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(54) **ADJUSTABLE PLATFORM FOR PHYSICAL THERAPY**

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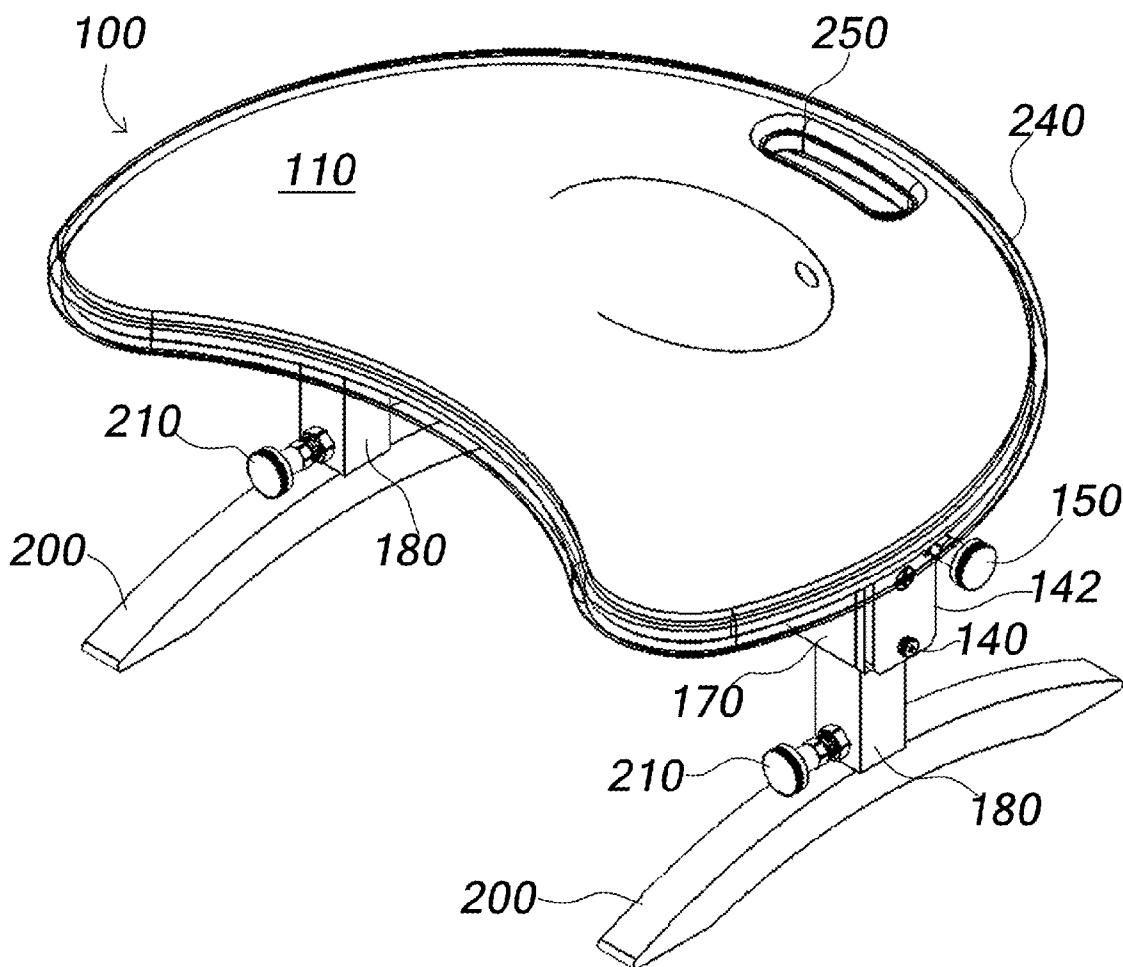
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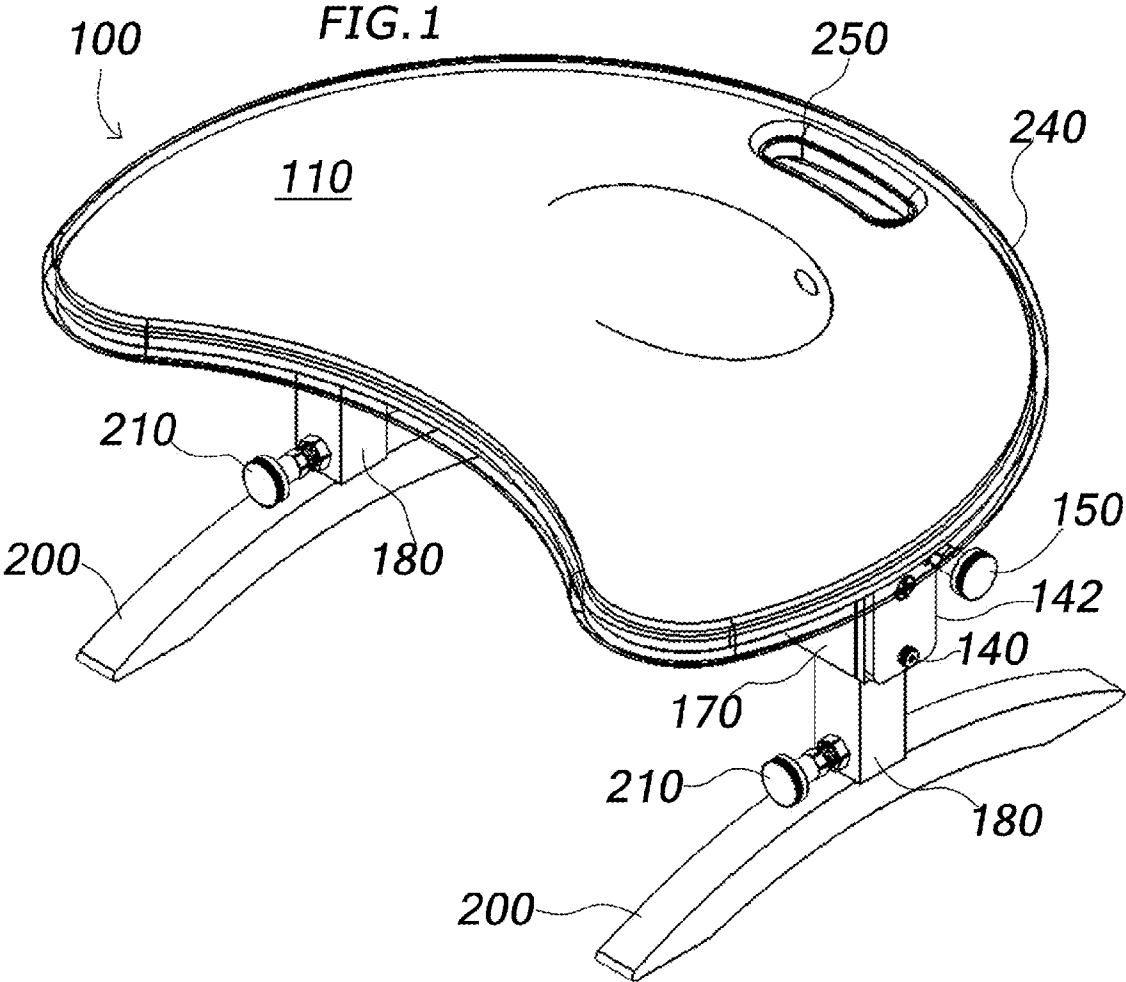
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(57) **ABSTRACT**

