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(54) TRAVEL SWING WITH DETACHABLE ROCKER

(57) A portable travel swing and rocker (10) device for children includes a swing frame (30) and a rocker (60). Either or both of the swing frame (30) and the rocker (60) are foldable for ease of transport. The rocker (60) can be used in a first swinging motion mode when attached to the swing frame (30), or independently in a second rocking motion mode when detached from the swing frame (30). Electronic features and controls are optionally provided on the rocker (60) for dual mode operability.

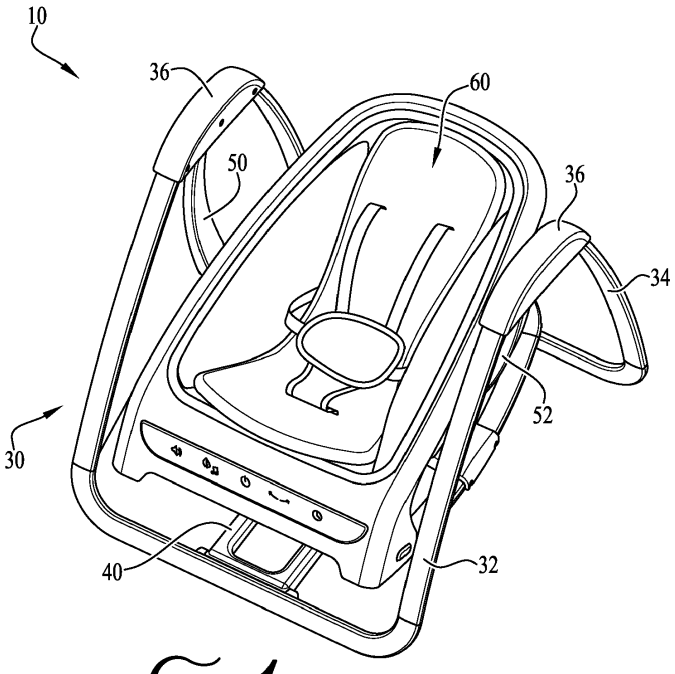

Fig. 1

EP 3 225 135 A1

Description

Cross-Reference to Related Applications

[0001] This application claims the benefit of U.S. Provisional Patent Application Serial No. 62/304,653 filed March 7, 2016 and U.S. Provisional Patent Application Serial No. 62/394,897 filed September 15, 2016, 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 more particularly to a portable travel swing device for children having a detachable rocker apparatus.

Background

[0003] Motion devices such as swings, rockers, gliders and the like are often used for supporting infants and small children during rest or play, and to entertain and soothe a child with a steady cyclical motion. Children's swing devices typically fall into one of two categories - larger (typically, for example, having a height of 32" or more) and heavier (typically, for example, weighing about 35 pounds or more) full-size swings for stationary use in one location, and smaller and lighter travel swings for portable use.

[0004] Some full-size swings may incorporate a removable child support unit, for example allowing a child carrier to be attached to and removed from the swing base structure. On such devices, the electronic controls for the swing's motion and other features are typically provided on the swing base structure, since it remains stationary and therefore easier to access than moving or removable components, and to avoid adding weight to components intended for portability.

[0005] Travel swings typically do not incorporate a removable child support unit, due to their smaller frame size and weight constraints. Thus, previously known travel swings typically function only as a swing, and do not provide alternate modes of use.

[0006] Continuing developments and improvements are sought in the field of children's accessories. It is to the provision of an improved portable travel swing device for children that the present invention is primarily directed.

Summary

[0007] In example embodiments, the present invention provides a portable travel swing device for children having a detachable rocker apparatus. The device includes a swing frame and a rocker configured for releasable attachment to the swing frame. In example embodiments, a magnetic drive or other motive means is provided for swinging the rocker when mounted on the frame, and the rocker is further configured for supporting a child therein and rocking the child when the rocker is removed from the frame. In this manner, the device is convertible between two modes of use, namely a swing mode and a rocker mode.

[0008] In one aspect, the present invention relates to a swing and rocker device for children, which includes a swing frame and a rocker. The swing frame preferably includes a first leg assembly and a second leg assembly connected by at least one frame hub. The swing frame preferably also includes at least one swing arm having a first end pivotally coupled to the at least one frame hub and a second end comprising a coupling bracket. The rocker preferably includes a seat, a rocker base attached to the seat, and a mounting hub for detachable coupling with the coupling bracket of the swing frame.

[0009] In another aspect, the invention relates to a portable travel swing and rocker device for children, including a swing frame and a rocker. The swing frame preferably includes a first leg assembly and a second leg assembly. The first and second leg assemblies are preferably connected by at least one frame hub. The swing frame preferably also includes at least one swing arm having a first end pivotally coupled to the at least one frame hub and a second end comprising a coupling bracket. The rocker preferably includes a seat, a rocker base attached to the seat, and a mounting hub for detachable coupling with the coupling bracket of the swing frame.

[0010] In yet another aspect, the invention relates to a portable child motion device including a base frame and a child support unit configured for removable attachment to the base frame. The child support unit is preferably operable to move in a coupled mode when attached to the base frame, and alternatively operable to move in an independent mode when detached from the base frame.

[0011] In another aspect, the invention relates to a children's swing and rocker device including a swing frame and a rocker. The swing frame preferably includes a first leg assembly and a second leg assembly, the first and second leg assemblies preferably being pivotally connected to one another by first and second frame hubs, whereby the swing frame is foldable from an expanded configuration for use to a compact configuration for portability. The swing frame preferably further includes first and second swing arms, each swing arm having a first end pivotally coupled to one of the first and second frame hubs and a second end comprising a first coupling portion. The rocker preferably includes a support surface for receiving a child, a rocker base attached to the support surface and defining at least one arcuate rocking surface, and second coupling portions for releasable engagement with the first coupling portions of the swing arms.

[0012] 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 append-

ed claims. It is to be understood that both the foregoing general description and the following brief description of the drawings and detailed description of example embodiments are explanatory of example embodiments of the invention, and are not restrictive of the invention, as claimed.

Brief Description of the Drawings

[0013]

Figure 1 is a perspective view of a two-in-one travel swing with a detachable rocker in a swinging first mode of use according to an example embodiment of the present invention.

Figure 2 is a front view of the swing with detachable rocker of Figure 1.

Figures 3A, 3B and 3C show side views of the swing with detachable rocker of Figure 1, moving through a range of swinging movement according to an example embodiment of the invention.

Figure 4 is a rear perspective view of the swing with detachable rocker of Figure 1.

Figure 5 shows the swing with detachable rocker of Figure 1, with the rocker removed from the swing frame and the swing frame partially folded into a collapsed configuration.

Figure 6 is a top perspective view of the detached rocker in a rocking second mode of use, independent of the swing frame.

Figure 7 is a side view of the detached rocker in the rocking second mode of use, independent of the swing frame.

Figures 8 and 9 show the detached rocker folded into a collapsed configuration.

Figures 10A, 10B and 10C show a sequence of folding of the swing frame, according to an example embodiment of the invention.

Figures 11A, 11B, 11C and 11D show an attachment sequence of coupling the removable rocker to the swing frame, according to an example embodiment of the invention.

Figures 12A and 12B show additional details of a portion of a coupling and release mechanism for attachment and removal of the removable rocker to and from the swing frame, according to an example embodiment of the invention.

Figures 13 and 13A show additional detail of a pivotal seat frame connection of the removable rocker portion of the travel swing, according to an example embodiment of the invention.

Detailed Description of Example Embodiments

[0014] The present invention may be understood more readily by reference to the following detailed description of example embodiments 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.

[0015] 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.

[0016] With reference now to the drawing figures, wherein like reference numbers represent corresponding parts throughout the several views, Figures 1-13 show a portable travel swing and rocker device 10 according to an example embodiment of the invention. The device generally includes a swing frame 30, and a detachable rocker 60 that is configured for a first mode of use attached to the swing frame, and also for a second mode of use detached from and independent of the swing frame. In alternative embodiments, the detachable component takes the form of a bouncer, glider, seat or other child support device, for example providing bouncing, gliding, vibrational or other types of motion.

[0017] In the example embodiment depicted, the frame 30 comprises an A-frame having a front leg assembly 32 and a rear leg assembly 34, both pivotally connected at upper ends thereof to upper frame hubs 36. Each of the front leg assembly 32 and the rear leg assembly 34 comprise a U-shaped assembly having first and second leg members and a lower cross-member extending between lower ends of the leg members. The frame 30 may be fabricated from plastic or aluminum tubing and/or other materials of construction. A lower frame brace member 40 extends between the lower cross-members of the front leg assembly 32 and the rear leg assembly 34. In exam-

ple embodiments, the lower frame brace member 40 comprises front and rear segments hingedly connected to one another at inner ends thereof, and pivotally connected to the lower cross-members of the leg assemblies at outer ends thereof. The frame hubs 36 and/or the lower frame brace member 40 optionally include a releasable locking mechanism to retain the frame 30 in the expanded or upright configuration (Figures 1-4), or to allow the frame to fold into a more compact folded or generally flat collapsed configuration (Figure 5) for storage and transport. Figures 10A, 10B and 10C show a sequence of folding of the swing base frame 30 from the expanded or upright configuration (Figure 10A) to the compact folded or collapsed configuration (Figure 10C). As shown, the lower frame brace member 40 optionally includes a carry handle or hand grip 41 extending from the inner end of one of the front or rear segments, with an opening configured for an adult caregiver's hand to pass through and grasp a handle portion thereof to fold and carry the frame. As seen with reference to Figure 10C, in an example embodiment the hand grip 41 is offset a distance from the hinged connection between the front and rear segments of the lower frame brace member 40, and when the frame 30 is in its folded configuration the hand grip is positioned generally along or proximal centrally along a medial plane or axis extending between the folded front and rear leg assemblies 32, 34, and above the center of gravity of the folded frame 30 for balanced carrying and ease of portability. A passive magnetic element 42, for example comprising a permanent magnet, is preferably mounted at or adjacent to a medial portion of the lower frame brace member 40. In example embodiments, the frame 30 does not include any active or powered electronics or drive components.

