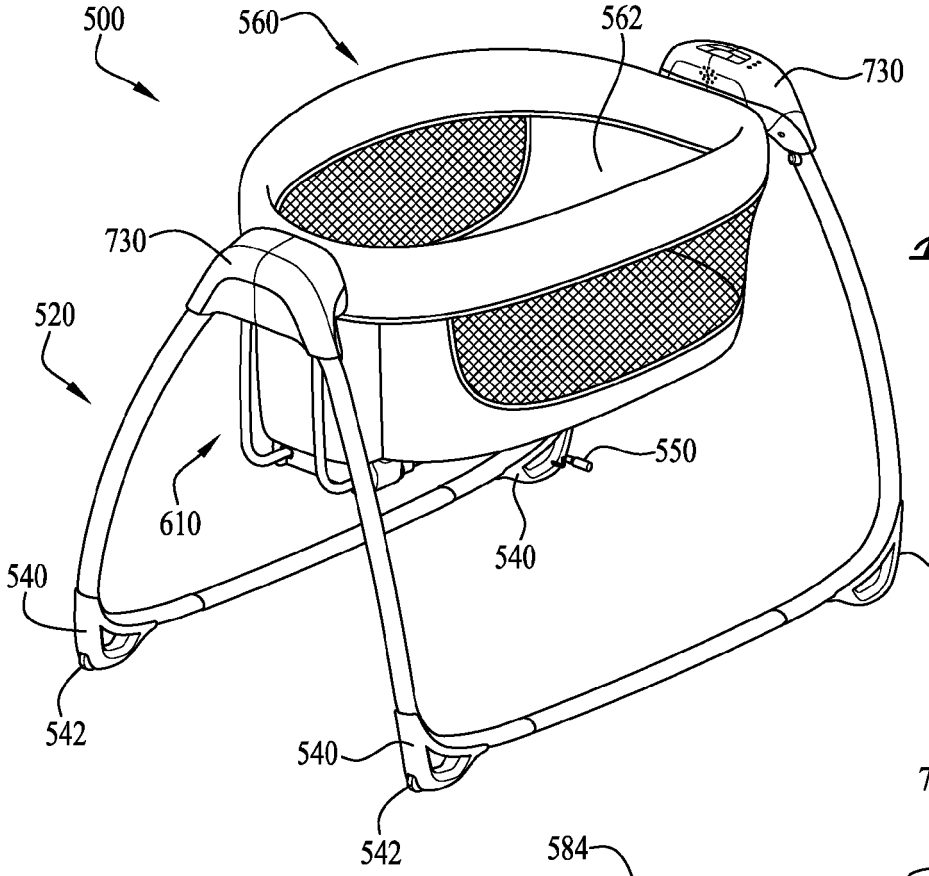

FIG. 15A

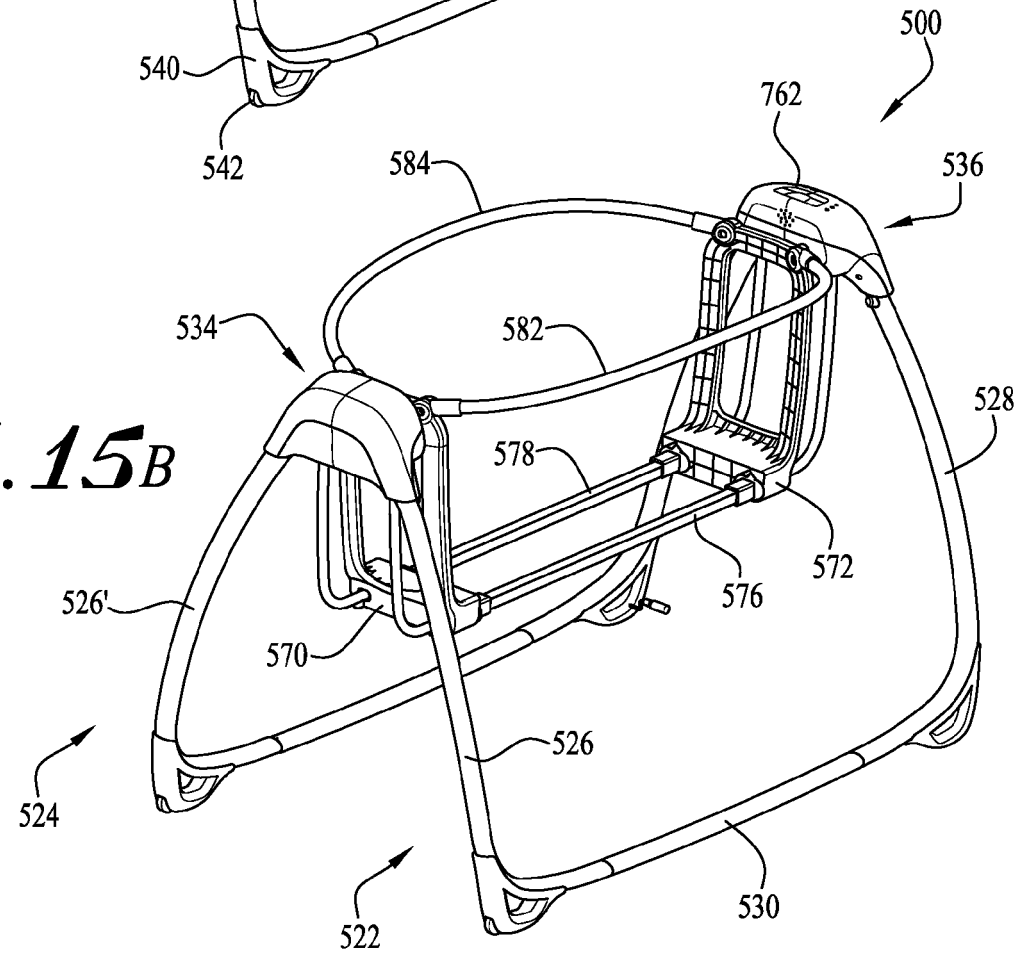

FIG. 15B

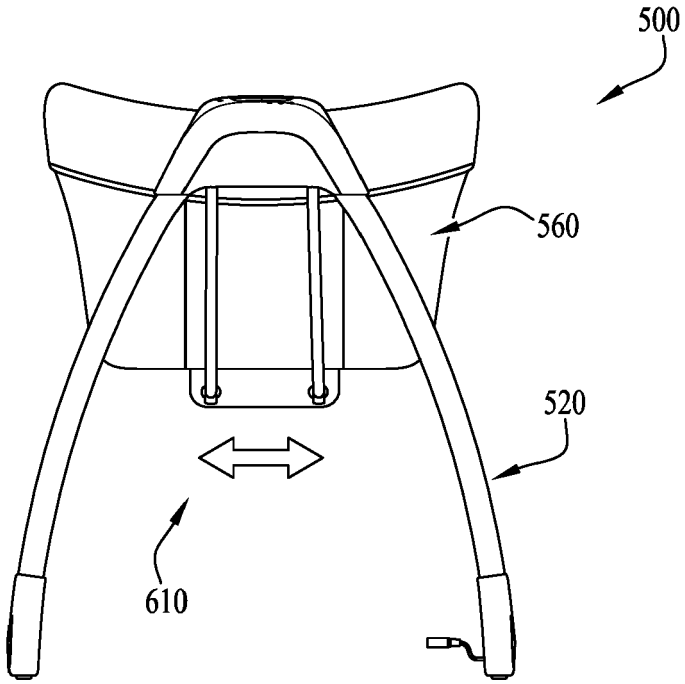

FIG. 16A

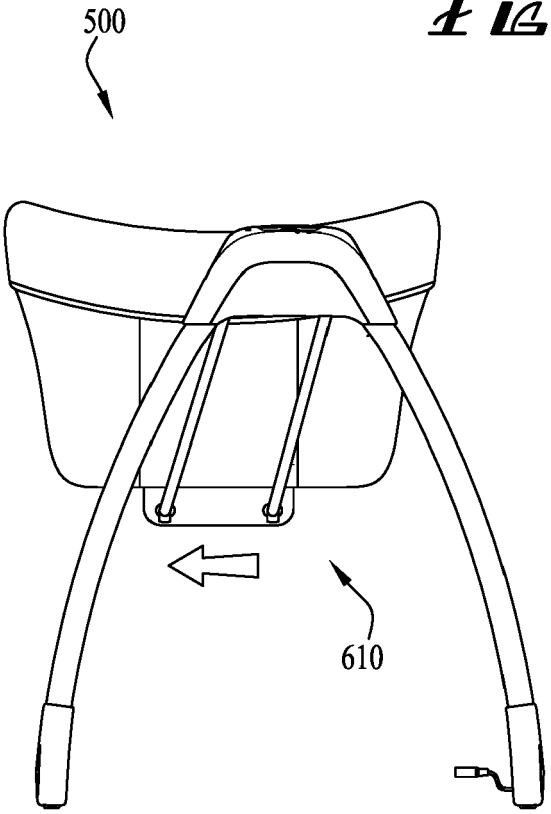

FIG. 16B

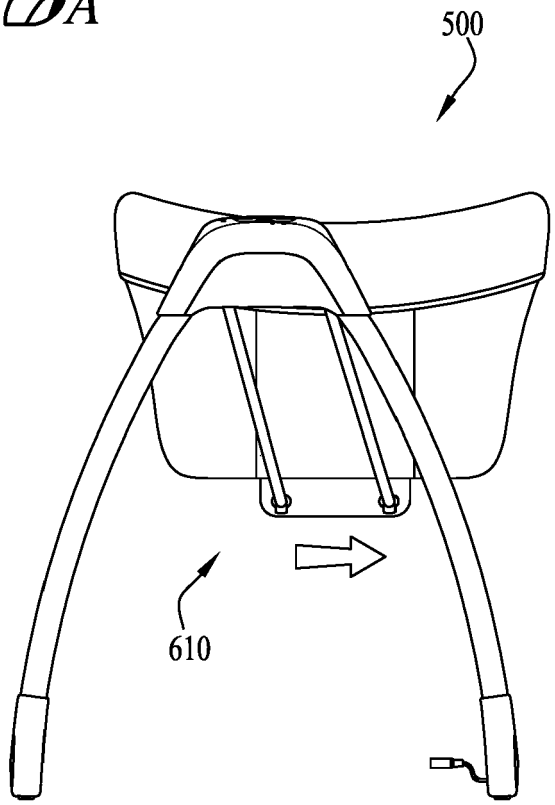

FIG. 16C

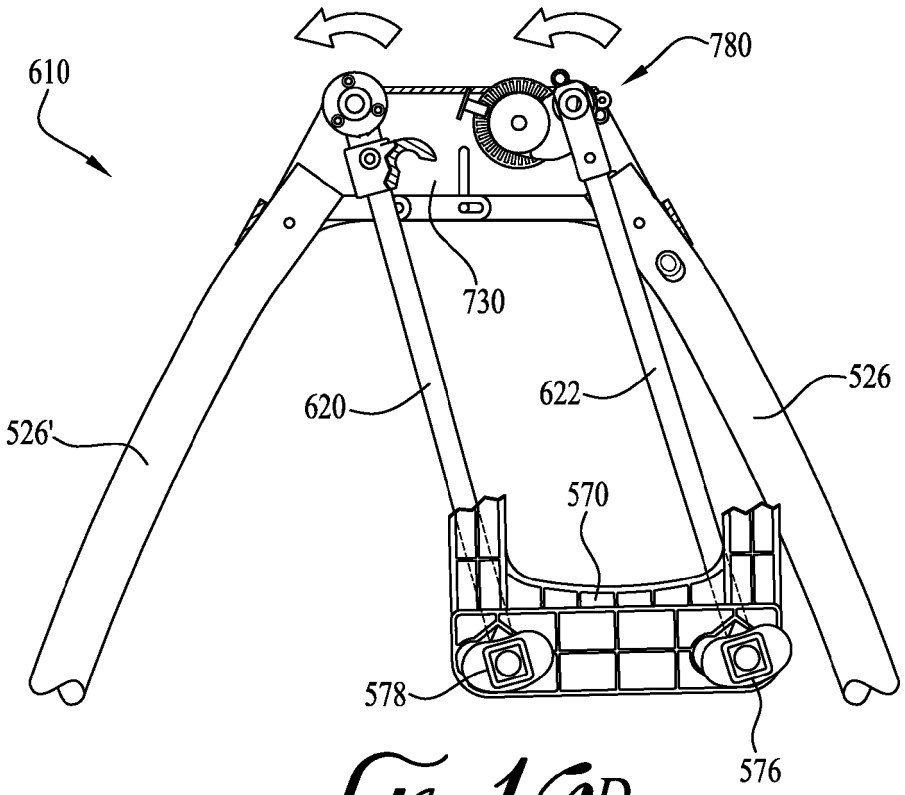

FIG. 16D

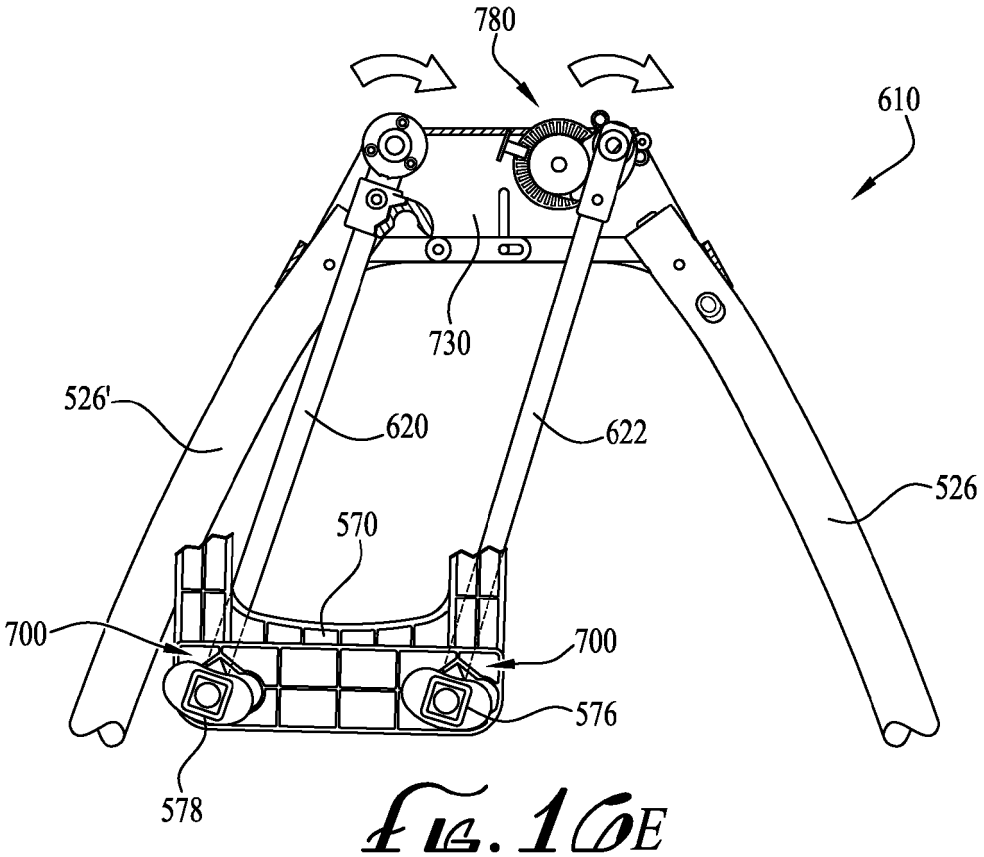