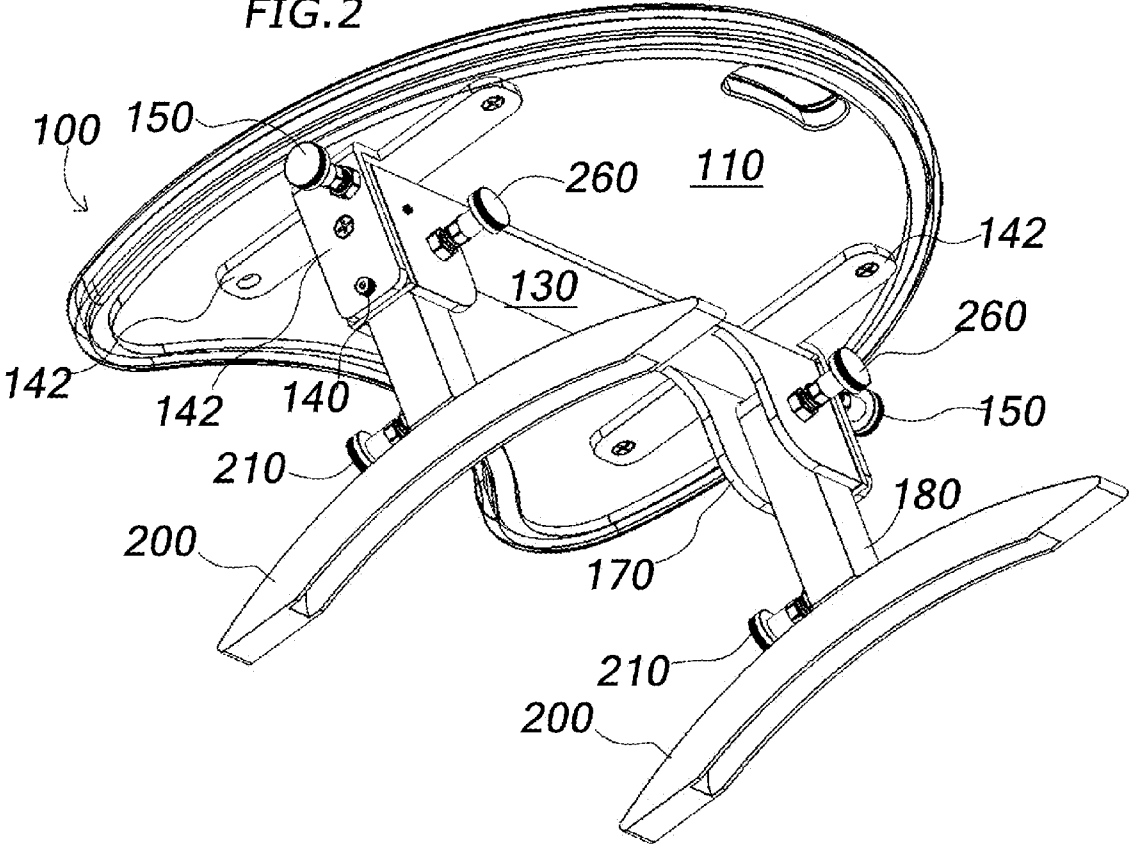
A therapeutic platform to facilitate increased functioning of the trunk and upper extremities of a subject includes a means for measuring and documenting specific height and angle adjustments thereby permitting reliable repeatability of platform position. The platform includes a top with fold out legs that telescope for top height adjustment, and angular adjustment of the top. A unobstructed area between the legs permits among other positions, a knees-forward sitting position where the top partially wraps about the subject, and sitting position atop the table whereby the subject can align their feet to their centerline when transitioning from a sitting to standing position.