[0018] The frame 30 further comprises first and second swing arms 50, 52, pivotally coupled to the upper frame hubs 36, and hanging downwardly therefrom. In the depicted example embodiment, each swing arm 50, 52 further comprises a coupling bracket 54 extending therefrom, for example rearwardly at an acute angle of inclination, and optionally hingedly connected to a respective swing arm. A generally U-shaped cross-bar 56 extends between the coupling brackets on each swing arm 50, 52 to couple the motion of the swing arms together and/or to provide structural bracing. Optionally, the cross-bar 56 is configured to function as a carrying handle when the frame 30 is folded. As seen best with reference to Figure 2, in example embodiments the swing arms 50, 52 are inwardly directed, for example arcuately curving or angled inwardly from a wider spacing W between the upper ends of the swing arms at their points of connection with the upper frame hubs 36 to a narrower spacing N between lower ends of the swing arms at the coupling brackets 54. The inward direction of the swing arms 50, 52 provides spacing between inside edges of the leg assemblies 32 of the swing base frame 30 and outside edges of the seat body 62 of the rocker 60, sufficient for an adult caregiver to more easily fit their hands for access to attach and remove the rocker 60 from the swing base frame. Additionally, in example embodiments, the upper frame hubs 36 are relatively narrow, for example no more than about 1.5 times the width, and more preferably no more than about 1.25 times the width of the front leg assemblies 32, to minimize interference with access between the frame and the seat.

[0019] For ease of portability and transport, in example embodiments, the travel swing and rocker device 10 has an overall maximum height of less than about 30", for example about 25" - 28" or less in height. Additionally, in example embodiments, the travel swing and rocker device 10 has an overall weight of about 30 pounds or less, for example about 15 - 20 pounds or less in weight. In this manner, a parent or other adult caregiver can easily move the travel swing and rocker device 10 from room to room for use in different locations, load the device into the trunk or storage area of a vehicle, and otherwise readily move and transport the device. Additionally, in example embodiments, a caregiver can lift and carry the travel swing and rocker device 10 with one hand, leaving the other hand free to carry the child or other objects.

[0020] The rocker 60 generally comprises a seat body 62, for example in the form of a plastic molding or fairing, comprising a seat frame portion 64 and a base frame portion 66 extending downward from the front of the seat frame portion. The seat frame portion retains a soft-goods seat or support surface 70 for holding a child, optionally including a fabric sling or cover, cushioning, and retention straps or a safety harness for attaching around the child seated therein. Optionally, as shown in greater detail in Figure 13, a folding and/or spring biased seat frame, for example in the form of a pair of generally U-shaped retention frame tubes 72, 74, is provided for engagement of the soft-goods seat 70 within the seat frame portion 64, and optionally to allow for removal of the soft-goods seat for cleaning or replacement. One or more snap retainers or other couplings 65 (Figure 13A) are optionally provided for engagement of the soft goods frame tubes 72, 74 with the seat frame 64. The seat frame 64 optionally also defines a recessed peripheral rim 67 about the opening into which the frame tubes 72, 74 of the soft goods seat 70 fit, for a flush and aesthetic fit.

[0021] The rocker 60 preferably further comprises a rocking base 80 comprising first and second arcuate side rocker components 82, 84 having convexly curved arcuate rocker surfaces, and a rocker cross-member 86 connected between distal ends of the side rocker components. The proximal ends of the first and second arcuate side rocker components 82, 84 are preferably coupled to the base frame portion 66. The first and second arcuate side rocker components 82, 84 are optionally pivotally coupled to the base frame portion 66 to allow folding between an expanded rocking configuration (Figures 6 and 7) and a generally flat compact folded configuration (Figures 8 and 9). A releasable locking mechanism with one or more release actuators 88 is optionally provided to allow a user to reconfigure the rocking base between the

expanded and compact configurations. In example embodiments, two release actuators 88 are provided, one along each lateral side of the rocker 60, such that two-handed operation by an adult caregiver is required to fold the rocker, to prevent unintentional folding of the rocker when in use with a child seated therein. The release actuators 88 are preferably positioned away from the support surface 70 so a child resting thereon does not accidentally release the actuators.

[0022] The seat body 62 preferably also comprises mounting hubs 100 along each side for detachable coupling with the coupling brackets 54 of the swing frame 30. Release actuators 102 are operatively coupled to the mounting hubs 100. In example embodiments, two release actuators 102 are provided, one on each side of the rocker 60, such that two-handed operation by an adult caregiver is required to remove the rocker 60 from the frame 30. Optionally, the actuators 102 are operated to release the rocker 60 by squeezing them upwardly, so that the rocker can be removed from the frame with a continuous upward lifting motion by the adult caregiver grasping the rocker by the seat body around the actuators. In example embodiments, the actuators 102 are positioned generally at or around a center of mass position along the seat body 62, such that the rocker 60 is balanced when lifted thereby. The actuators 102 are also preferably positioned underneath and away from the support surface 70 to prevent a child resting thereon to accidentally operate the actuators. Figures 12A and 12B show additional detail of an actuator according to an example embodiment, wherein an outwardly biased actuator portion 103 is depressed inwardly to retract a latch 105, and upon release returns outwardly to extend the latch. Figures 11A - 11D show a sequence of attachment of the rocker 60 to the base frame 30 according to an example embodiment of the invention. A hook retainer 90 mounted at the head end of the underside of the seat body 62 is engaged with the free end of the cross-bar 56 of the base frame 30 (Figures 11A, 11B). Mounting hubs 100 of the rocker 60 are engaged with corresponding receivers of the coupling brackets 54 of the swing base frame 30 (Figure 11C). The rocker 60 is lowered onto the coupling brackets 54, and latches 105 of the actuators 102 of the rocker releasably engage cooperative coupling portions of the coupling brackets 54 to securely attach the rocker to the swing base frame 30 (Figure 11 D). To remove the rocker 60 from the swing base frame 30, the process is reversed, by depressing actuators 103 to release the latches 105, and lifting the rocker 60 off of the coupling brackets 54 of the swing base frame.

[0023] The swing and rocker device 10 preferably also includes an electro-magnetic drive system for automated swinging of the rocker 60 when mounted to the frame 30. In the depicted example embodiment, the magnetic drive system includes electrical drive components and an onboard power source such as batteries located on the rocker 60, such that the frame 30 is non-powered and structural only. In alternate embodiments, the drive system and/or other electronic features may be located on the frame or elsewhere. The magnetic drive system preferably includes an active electromagnetic coil or actuator mounted on a cross-brace 110 extending between the first and second side rocker components 82, 84 of the rocking base 80 of the rocker 60. When the rocker 60 is mounted on the swing frame 30 and the rocking base 80 is extended (see Figures 3 and 4), the electromagnetic actuator 110 extends in close proximity to the passive magnetic element 42 of the swing frame, such that the magnetic drive system operates to impart and/or maintain a swinging motion to the rocker and a child seated therein.

[0024] The seat body 62 of the rocker 60 optionally further comprises additional onboard electronic control and/or entertainment features. For example, a control panel 120 is optionally provided along a front face of the base frame portion 66. For example, the rocker 60 optionally includes electronic actuators for control of sound and/or vibration transducers, speakers, music features, and/or light features provided in or on the seat body; and/or on-off, swing speed, amplitude, and/or timer controls for the swing motion of the electromagnetic drive system. Incorporation of the active drive components, power source, and/or electronic features and controls of the device 10 into the removable rocker 60 rather than the swing base frame 30 allows operation of the electronic features and controls when the rocker is used with the swing base frame or used independently apart from the swing base frame. A remote control device is optionally provided, for example in the form of a wireless (e.g., Bluetooth) remote control device or Wi-Fi enabled mobile device such as a smart-phone or tablet computer device. Optionally, music or voice is delivered from the mobile device or remote control device to a speaker on the rocker 60. The provision of remotely controlled operation of the electronic features is particularly advantageous in embodiments having onboard controls on the rocker 60 rather than the swing base frame 30, as the rocker moves in use (whereas the base frame remains generally stationary in use), so the onboard controls would present a moving target to operate when the rocker is swinging or rocking during use. In further example embodiments, the electronic controls of the device 10 may be remote control only, without onboard controls (or with only minimal onboard controls), to reduce weight and cost.

[0025] The swing and rocker device 10 preferably provides two-in-one or dual mode functionality, for example enabling use in a first "swing" mode of use as a swing device when the rocker 60 is mounted to the swing frame 30 (Figures 1-4), and in a second "rocker" mode of use of the rocker independently when detached from the swing frame (Figures 6 and 7). In the swing mode of use, a child seated in the seat 70 of the rocker 60 moves through a back-and-forth swinging motion along a generally arcuate path defined by pivotal motion of the swing arms 52 about their points of pivotal connection to upper mounting hubs 36 of the swing frame 30, as indicated by

direction arrows S in Figure 3. In the rocking mode of use, a child seated in the seat 70 of the rocker 60 moves through a back-and-forth rocking motion defined by contact of the rocker arms 82, 84 along an underlying support surface, as indicated by direction arrows R in Figure 7. The rocker 60 is attached to the swing frame 30 for use in the swing mode, by an adult caregiver coupling the mounting hubs 100 of the rocker to the coupling brackets 54 of the swing frame. The rocker 60 is removed from the swing frame 30 for use in the rocker mode by the caregiver releasing the mounting hubs 100 of the rocker from the coupling brackets 54 of the swing frame by actuation of the release actuators 102, lifting the rocker away from the swing frame, and placing the rocker onto a support surface that is not part of the swing frame. When not in use, the swing frame 30 can be folded into a generally flat compact configuration (Figure 5) and the rocker 60 can also folded into a generally flat compact configuration (Figure 9) for compact storage and transport. Both the swing frame 30 and the rocker 60 are lightweight and configured for ease of portability in travel applications.