FIG. 16E

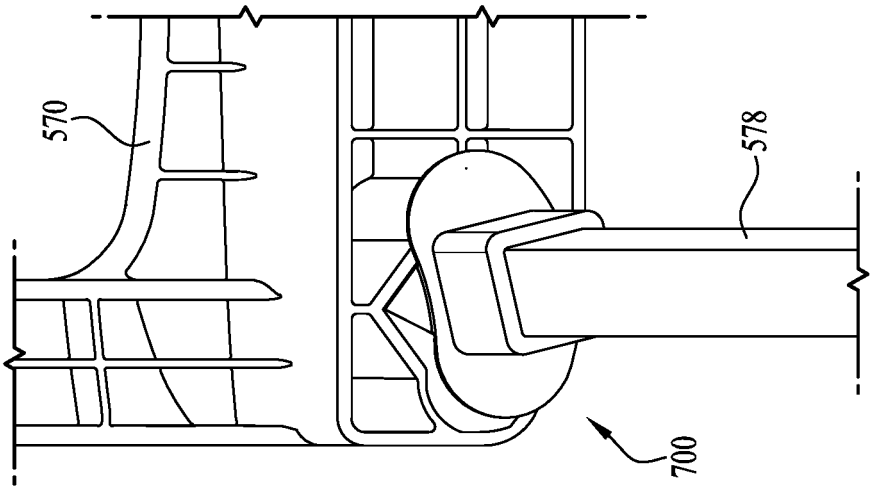

FIG. 16H

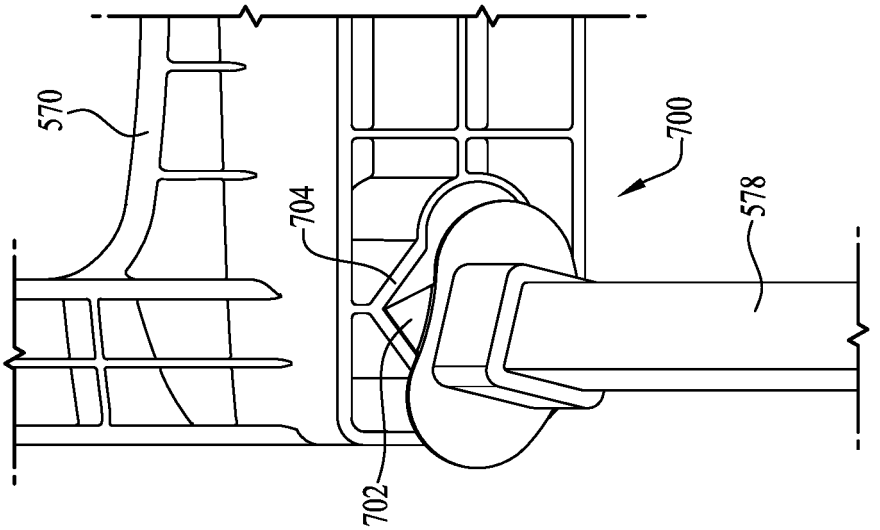

FIG. 16G

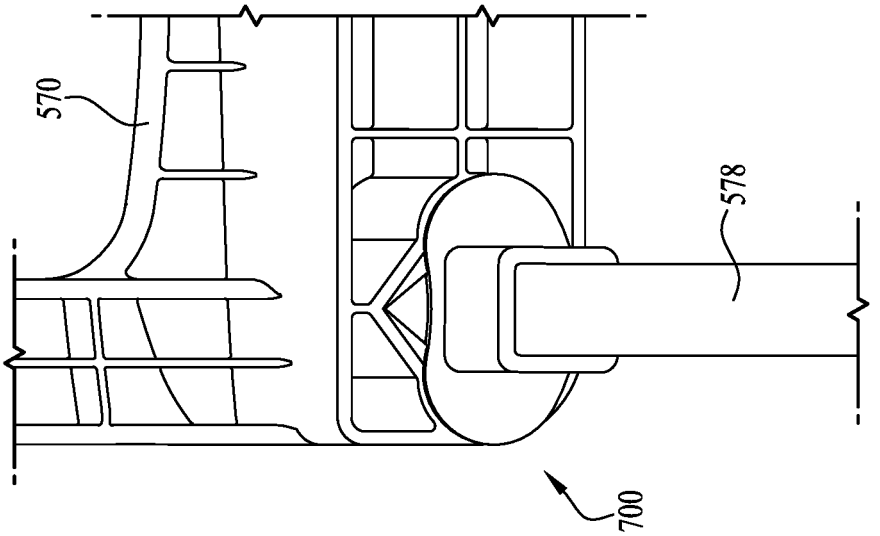

FIG. 16F

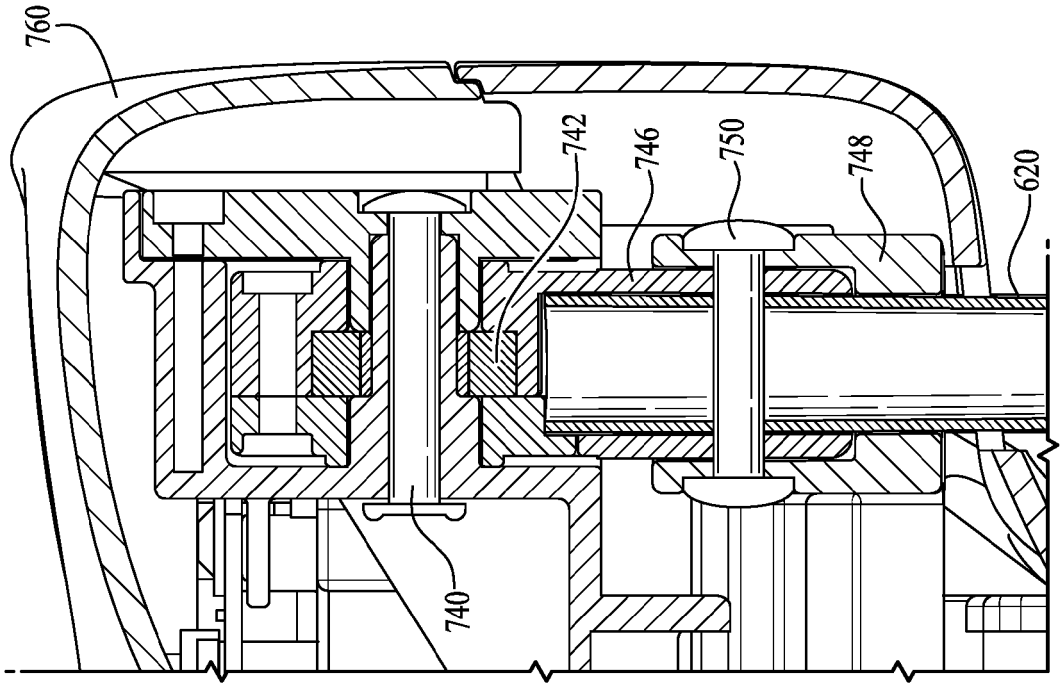

Fig. 16J

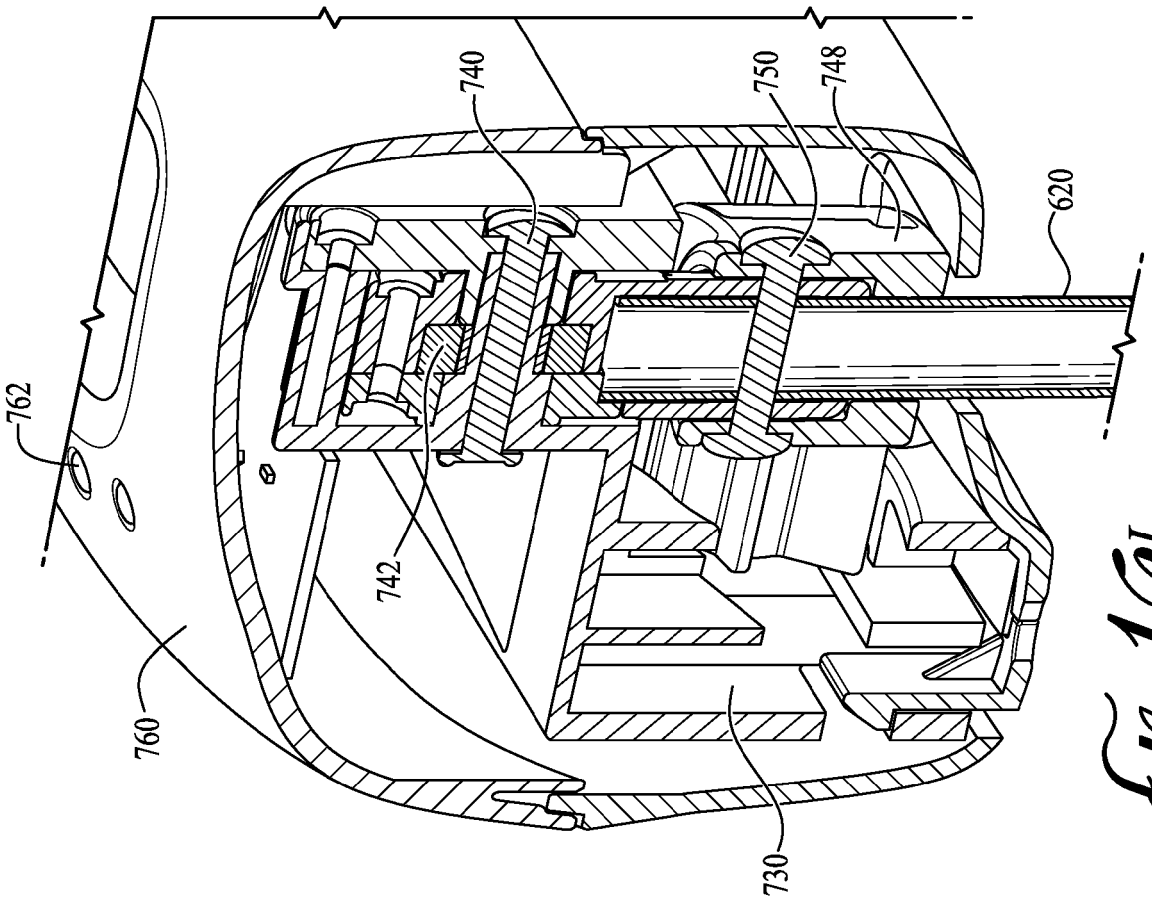

Fig. 16I

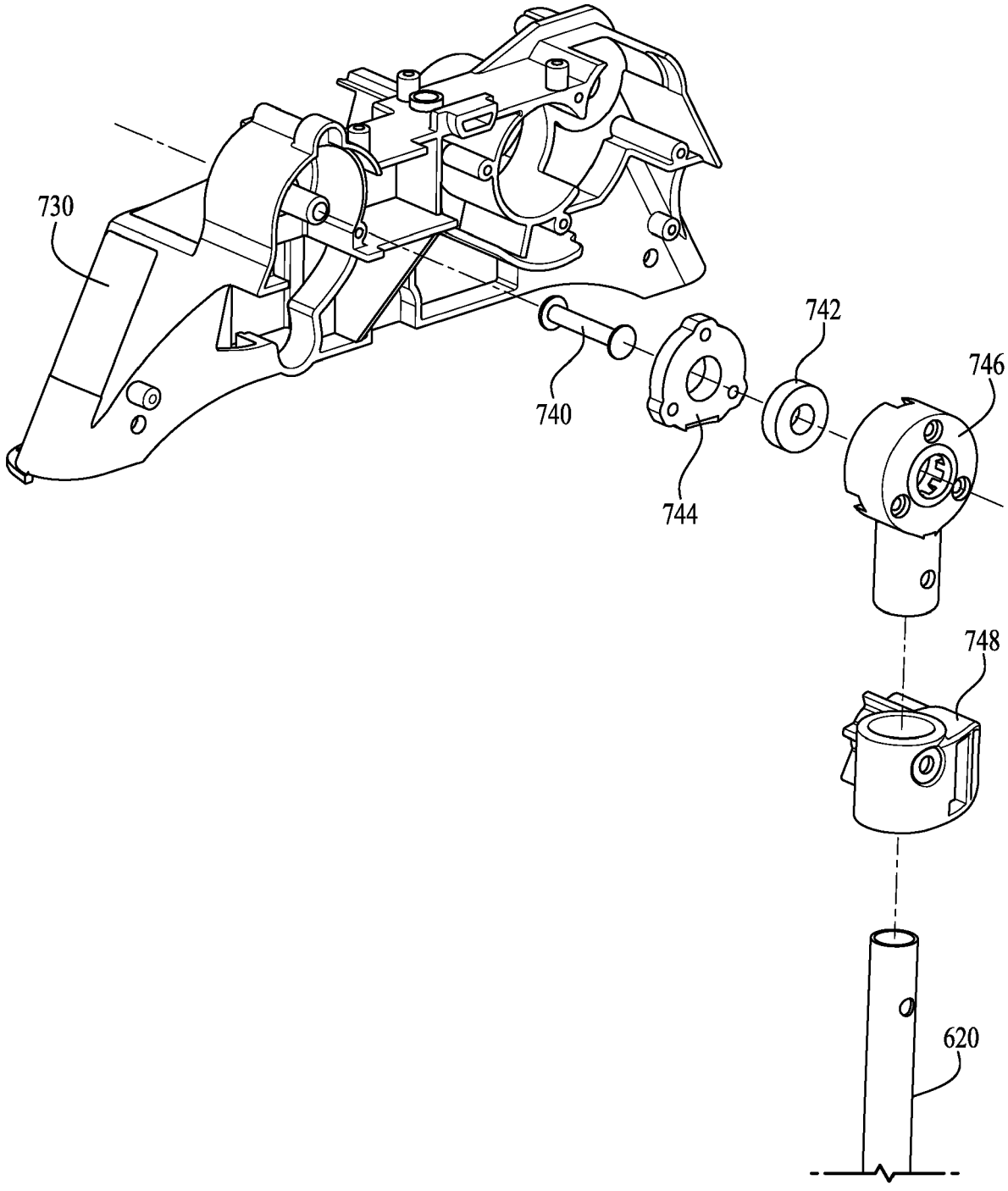

FIG. 16K