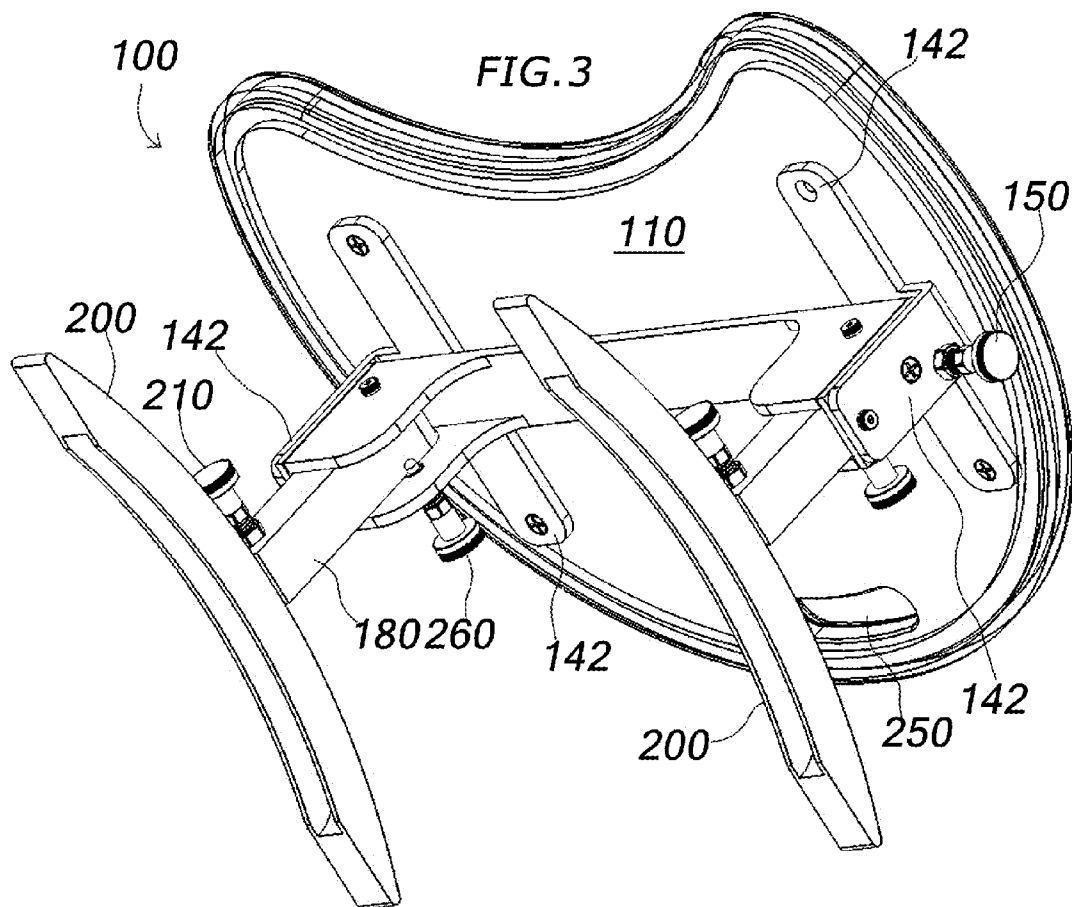


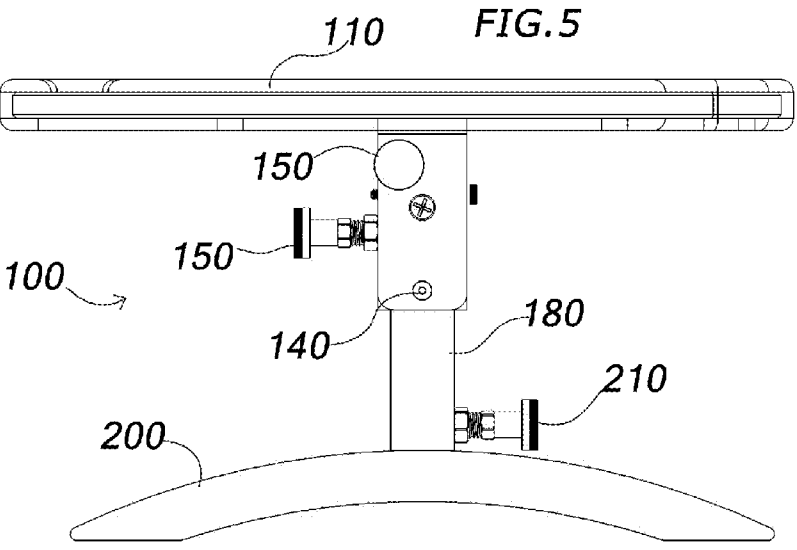
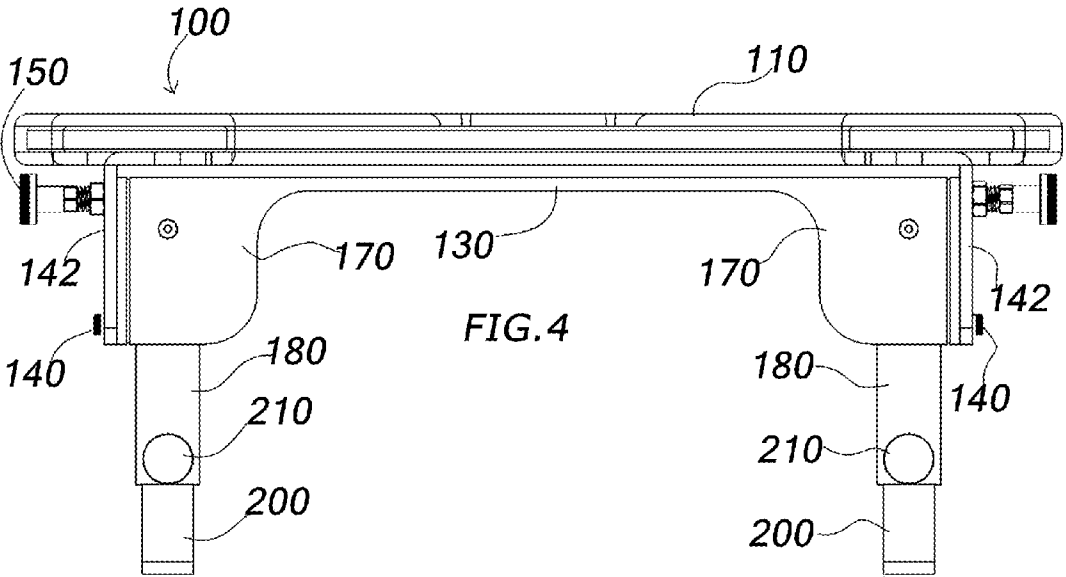


250

FIG. 2







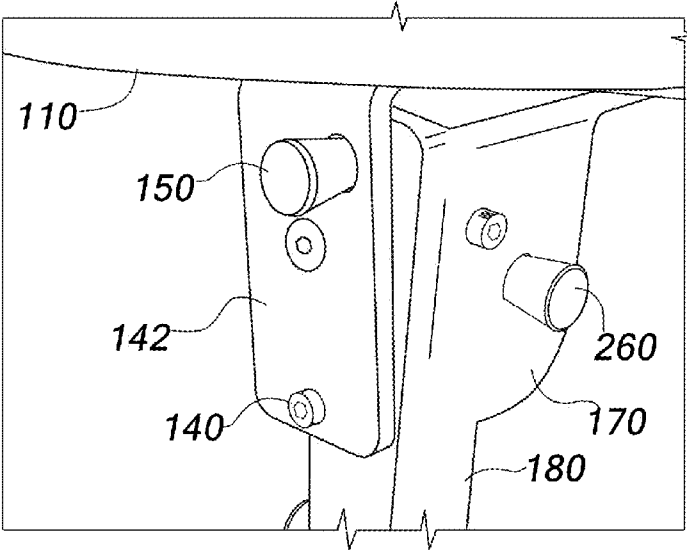
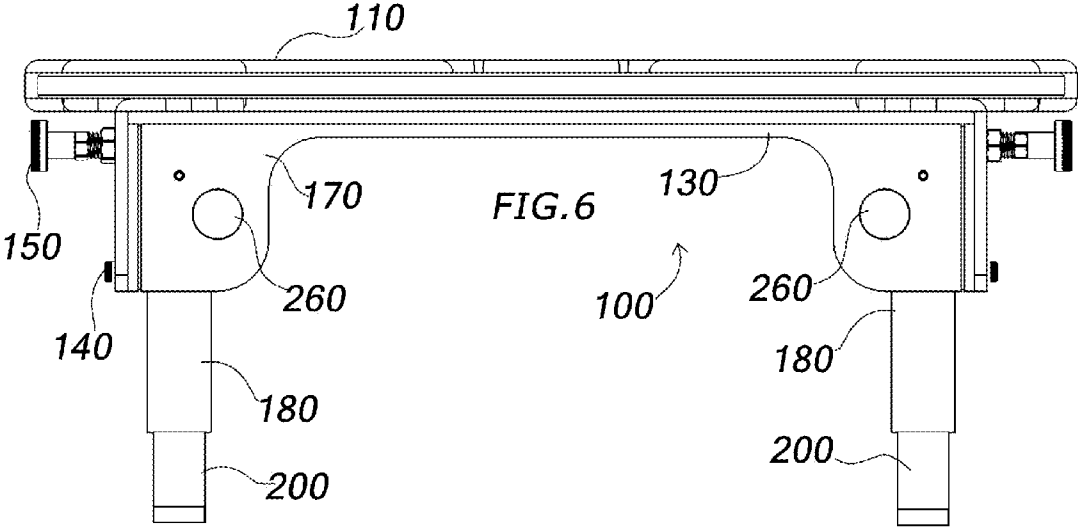