[0026] While the invention has been described with reference to 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.

[0027] 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 portable travel swing and rocker device for children, comprising:

    a swing frame comprising a first leg assembly and a second leg assembly, the first and second leg assemblies connected by at least one frame hub, and further comprising at least one swing arm having a first end pivotally coupled to the at least one frame hub and a second end comprising a coupling bracket; and

    a rocker comprising a seat, a rocker base attached to the seat, and a mounting hub for detachable coupling with the coupling bracket of the swing frame.

2. The portable travel swing and rocker device of Para 1, wherein the rocker is operable in a first mode for swinging when mounted to the swing frame, and operable in a second mode for rocking when detached from the swing frame.

3. The portable travel swing and rocker device of Para 1 or 2, further comprising a magnetic drive mechanism for imparting a swinging motion to the rocker when mounted to the swing frame.

4. The portable travel swing and rocker device of Para 3, wherein substantially all powered components of the magnetic drive mechanism are mounted to the rocker.

5. The portable travel swing and rocker device of any preceding Para, wherein at least one of the swing frame and the rocker are foldable from an expanded configuration to a compact configuration.

6. The portable travel swing and rocker device of any preceding Para, wherein the rocker comprises at least one remotely-controlled electronic feature.

7. The portable travel swing and rocker device of any preceding Para, wherein the at least one swing arm is inwardly directed, to provide operational clearance between the swing frame and the rocker.

8. The portable travel swing and rocker device of any preceding Para, having a height of less than 30 inches and a weight of less than 25 pounds.

9. A portable child motion device comprising a base frame and a child support unit configured for removable attachment to the base frame, wherein the child support unit is operable to move in a coupled mode when attached to the base frame, and wherein the child support unit is operable to move in an independent mode when detached from the base frame.

10. The portable child motion device of Para 9, wherein the child support unit swings relative to the base frame in the coupled mode, and rocks on a support surface in the independent mode.

11. The portable child motion device of Para 9 or 10, wherein at least one of the base frame and the child support unit are foldable from an expanded configuration for use to a compact configuration for portability.

12. The portable child motion device of any of Paras 9-11, wherein both of the base frame and the child support unit are foldable from an expanded configuration for use to a compact configuration for portability.

13. The portable child motion device of any of Paras 9-12, wherein the base frame comprises a first leg assembly and a second leg assembly, the first and second leg assemblies being pivotally connected to one another by first and second frame hubs, and further comprising first and second swing arms, each swing arm having a first end pivotally coupled to one of the first and second frame hubs.

14. The portable child motion device of any of Paras 9-13, wherein the child support unit comprises a rocker comprising a support surface for receiving a child and a rocker base attached to the support surface.

15. The portable child motion device of any of Paras 9-14, further comprising at least one electronic feature, the at least one electronic feature being a part of the child support unit and separable from the base frame when the child support unit is in the independent mode.

16. The portable child motion device of Para 15, further comprising a control for the at least one elec-

tronic feature, the control being onboard the child support unit and/or part of a remote control separate from the child support unit and the base frame.

17. The portable child motion device of any of Paras 9-16, having a height of less than 30 inches and a weight of less than 25 pounds.

18. A children's swing and rocker device comprising:

a swing frame comprising a first leg assembly and a second leg assembly, the first and second leg assemblies being pivotally connected to one another by first and second frame hubs, whereby the swing frame is foldable from an expanded configuration for use to a compact configuration for portability, the swing frame further comprising first and second swing arms, each swing arm having a first end pivotally coupled to one of the first and second frame hubs and a second end comprising a first coupling portion; and

a rocker comprising a support surface for receiving a child, a rocker base attached to the support surface and defining at least one arcuate rocking surface, and second coupling portions for releasable engagement with the first coupling portions of the swing arms.

19. The children's swing and rocker device of Para 18, wherein the rocker is operable in a swinging motion mode when attached to the swing frame, and wherein the rocker is operable independently of the swing frame in a rocking motion mode when detached from the swing frame.

20. The children's swing and rocker device of Para 18 or 19, further comprising an electromagnetic drive system for imparting a swinging motion of the rocker relative to the swing frame.

21. The children's swing and rocker device of Para 20, wherein a powered component of the electromagnetic drive system is mounted to the rocker, and a passive component of the electromagnetic drive system is mounted to the swing frame.

22. The children's swing and rocker device of any of Paras 18-21, further comprising at least one electronic feature, the at least one electronic feature being a part of the rocker and removable from the swing frame.

23. The children's swing and rocker device of Para 22, further comprising a control unit for the at least one electronic feature, the control unit being selected from an onboard control unit being a part of the rocker, a remote control unit not part of the rocker or the swing frame, and a combination thereof.

24. The children's swing and rocker device of any of Paras 18-23, wherein the rocker base is hingedly attached to the support surface of the rocker.

25. The children's swing and rocker device of any of Paras 18-24, wherein the first and second swing arms are inwardly directed, defining a wider spacing between the first ends of the swing arms at their points of connection with the frame hubs and a narrower spacing between the second ends of the swing arms at the first coupling portions.

26. The children's swing and rocker device of any of Paras 18-25, having a height of less than 30 inches and a weight of less than 25 pounds.

Claims

1. A portable travel swing and rocker device for children, comprising:

a swing frame comprising a first leg assembly and a second leg assembly, the first and second leg assemblies connected by at least one frame hub, and further comprising at least one swing arm having a first end pivotally coupled to the at least one frame hub and a second end comprising a coupling bracket; and

a rocker comprising a seat, a rocker base attached to the seat, and a mounting hub for detachable coupling with the coupling bracket of the swing frame.

2. The portable travel swing and rocker device of claim 1, wherein the rocker is operable in a first mode for swinging when mounted to the swing frame, and operable in a second mode for rocking when detached from the swing frame.

3. The portable travel swing and rocker device of claim 1 or 2, further comprising a magnetic drive mechanism for imparting a swinging motion to the rocker when mounted to the swing frame.

4. The portable travel swing and rocker device of claim 3, wherein substantially all powered components of the magnetic drive mechanism are mounted to the rocker.

5. The portable travel swing and rocker device of any preceding claim, wherein at least one of the swing frame and the rocker are foldable from an expanded configuration to a compact configuration.

6. The portable travel swing and rocker device of any preceding claim, wherein the rocker comprises at least one remotely-controlled electronic feature.

7. The portable travel swing and rocker device of any preceding claim, wherein the at least one swing arm is inwardly directed, to provide operational clearance between the swing frame and the rocker.

8. A portable child motion device comprising a base frame and a child support unit configured for remov-

able attachment to the base frame, wherein the child support unit is operable to move in a coupled mode when attached to the base frame, and wherein the child support unit is operable to move in an independent mode when detached from the base frame.

9. The portable child motion device of claim 8, wherein the child support unit swings relative to the base frame in the coupled mode, and rocks on a support surface in the independent mode.

10. The portable child motion device of claim 8 or 9, wherein at least one of the base frame and the child support unit are foldable from an expanded configuration for use to a compact configuration for portability.

11. The portable child motion device of any of claims 8-10, wherein both of the base frame and the child support unit are foldable from an expanded configuration for use to a compact configuration for portability.

12. The portable child motion device of any of claims 8-11, wherein the base frame comprises a first leg assembly and a second leg assembly, the first and second leg assemblies being pivotally connected to one another by first and second frame hubs, and further comprising first and second swing arms, each swing arm having a first end pivotally coupled to one of the first and second frame hubs.

13. The portable child motion device of any of claims 8-12, wherein the child support unit comprises a rocker comprising a support surface for receiving a child and a rocker base attached to the support surface.

14. The portable child motion device of any of claims 8-13, further comprising at least one electronic feature, the at least one electronic feature being a part of the child support unit and separable from the base frame when the child support unit is in the independent mode, and optionally further comprising a control for the at least one electronic feature, the control being onboard the child support unit and/or part of a remote control separate from the child support unit and the base frame.

15. The portable travel swing and rocker device of any of claims 1-7 or the portable child motion device of any of claims 8-14, having a height of less than 30 inches and a weight of less than 25 pounds.