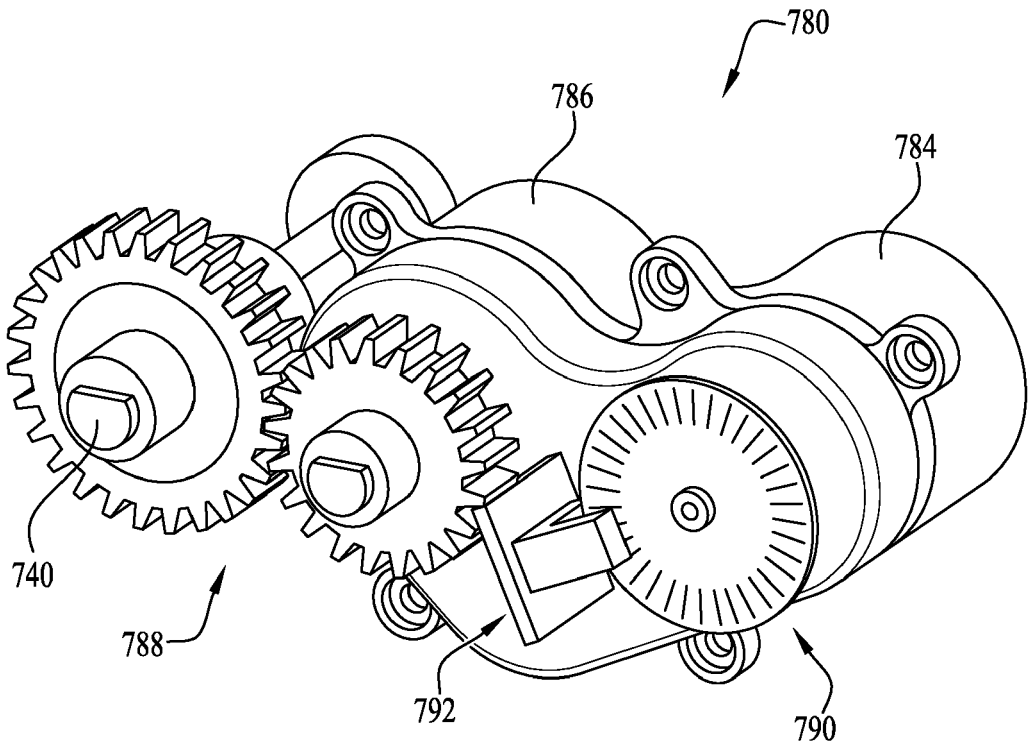

FIG. 16L

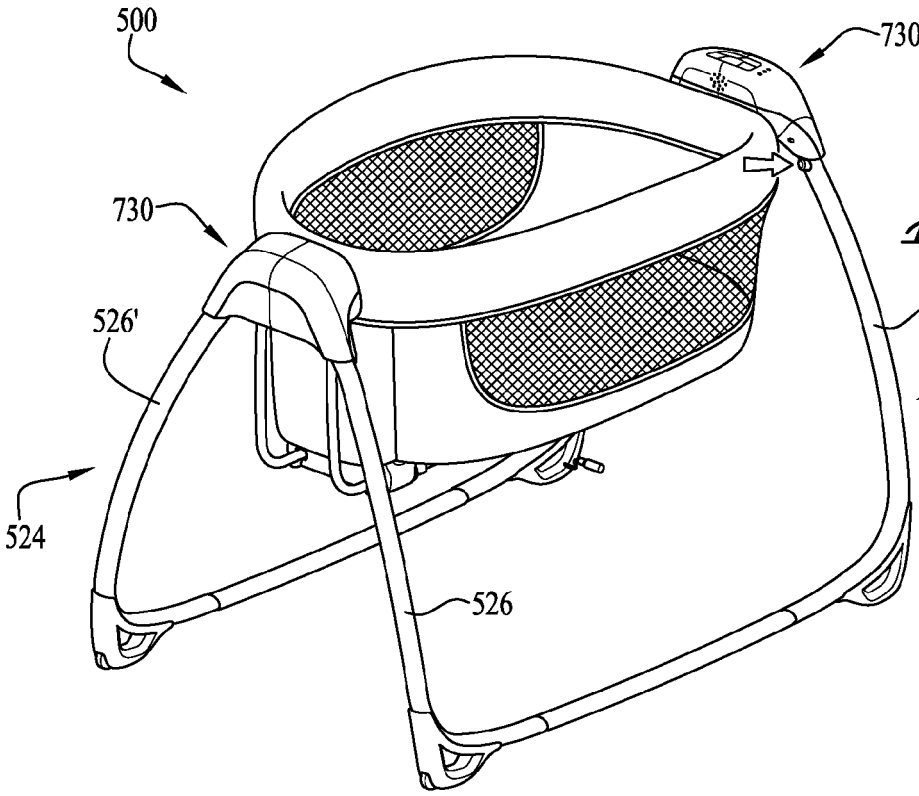

FIG. 17A

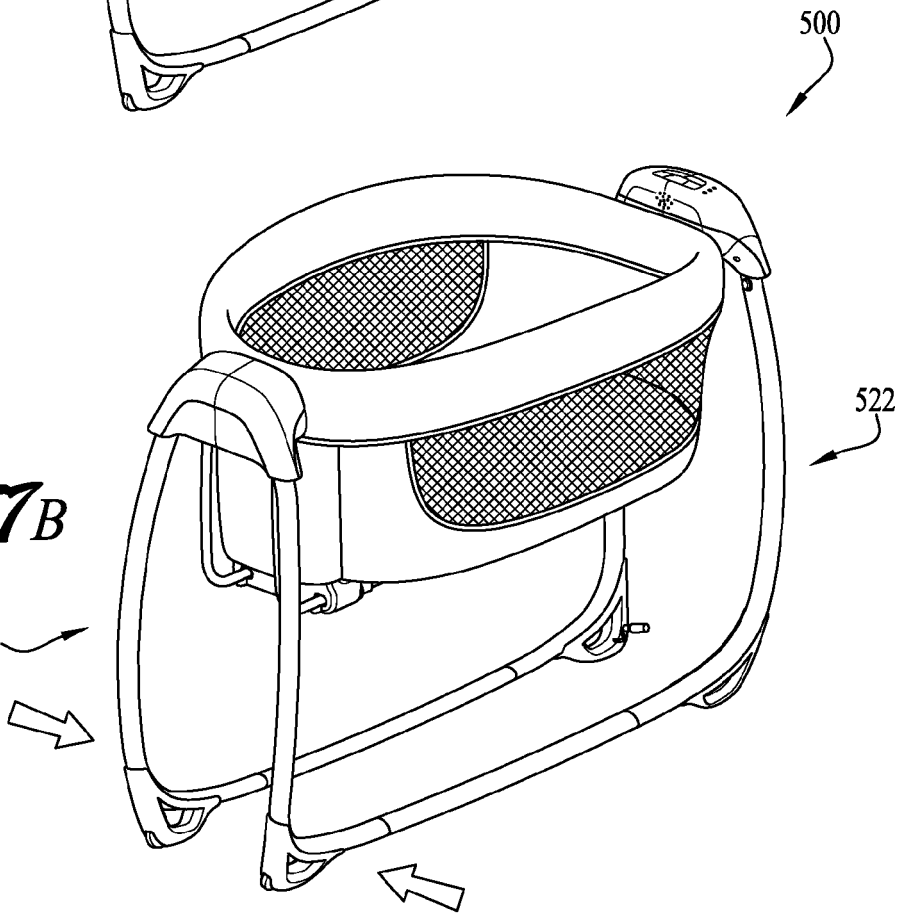

FIG. 17B

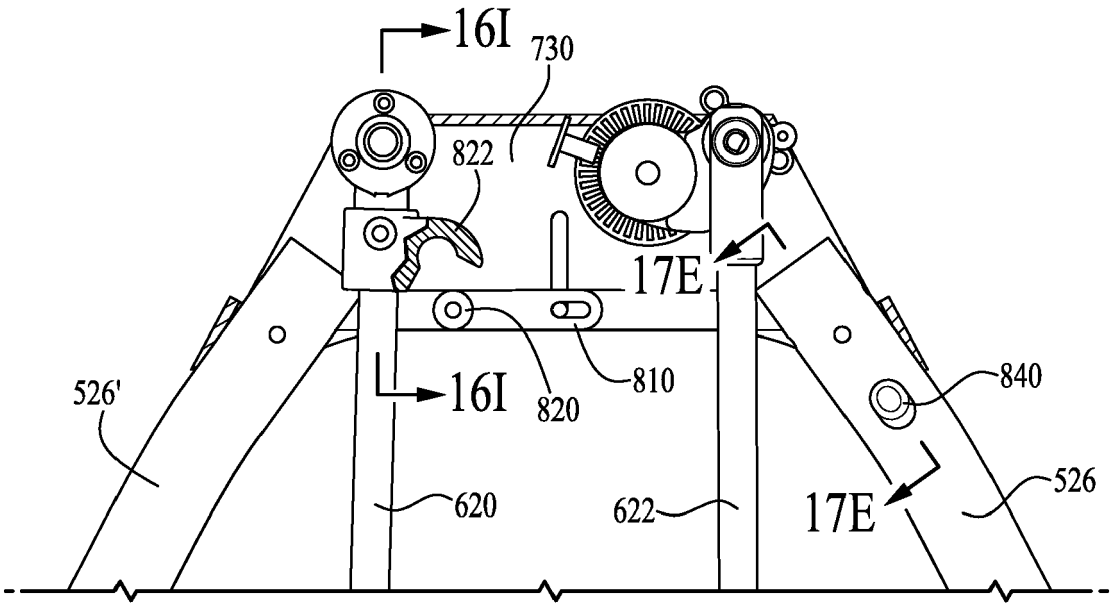

FIG. 17C

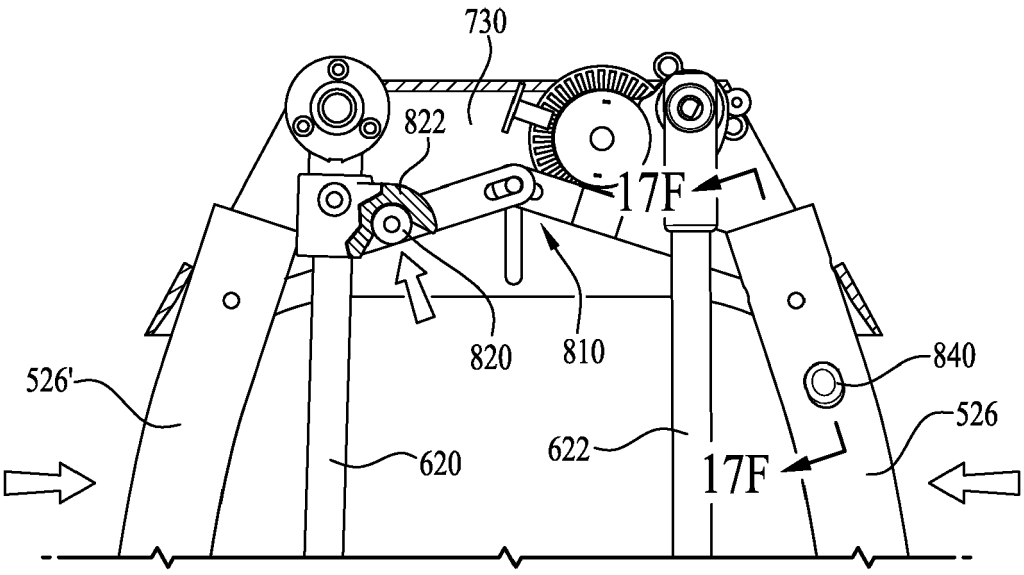

FIG. 17D

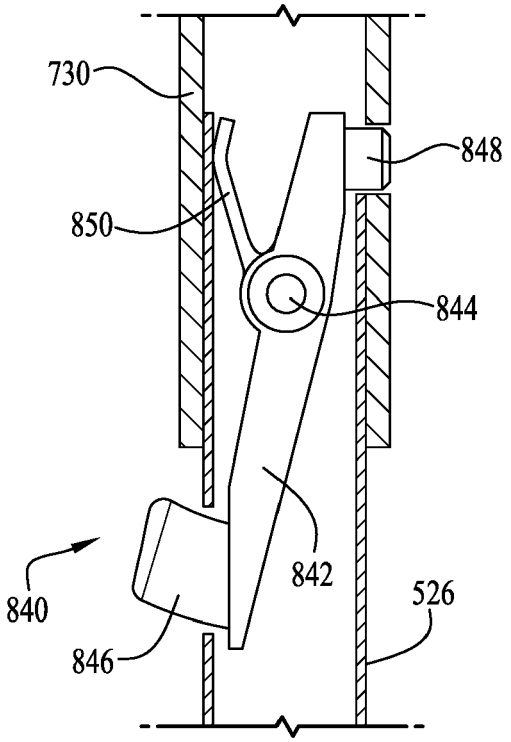

FIG. 17E

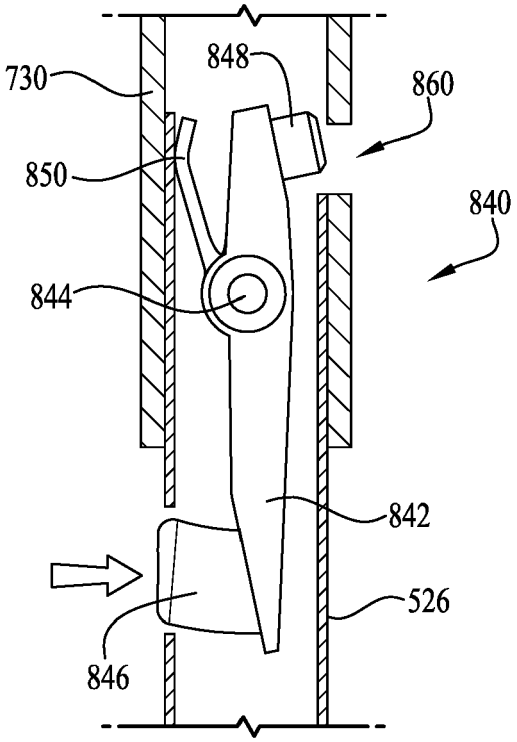

FIG. 17F