FIG. 8

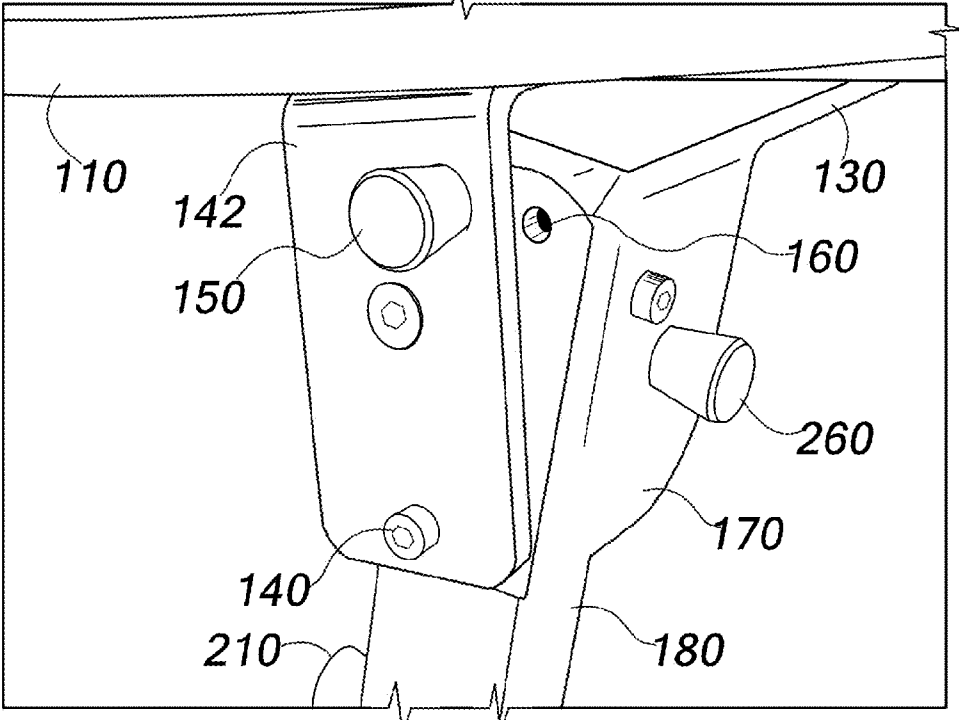
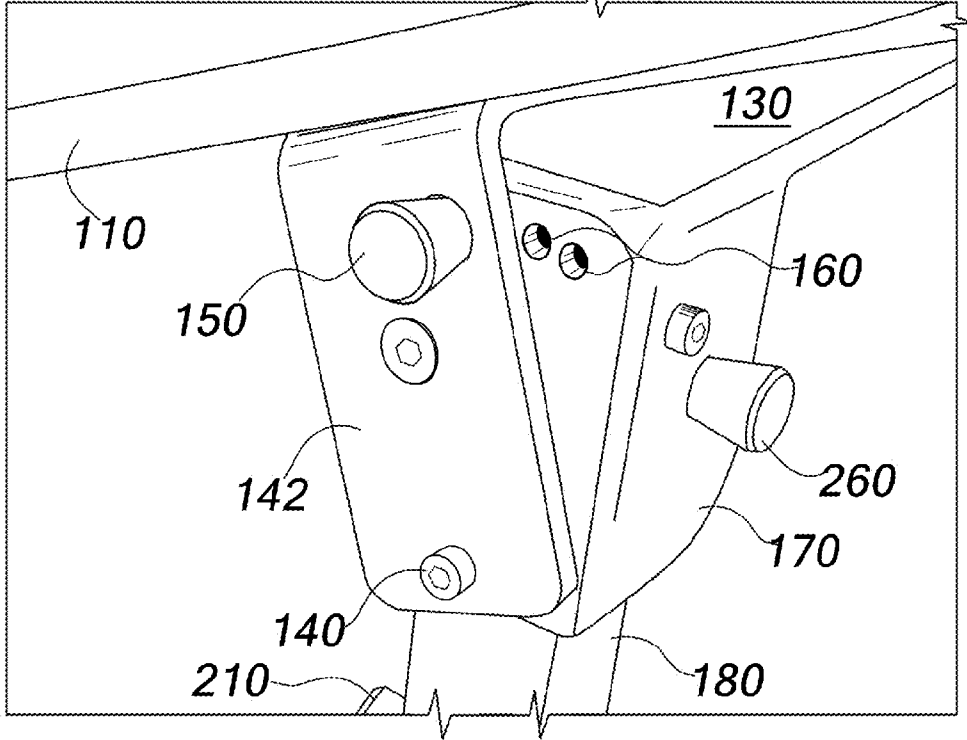