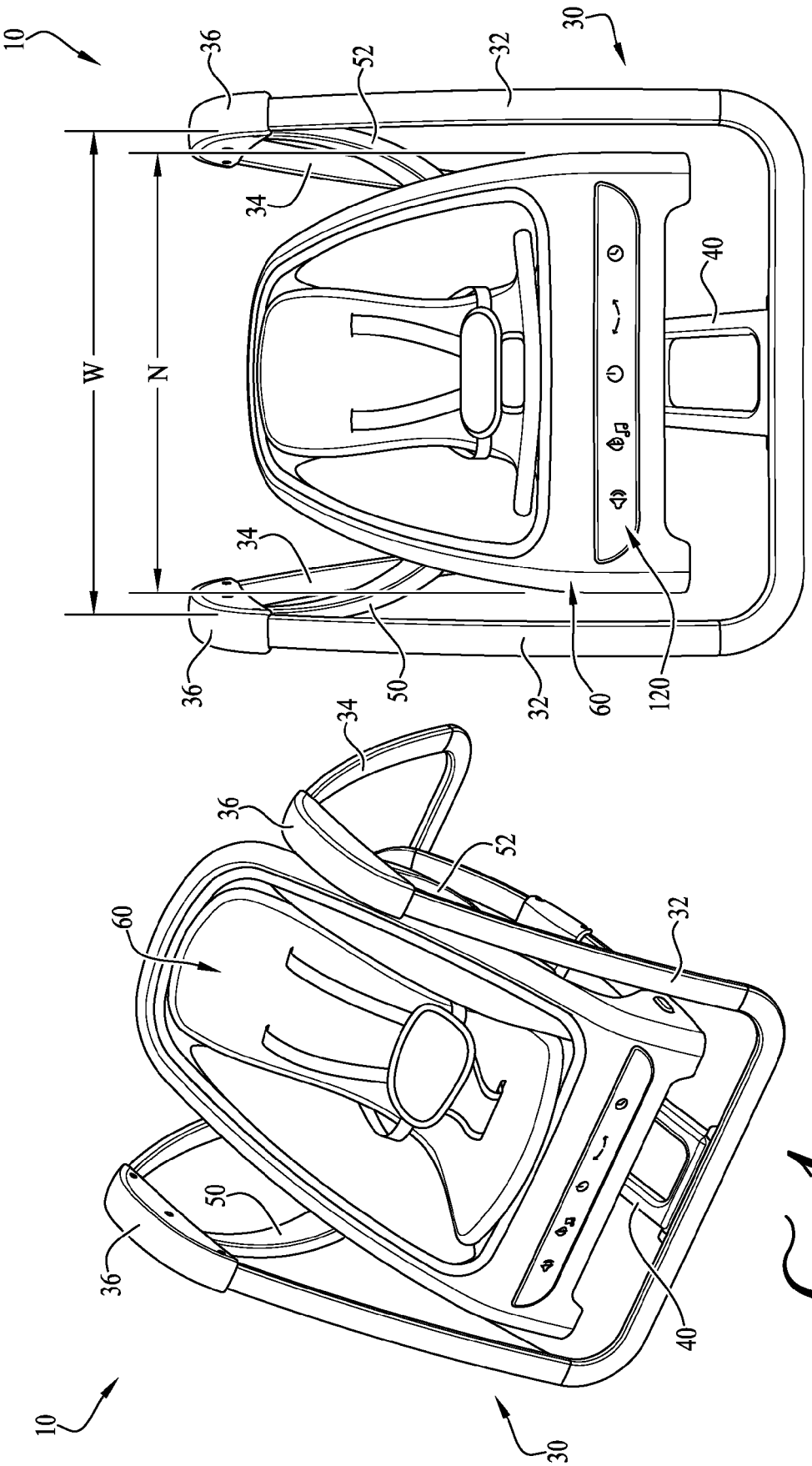

Fig. 2

Fig. 1

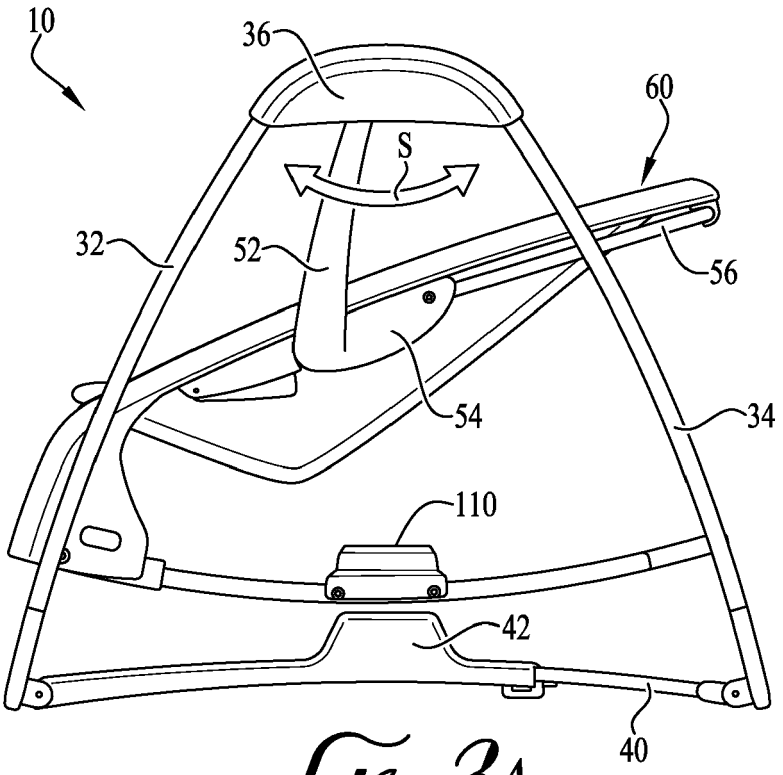

FIG. 3A

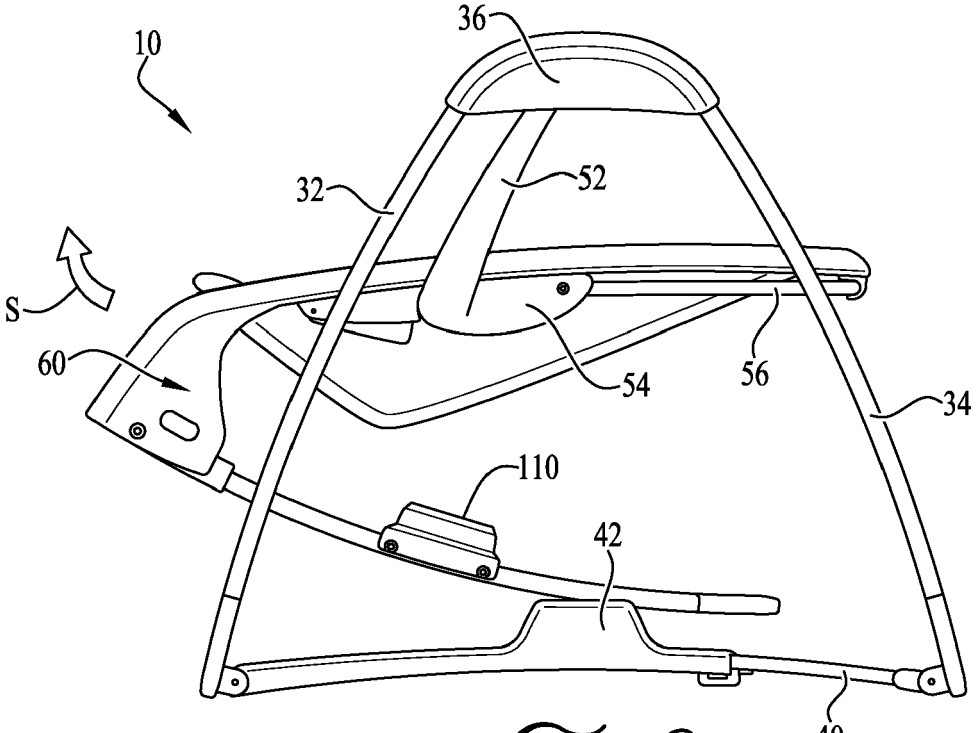

FIG. 3B

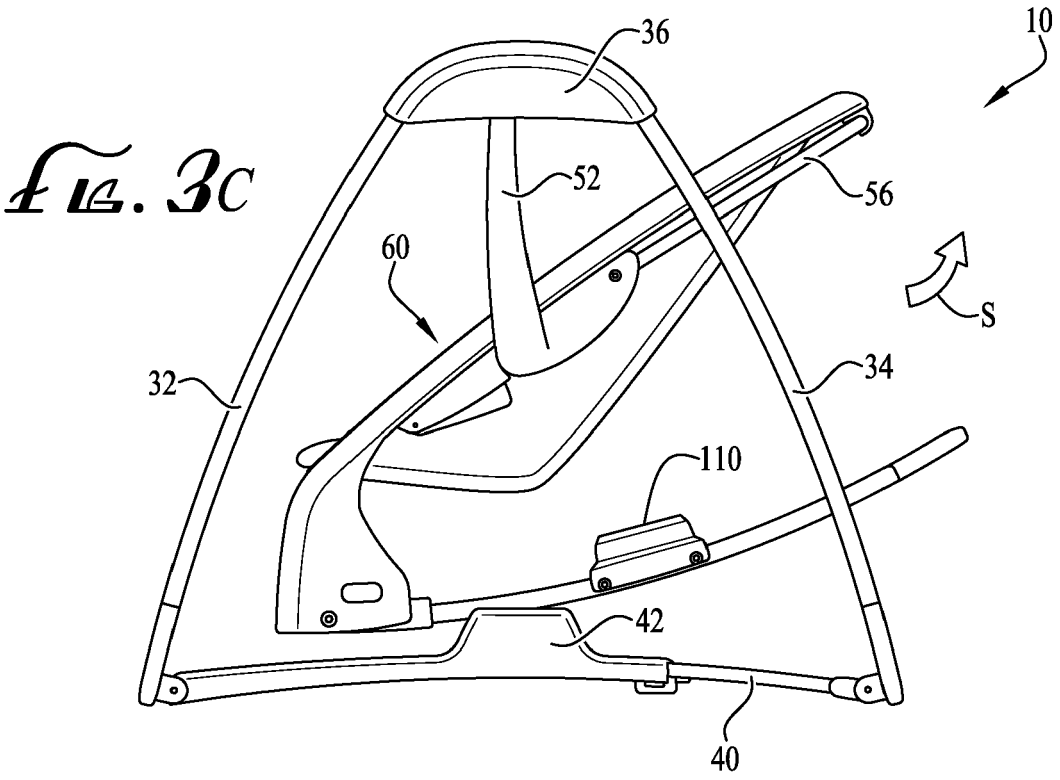