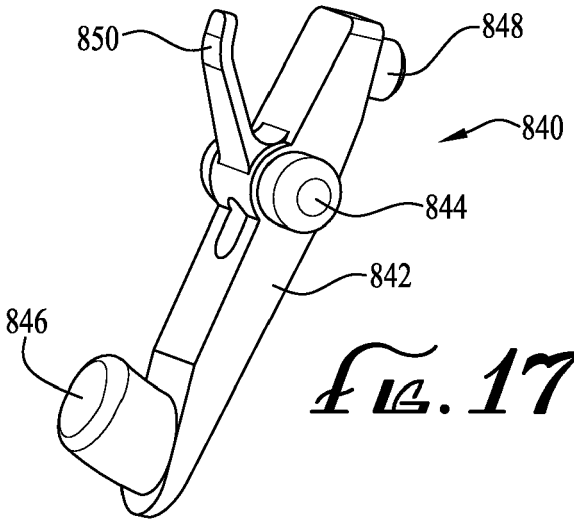

FIG. 17G

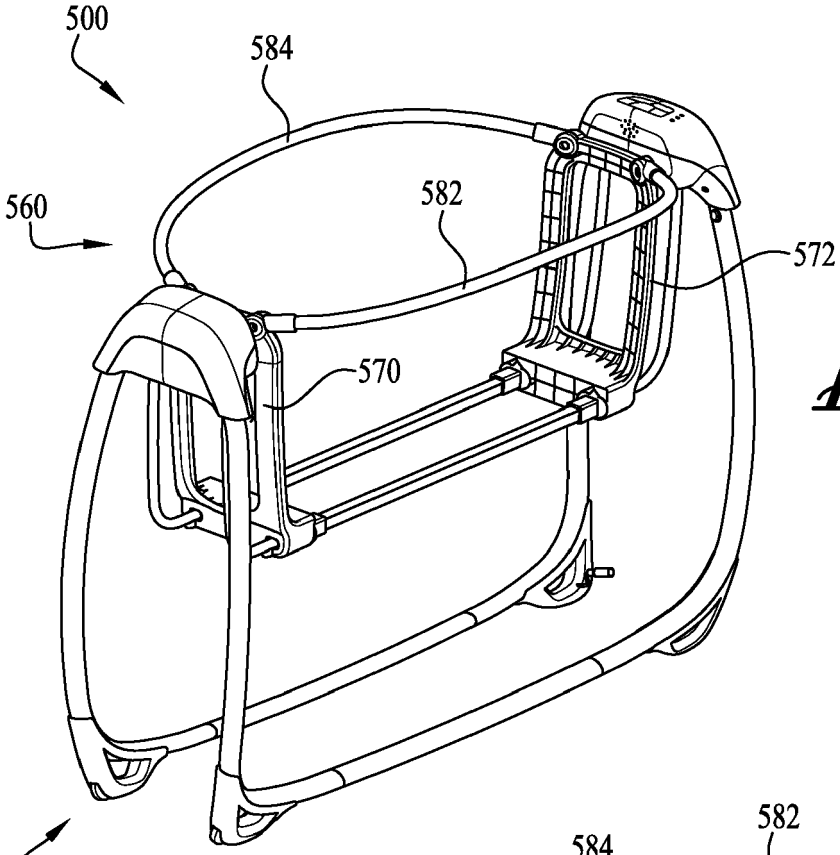

FIG. 18A

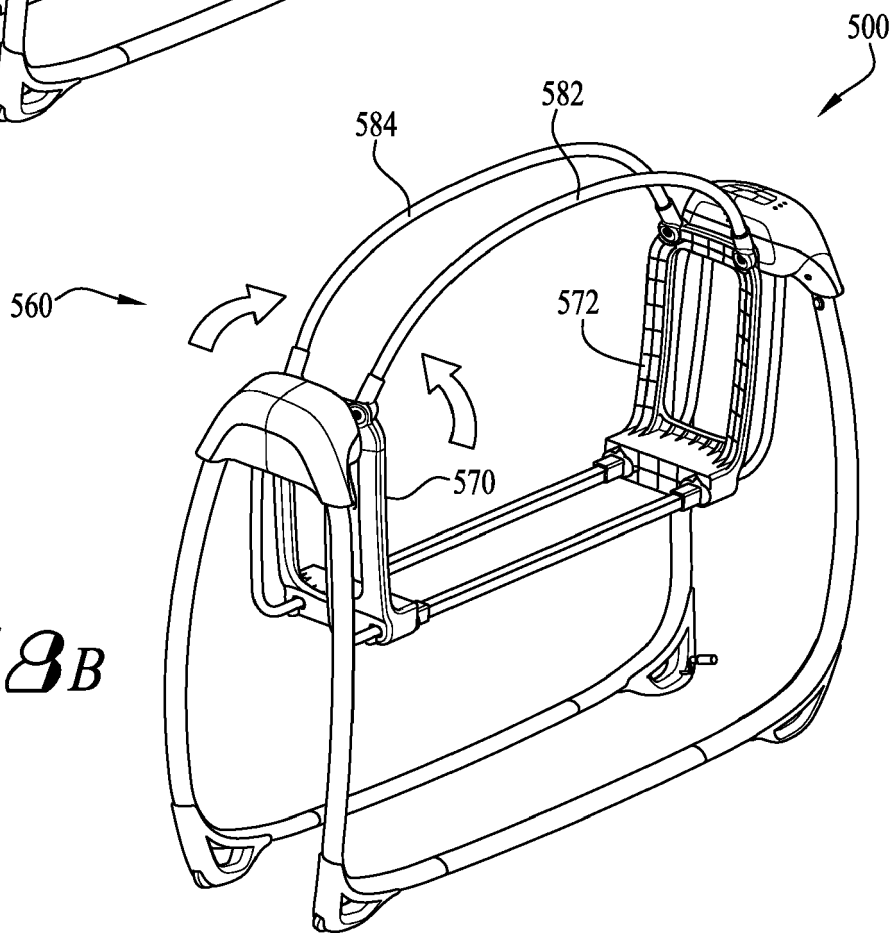

FIG. 18B

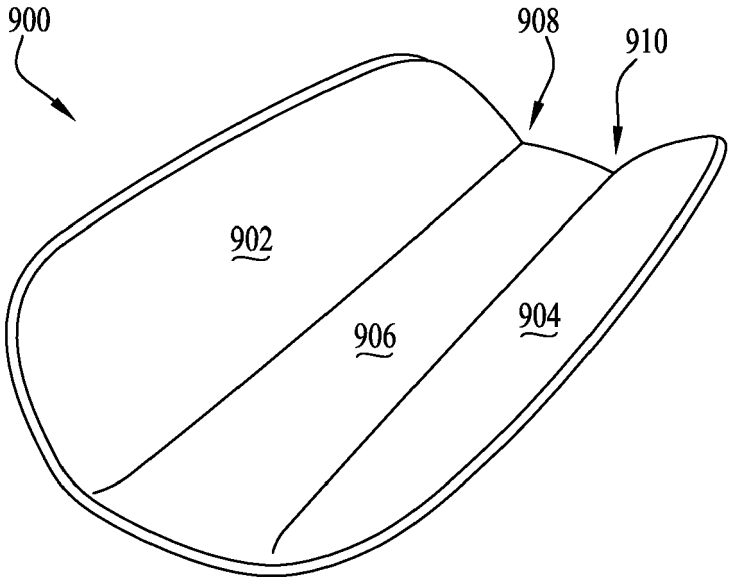

FIG. 19A

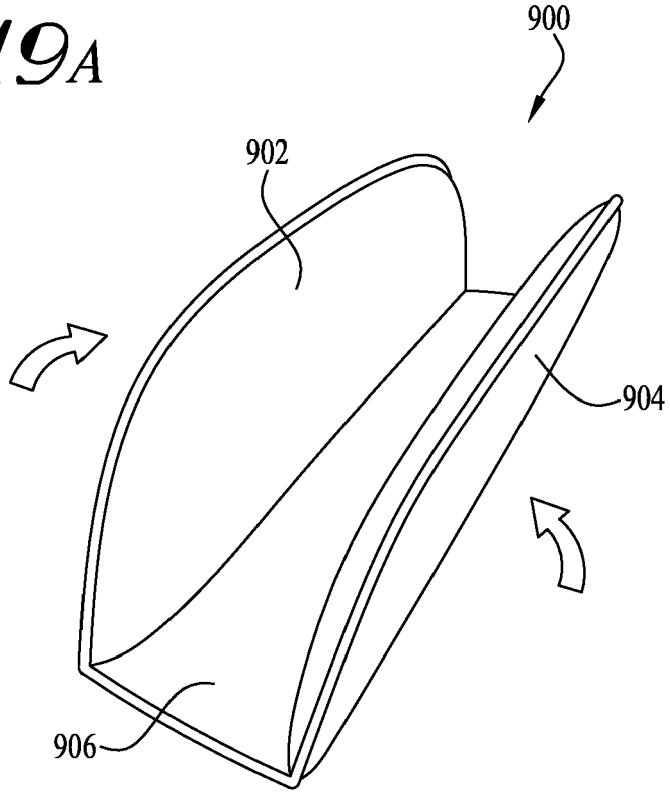

FIG. 19B

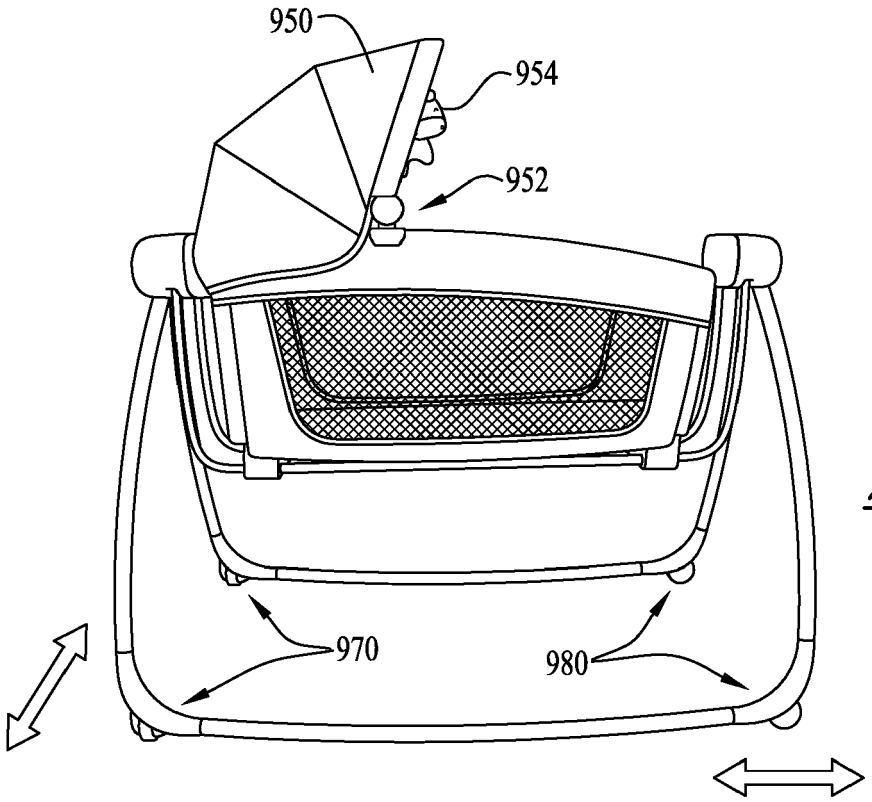

FIG. 20A

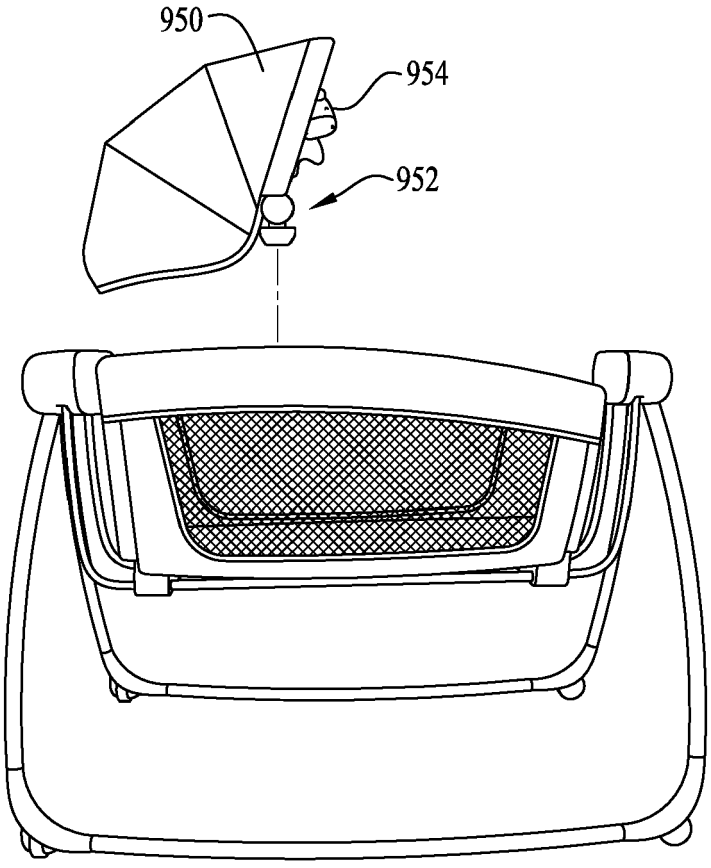