FIG. 9



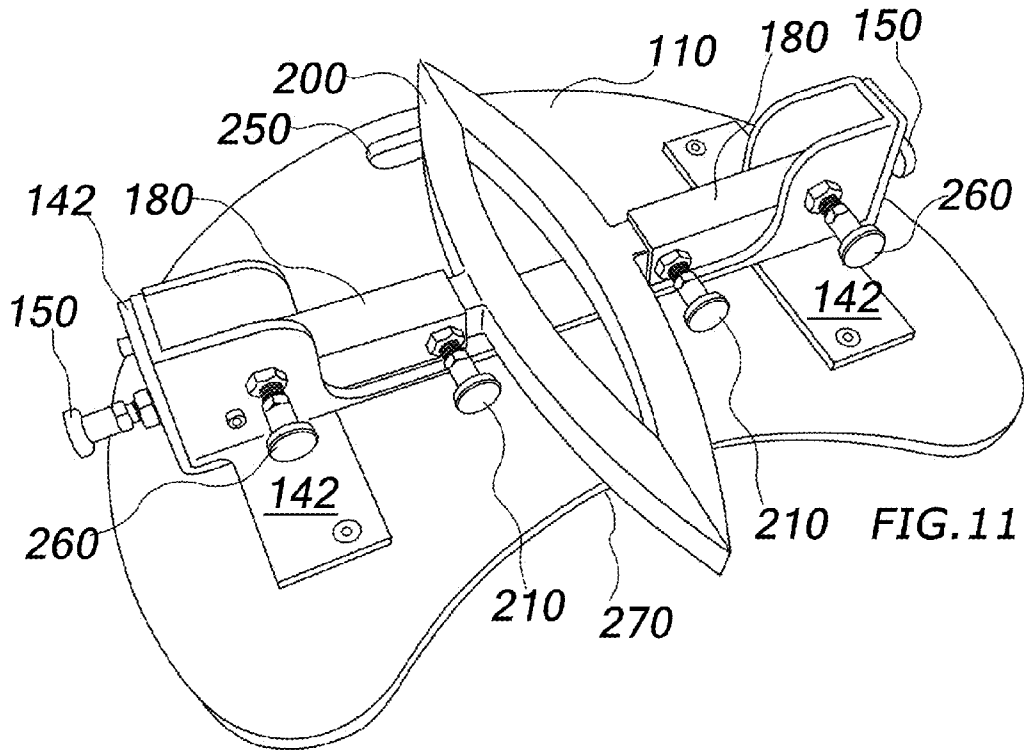
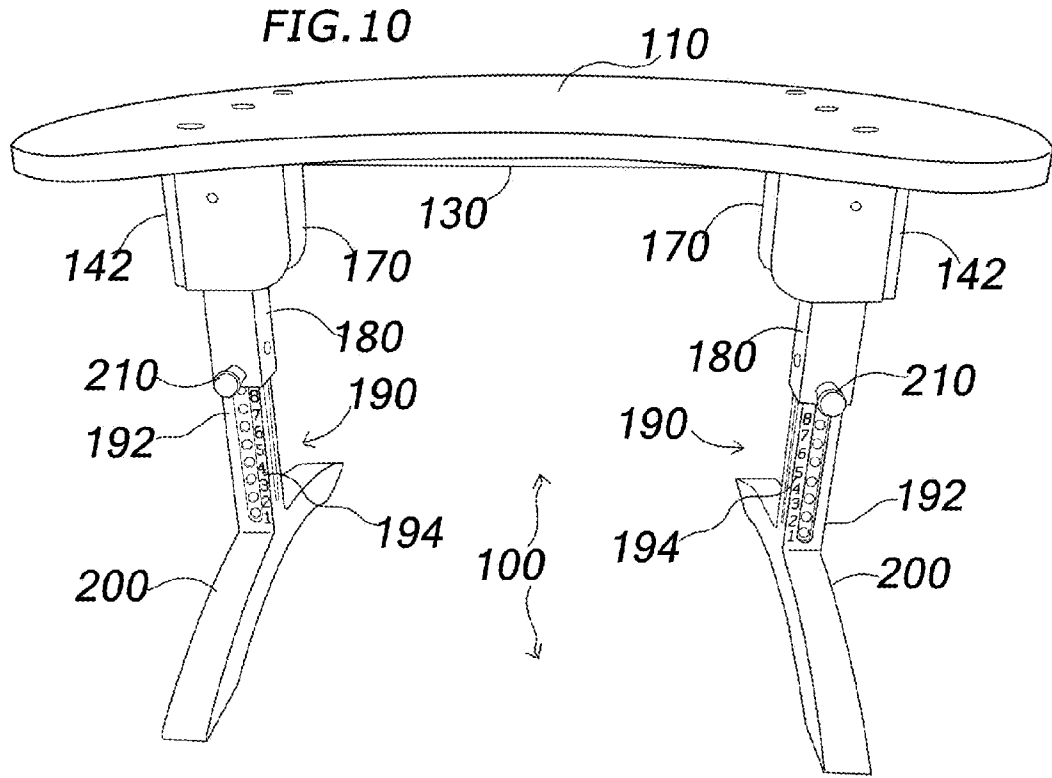
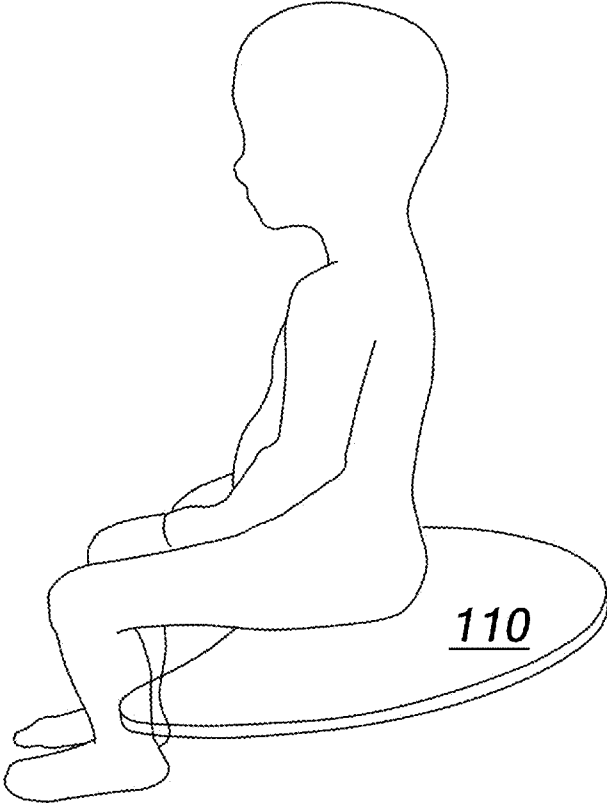
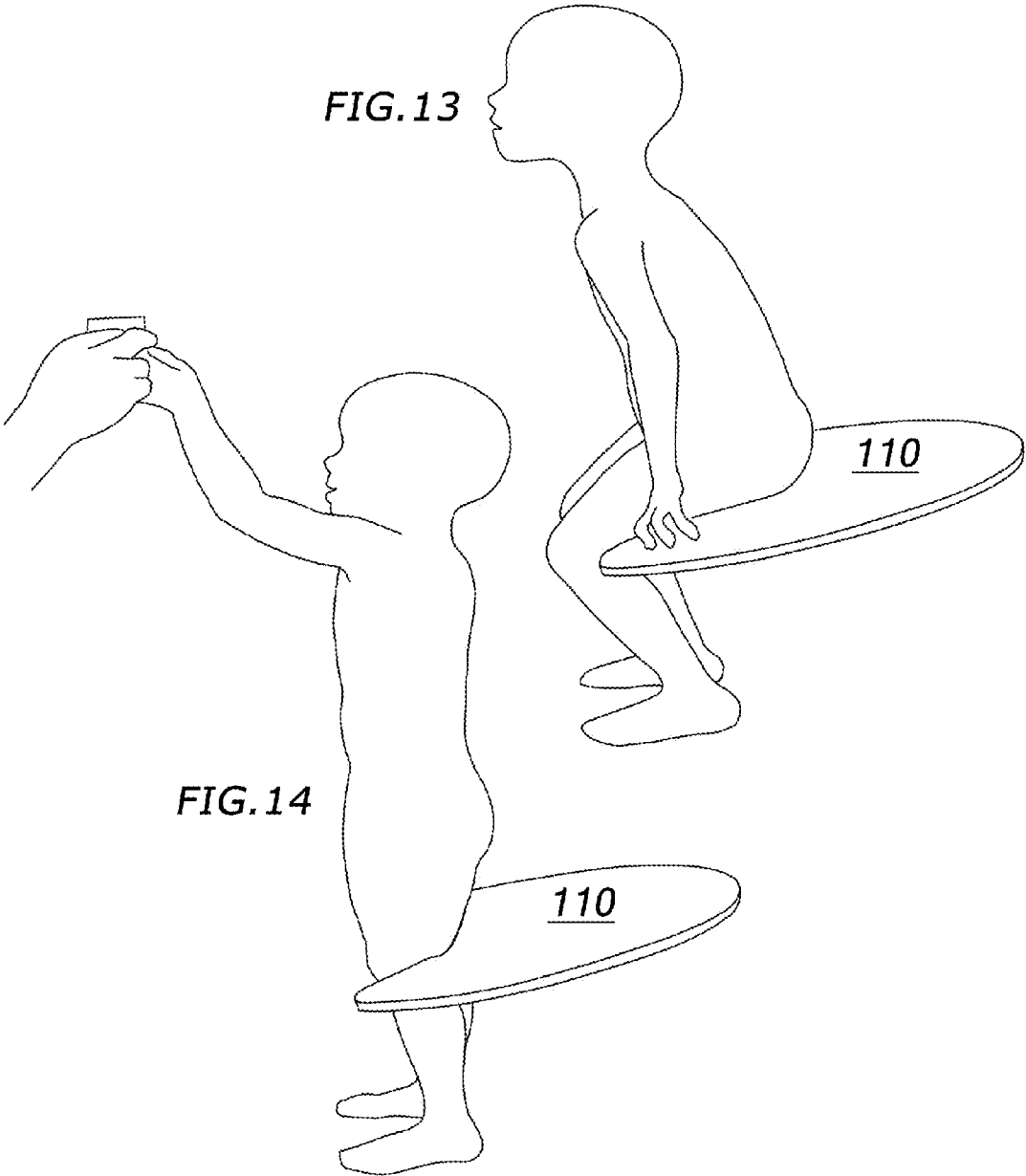