FIG. 3C

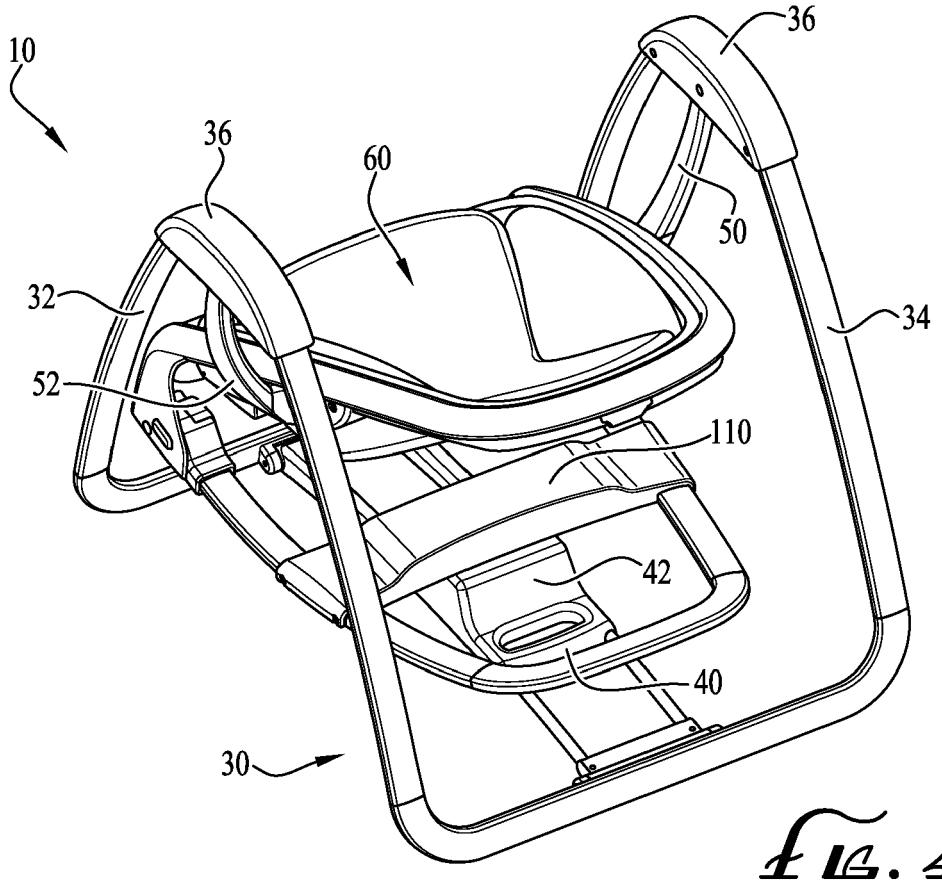

FIG. 4

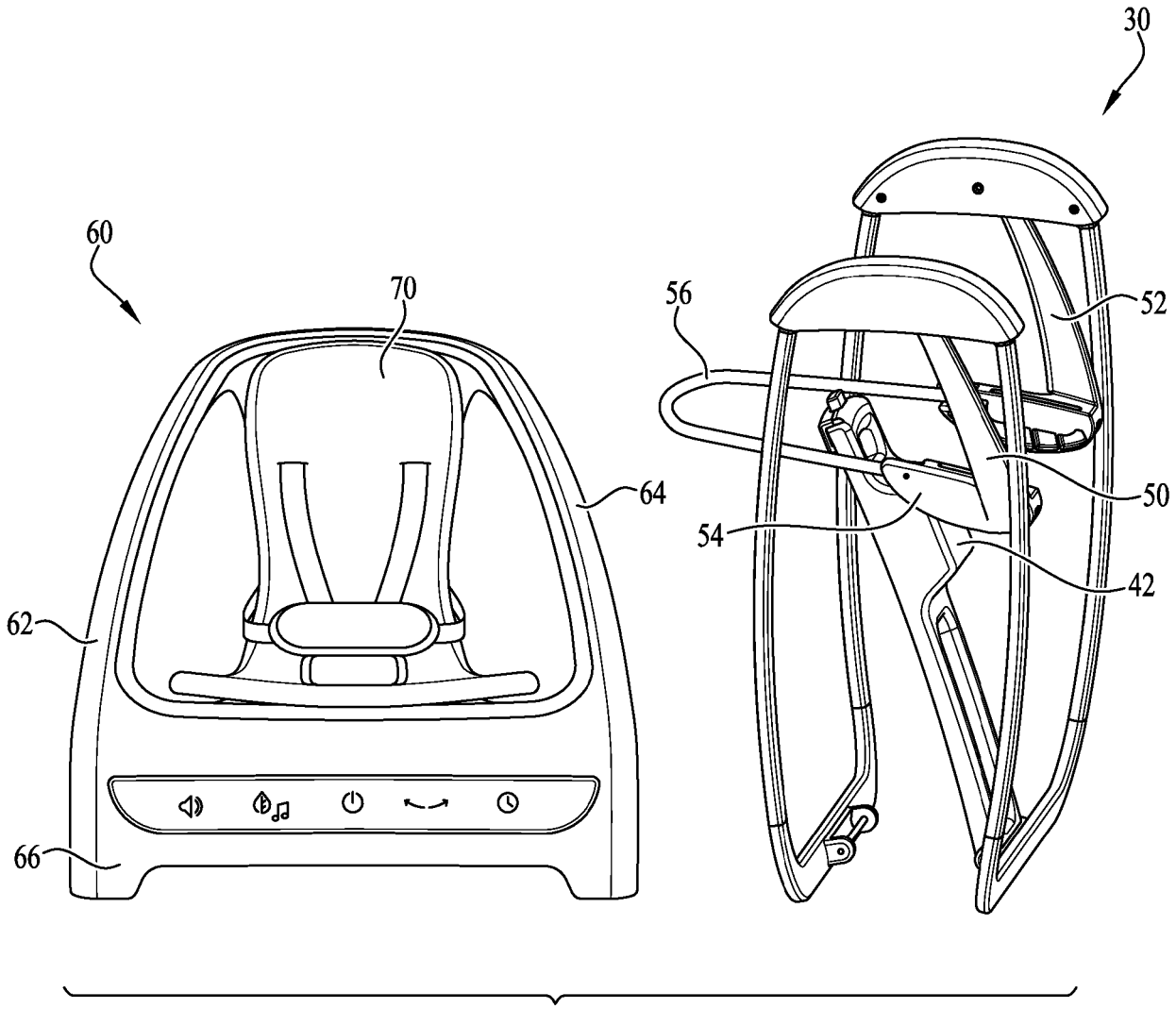

FIG. 5

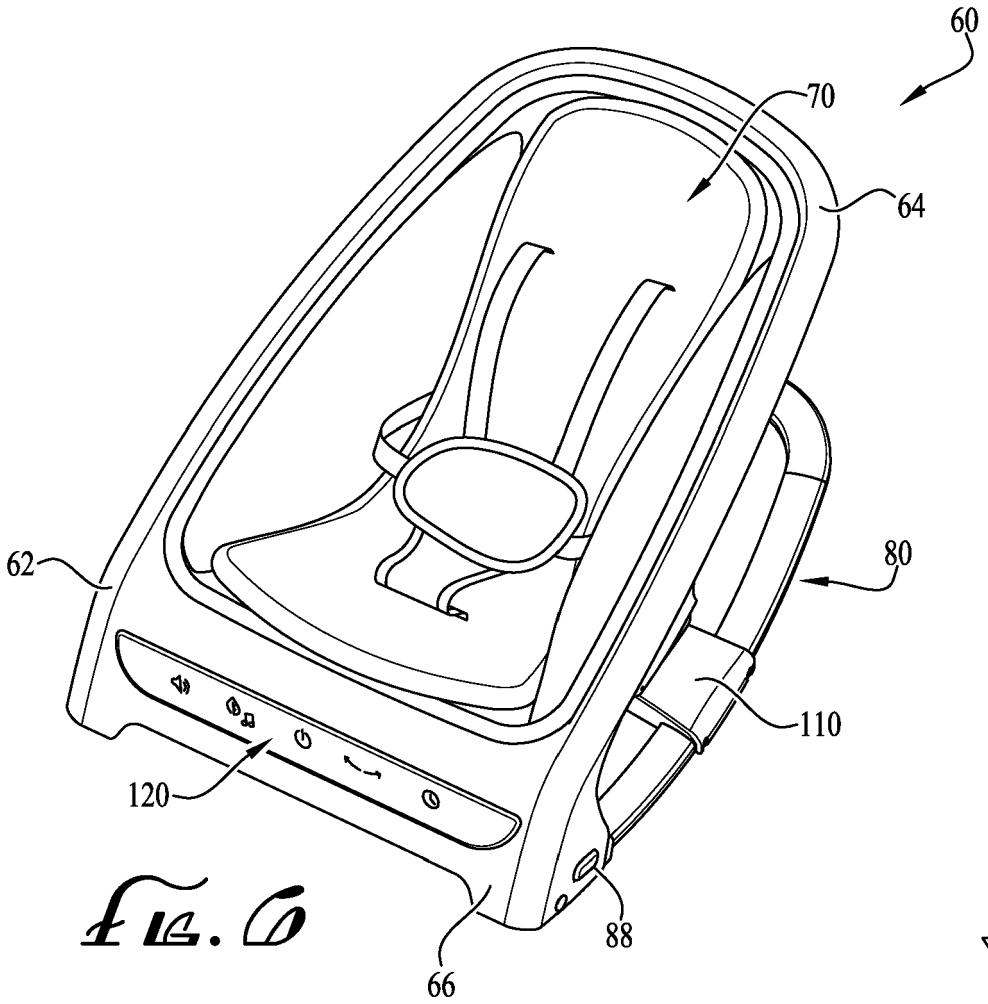
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FIG. 6