FIG. 20B

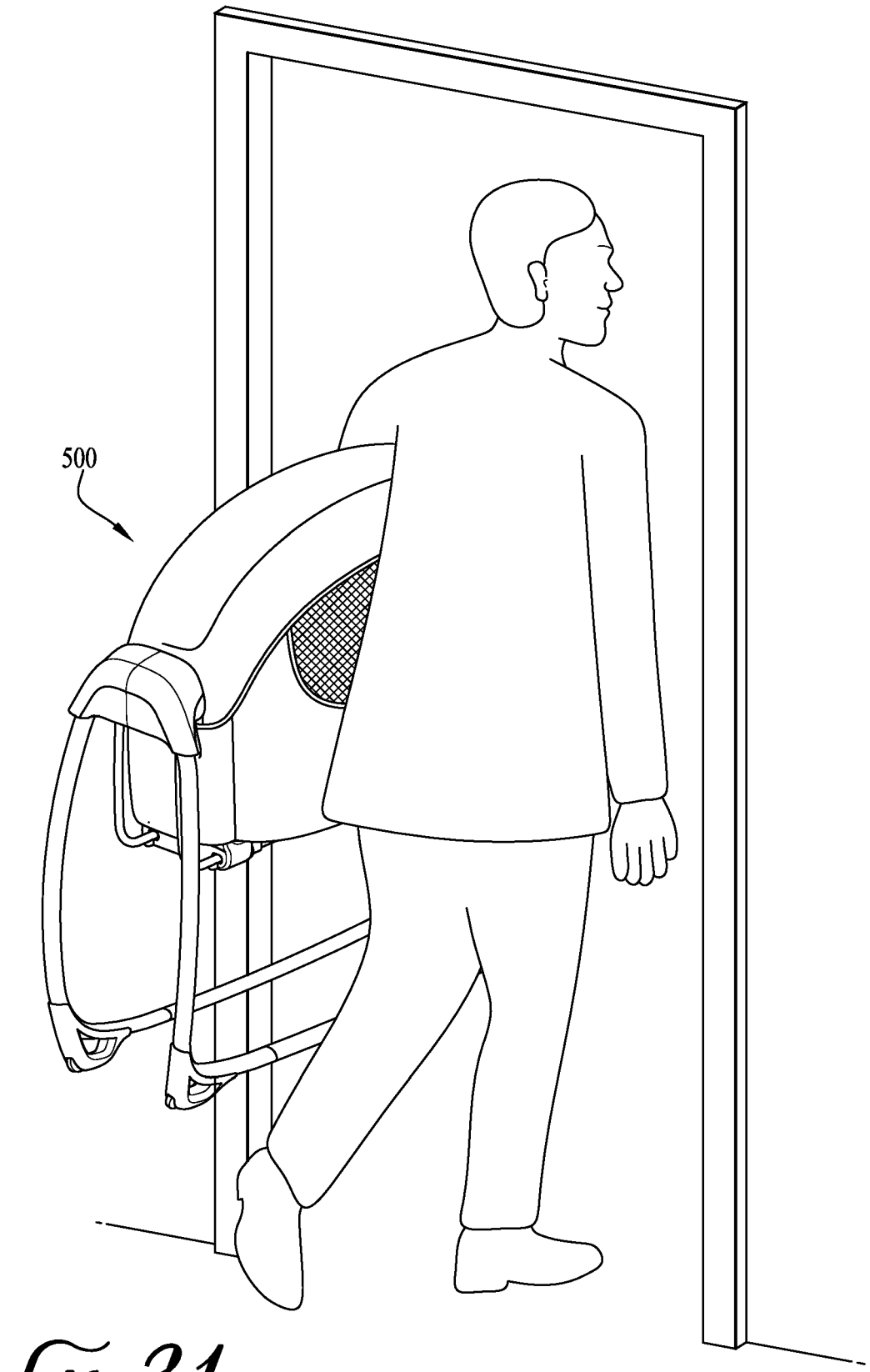

FIG. 21

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EUROPEAN SEARCH REPORT

Application Number
EP 16 16 6935

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	US 2011/275445 A1 (TUCKEY PETER [US] ET AL) 10 November 2011 (2011-11-10) * paragraphs [0028], [0029]; claim 1 *	1,2,14 3-5	INV. B60N2/00 A47D7/03 A47D13/06
X Y A	US 2009/113625 A1 (HUTCHINSON JAMES M F [US] ET AL) 7 May 2009 (2009-05-07) * paragraphs [0049], [0050], [0057]; claim 1; figures *	1,6,9, 11,15 12,13 7,8,10	A47D7/04 A47D9/00
Y	US 2011/041245 A1 (SHAFER RYAN [US] ET AL) 24 February 2011 (2011-02-24) * paragraph [0020]; figure 1 *	12,13	
X	EP 2 409 605 A1 (WONDERLAND NURSERY GOODS [HK]) 25 January 2012 (2012-01-25) * claims; figures *	1	
A	US 2006/211506 A1 (KAKUDA BAKU [US]) 21 September 2006 (2006-09-21) * claim 20; figures 1,7,9 *	1,3	

TECHNICAL FIELDS SEARCHED (IPC)
B60N A47D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	23 August 2016	Amghar, Norddin

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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23-08-2016

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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- US 62152845 A **[0001]**
- US 62215793 A **[0001]**
- US 62215824 A **[0001]**
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