FIG. 12





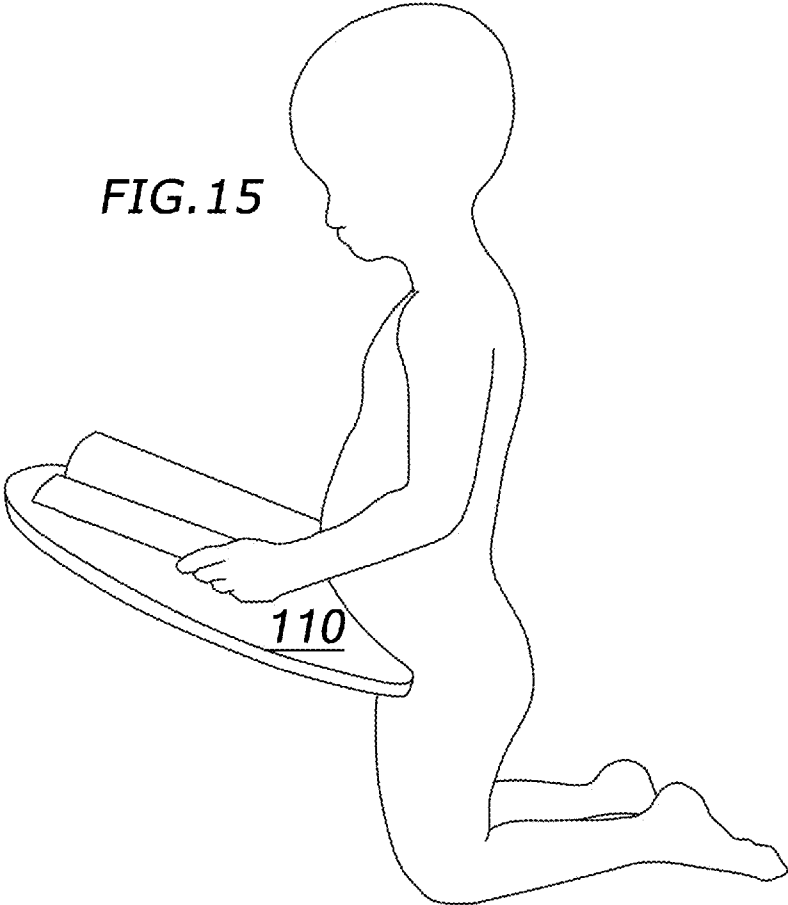
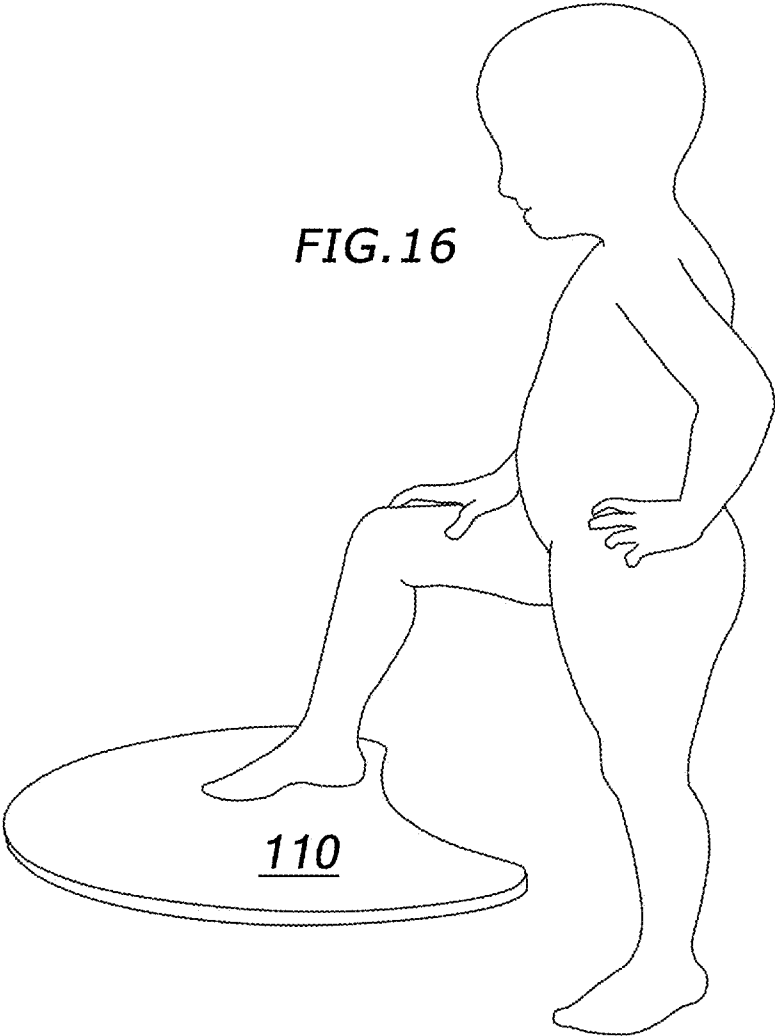