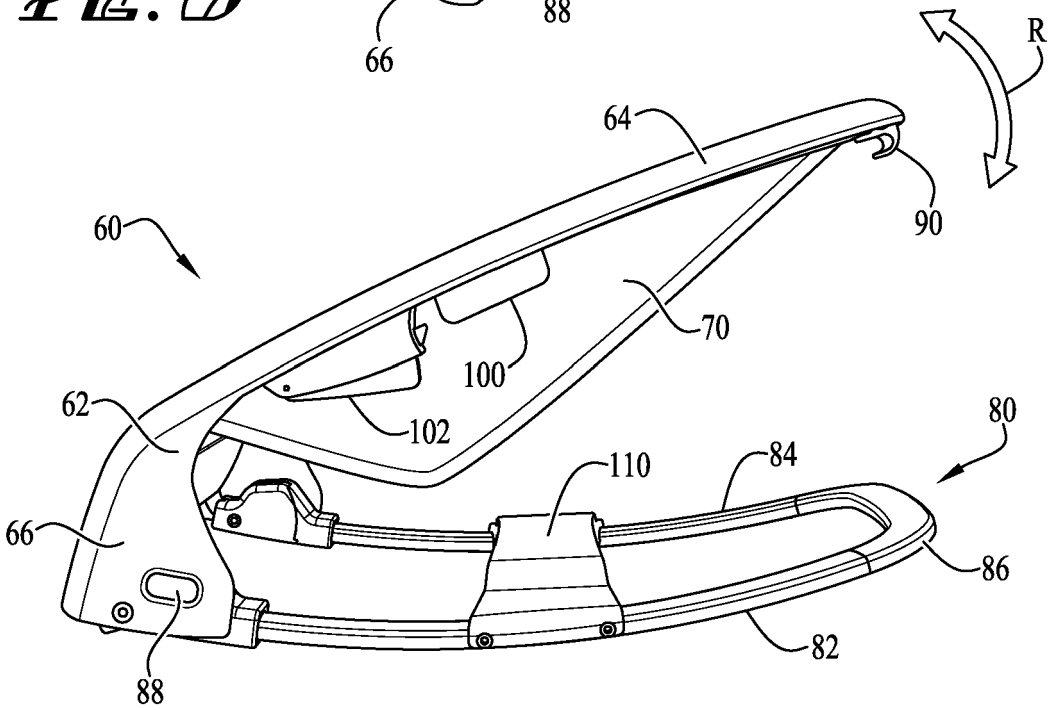
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FIG. 7