FIG. 15

110



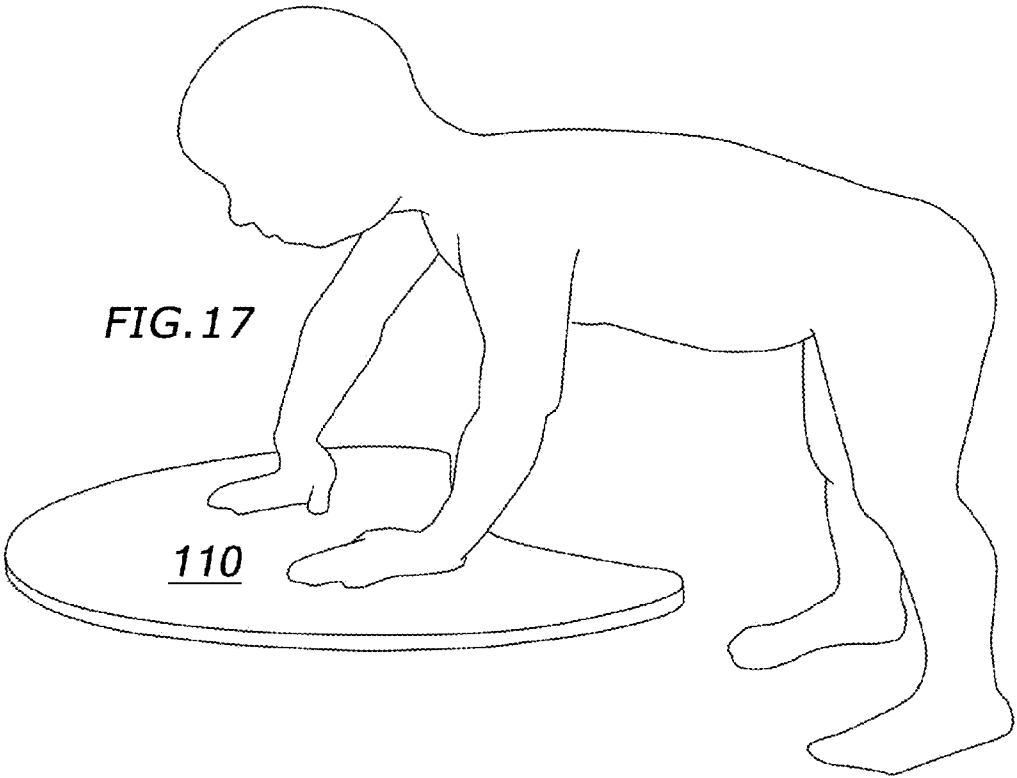
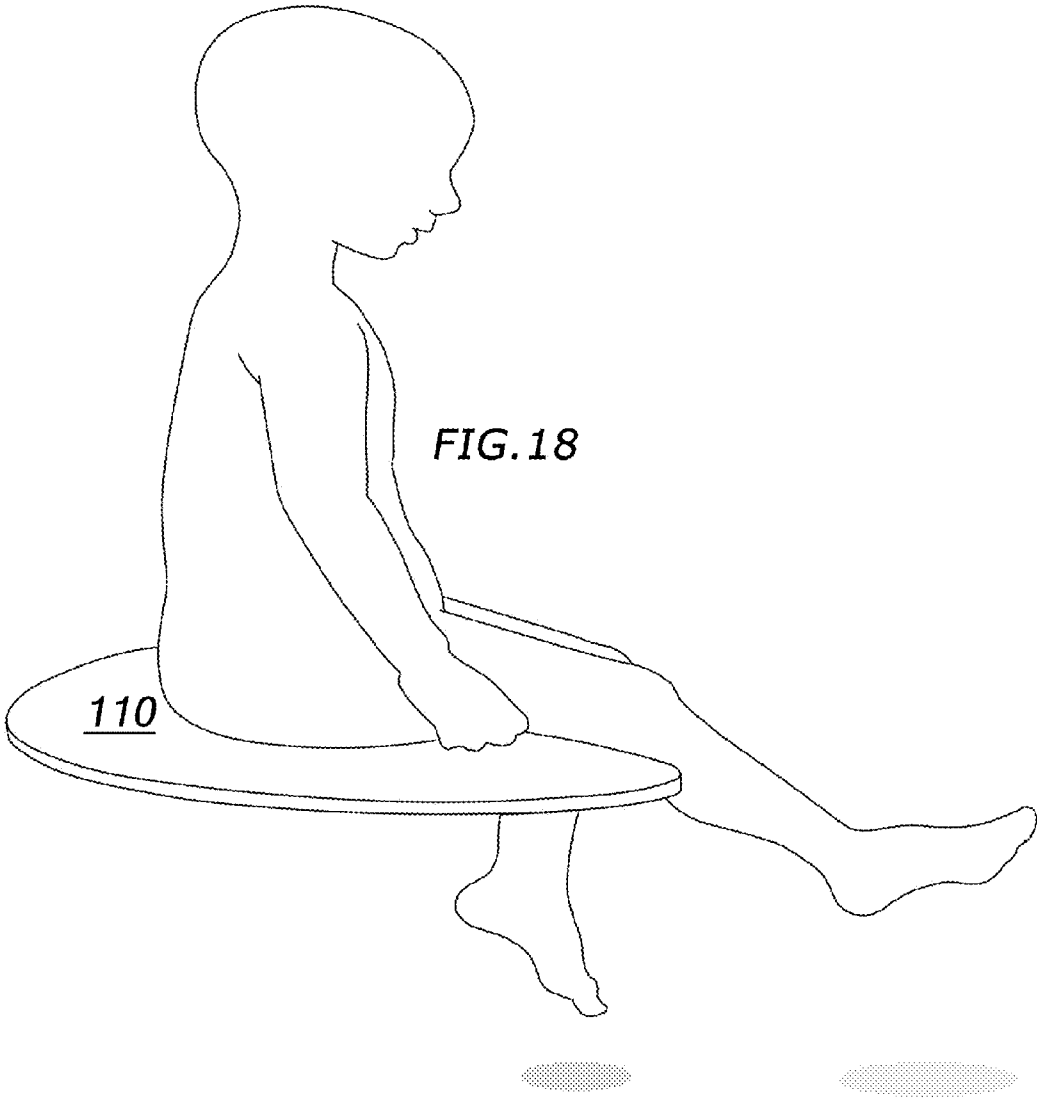
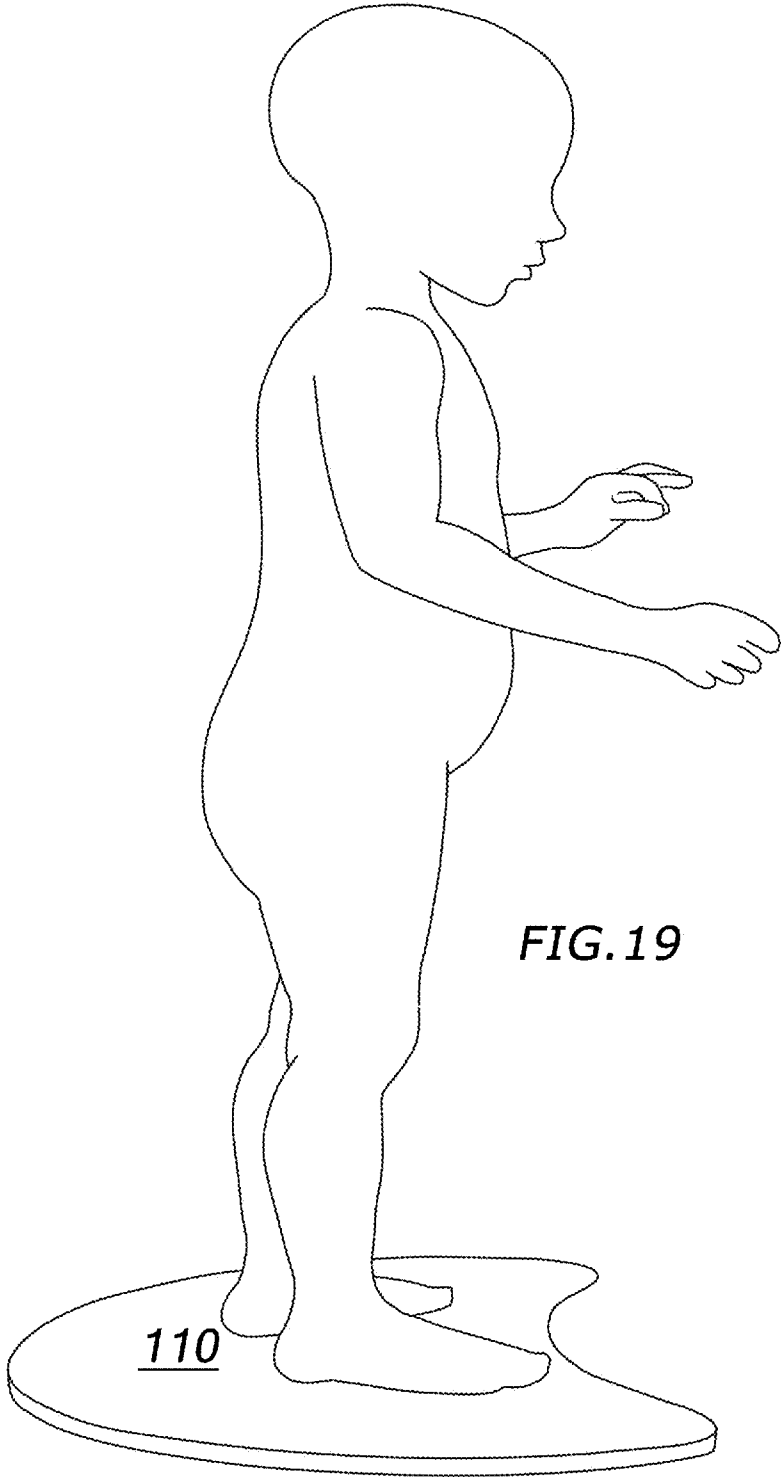