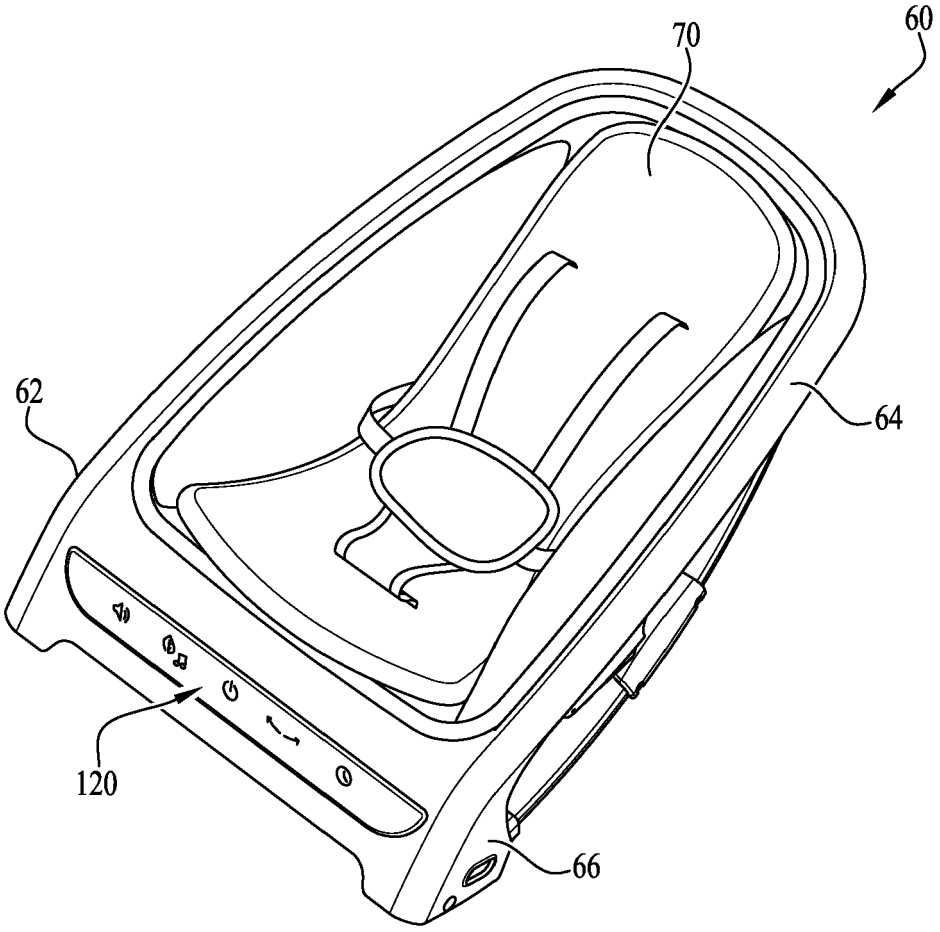

FIG. 8

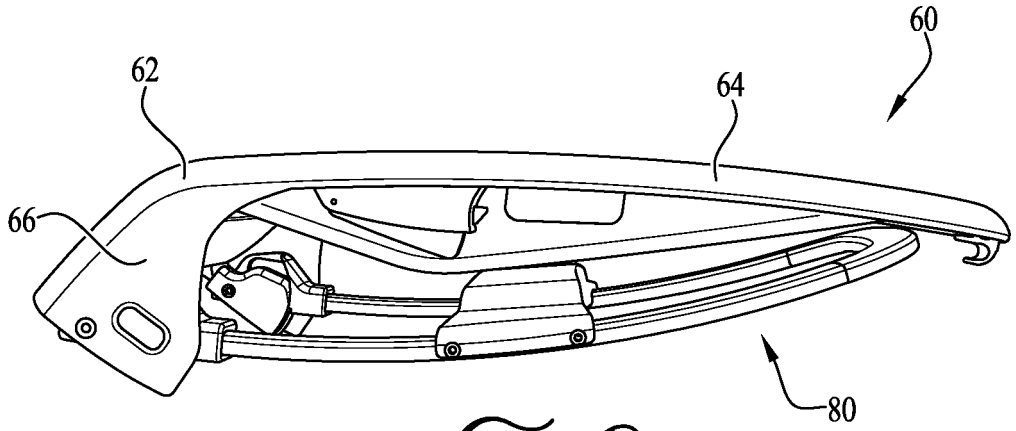

FIG. 9

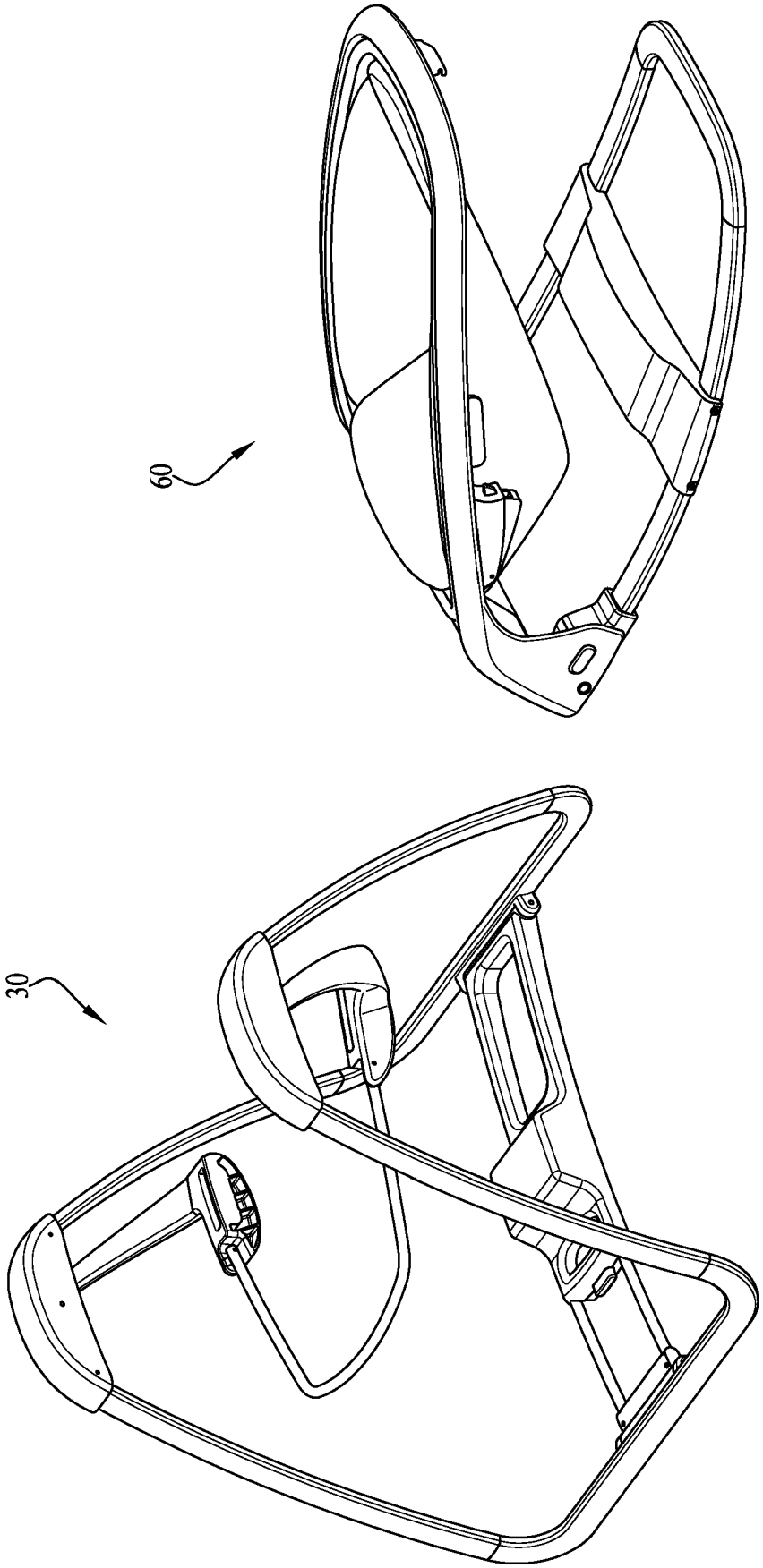

FIG. 10A

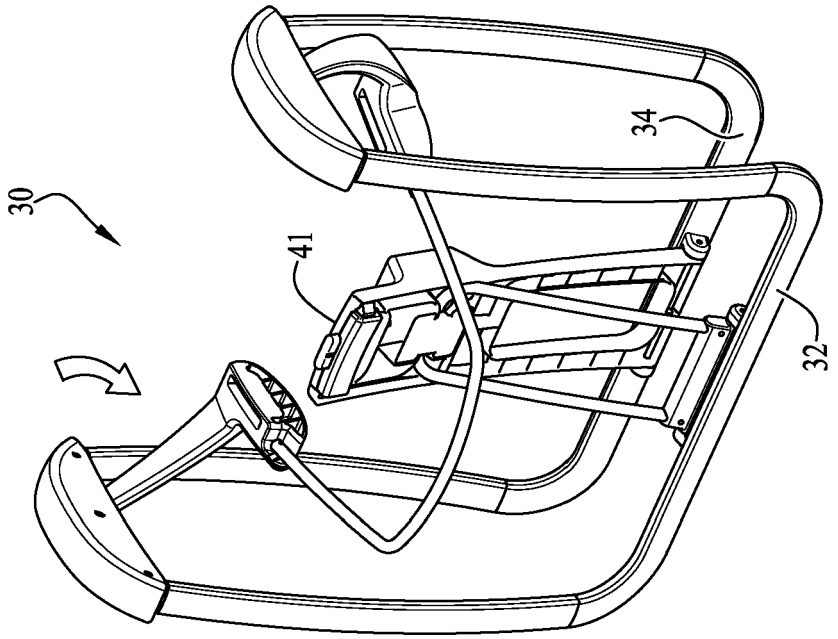

Fig. 10C

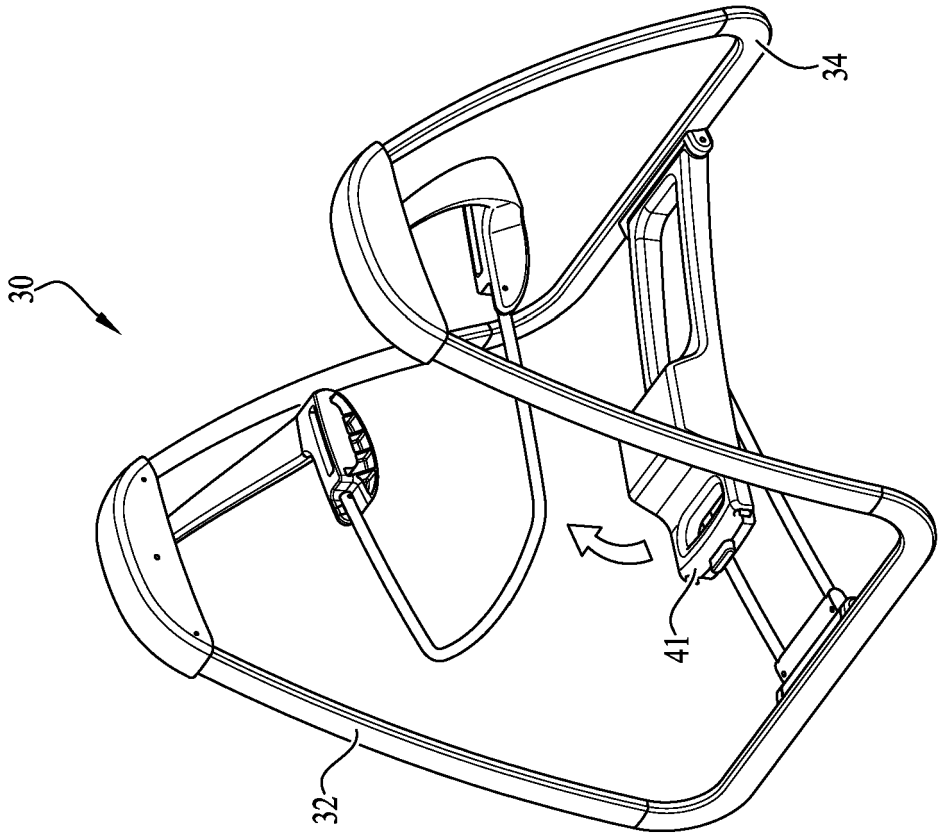

Fig. 10B

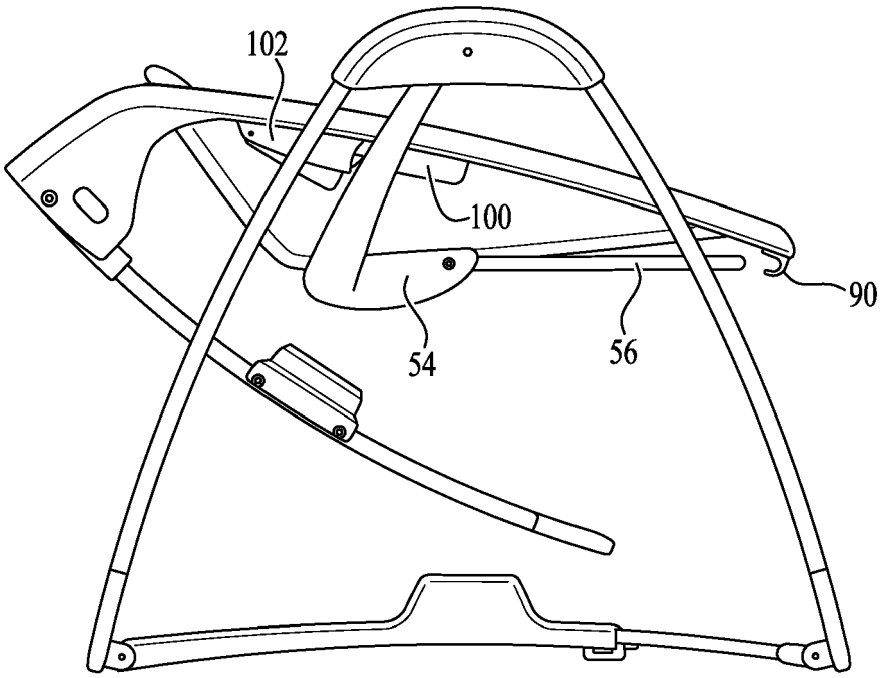

FIG. 11A

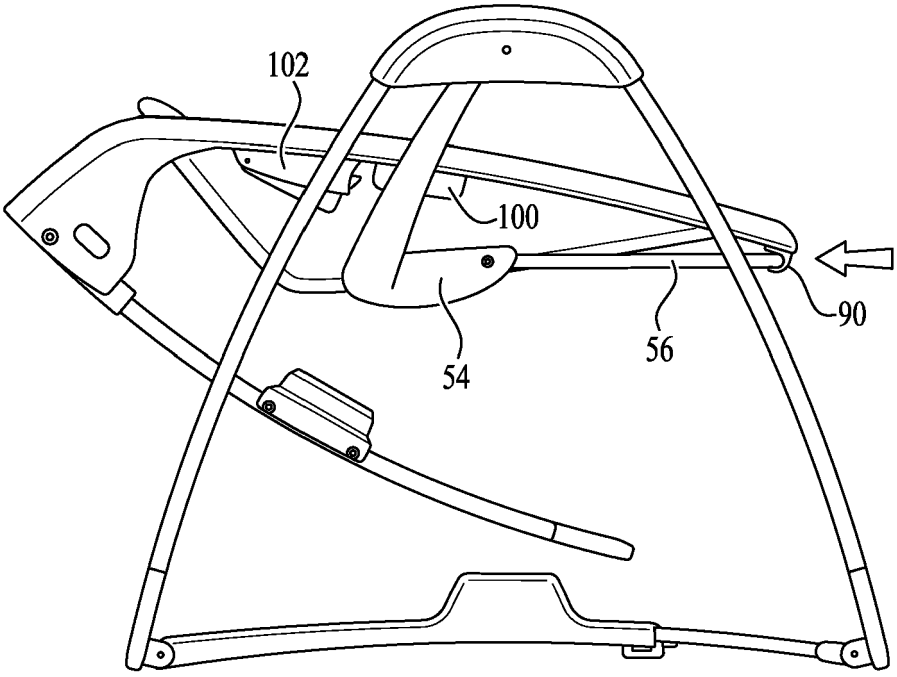

FIG. 11B

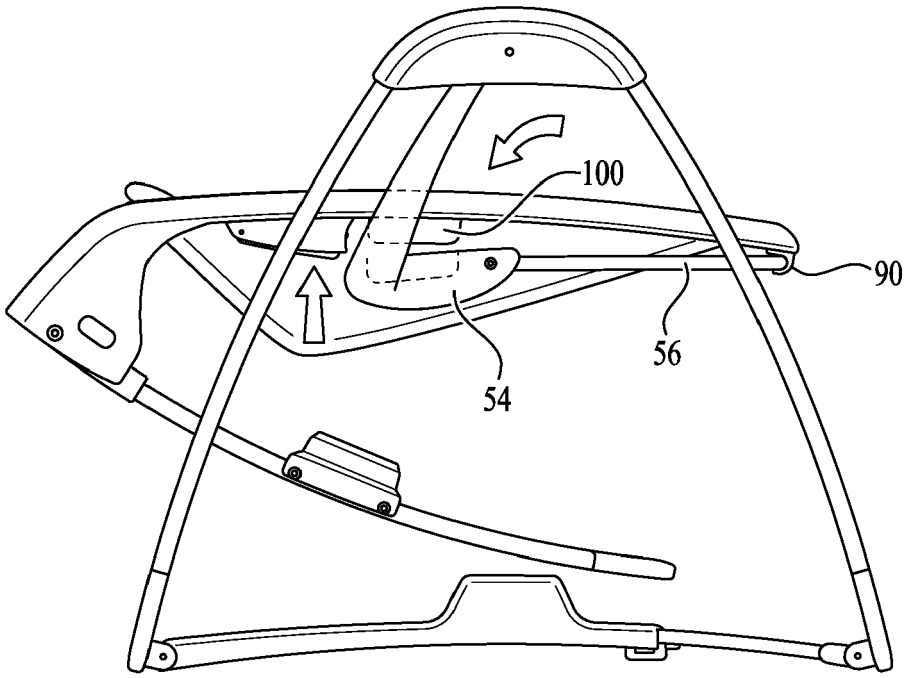

FIG. 11C

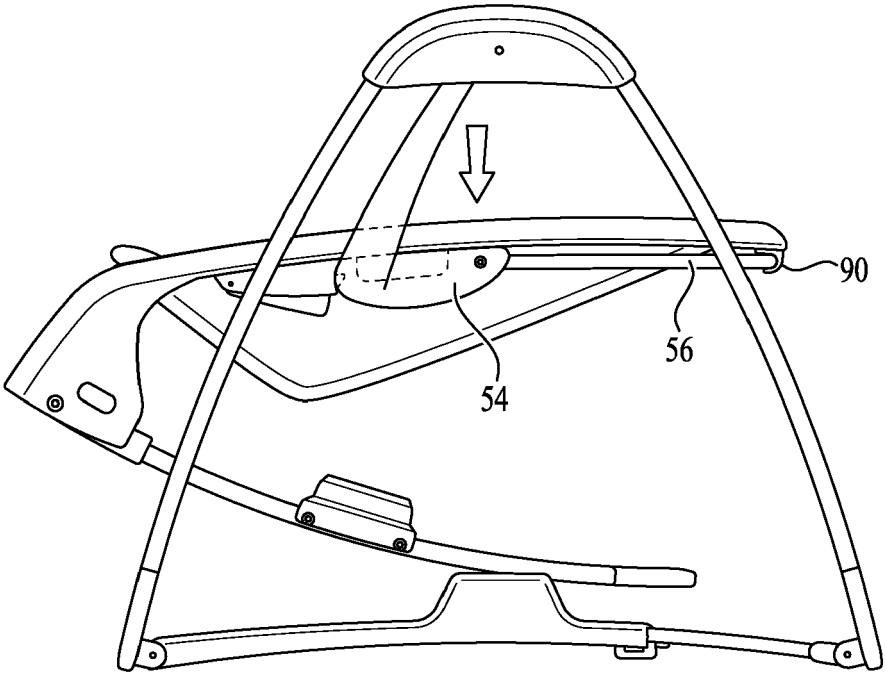

FIG. 11D

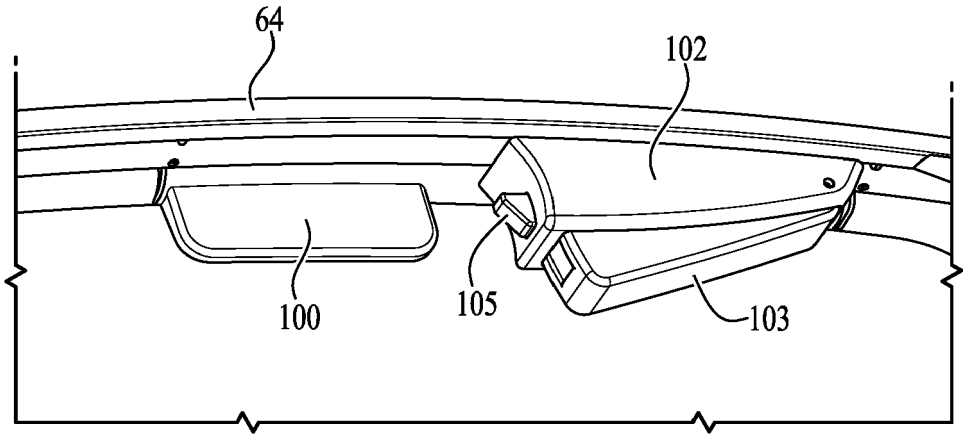

FIG. 12A

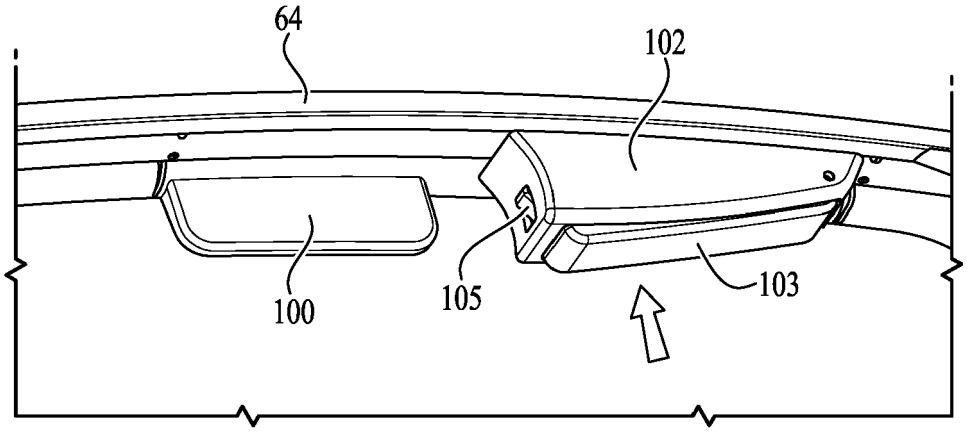

FIG. 12B

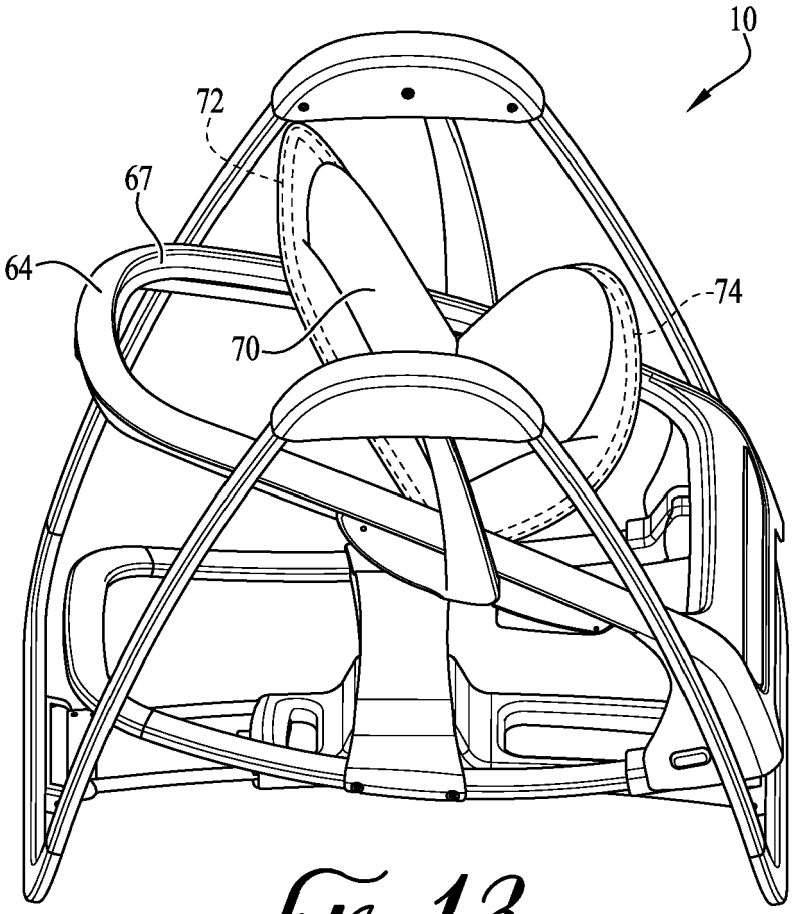

FIG. 13

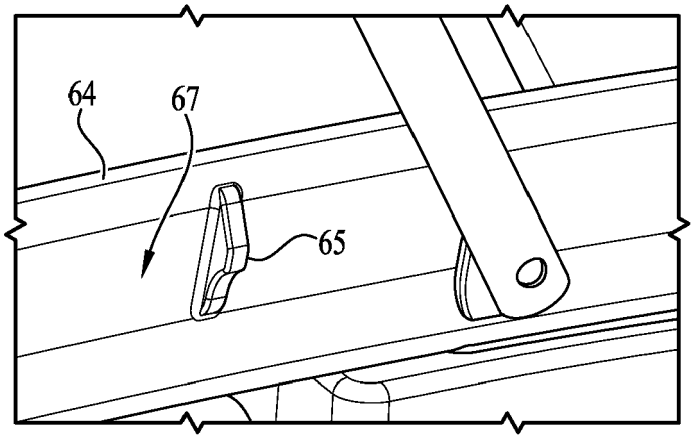

FIG. 13A

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EUROPEAN SEARCH REPORT

Application Number
EP 17 15 9743

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 Y A	US 2006/252565 A1 (BELLOWS WILLIAM B [US] ET AL) 9 November 2006 (2006-11-09) * paragraphs [0033], [0034], [0037]; claims 1,13,14,20; figures * -----	1-3,5, 7-13,15 6 4,14	INV. A47D13/10 A47D9/04
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TECHNICAL FIELDS SEARCHED (IPC)

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 2017	Amghar, Norddin

CATEGORY OF CITED DOCUMENTS

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23-08-2017

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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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