FIG. 17

110





ADJUSTABLE PLATFORM FOR PHYSICAL THERAPY

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This Application Claims the benefit of U.S. Provisional Patent Application No. 61/727,842 filed Nov. 19, 2012.

FIELD

[0002] The present invention relates generally to a rapidly adjustable platform for therapeutic use to assist children and others in developing inter alia, optimal positions to perform and facilitate increased functioning using their trunk and all extremities.

BACKGROUND

[0003] Various adjustable seats and tables are long known in the art. However, certain therapeutic activities and exercises developed to assist children and others in developing their trunk and upper extremities, and positioning to perform and facilitate increased function using their trunk and all extremities are not easily administered using previously available adjustable seats, benches and tables which possess no measurement indicators and are unintuitive and cumbersome to adjust, even for trained personnel.

SUMMARY

[0004] The present invention addresses certain heretofore unmet needs by providing a structural basis for healthcare providers such as physical, occupational, and speech therapists to perform closed kinetic chain (CKC) and open kinetic chain (OKC) exercises at particular height and angle settings suited to specific individuals, enabling rehabilitation and strengthening in various body positions which predominate in settings such as outdoor playgrounds, schools and home. Predetermined adjustment settings along with intuitive adjustment controls permit parents and other caregivers to be quickly trained to use the apparatus at home to provide therapeutic continuity.

[0005] The therapeutic platform of the present invention is lightweight, compact, and includes a height and tilt adjustable top. Height adjustment is provided in increments of 1 inch to match lower leg length and increase hip flexion to neutralize extensor muscle hypertonicity. The top can be tilted and set to 0°, 7°, 14° and 21° in order to position the pelvis in a slight anterior tilt for working, which stacks the vertebrae resulting in improved posture and the ability to reach in and out of the base of support. The slight anterior tilt also increases weight bearing through the lower extremities, and facilitates sit to stand transfers by manipulating the kinematic variables. Height and angle adjustments to the platform can be made in a matter of seconds because measurement indicators are visually marked. Intuitive adjustments for height and tilt allow therapists to train caregivers and family members on home exercise programs (HEP) and improve functional outcomes.

[0006] The therapeutic platform of the present invention can be used as a custom height and angle specific platform for sitting, tall kneeling, and reaching in these positions among others, which facilitates improved posture, balance, head/trunk control, proprioception and midline orientation. The therapeutic platform allows for objective data regarding position to be measured and documented for repeatable results. The contour 270 on the front edge of the top allows for greater

weight bearing through upper extremities and it allows for access to objects while maintaining body alignment and center of gravity. For example, when preparing to transition from a sitting to a standing position, a subject can align their feet below their centerline by scooting the feet back, and observe position of the feet due to the curvature of the platform top.

[0007] In particular embodiments described herein, the platform of the present invention incorporates spring-loaded plunger-type pins for height and tilt adjustments, and to secure and collapse the legs for stowing and portability.

[0008] Although the particular embodiment described herein incorporates 4 predetermined tilt settings, more predetermined tilt settings can be incorporated without departing from the spirit and scope of the invention. While top tilt adjustment is preferably by means a pivoting bracket attached to the top secured in a desired tilt by spring-loaded plunger-type pins which are retracted and indexed to occupy an adjacent slotted position to achieve a subsequent desired tilt, other means for adjusting tilt will suggest themselves to those having skill in the art and benefit of this disclosure.

[0009] Rigidity of construction, and smooth pivoting operation make it impossible to misalign the top which confers numerous advantages over other adjustable seats and tables by eliminating guesswork related to tilt adjustments. Once the spring-loaded plunger-type pins are refracted, the top is smoothly pivoted to the next desired tilt angle where the ends of the pins are indexably resealed.

[0010] While preferably, the folding legs of the embodiments of this disclosure are released and secured by a retractable pin-in-slot, other means for collapsing and securing legs will no doubt suggest themselves to those having skill in the art and benefit of this disclosure, and are considered to be encompassed by the present invention.

[0011] In particular embodiments described herein, the platform of the present invention possesses lower legs which have marked height adjustment slots corresponding to height settings for the top. In the accompanying figures, the height adjustment indicators are shown as numerical indicia adjacent the height adjustment slots (FIG. 10).

[0012] The top is somewhat bean shaped, with a concave curvature along a front edge.

[0013] Preferably, the top is made from a rigid material such as plastic, wood, a lamination of wood or plastic, or metal. According to particular therapeutic needs, covers having various degrees of resiliency so as to alter the feedback characteristics of the top surface can be affixed to the top. For example, a rigid surface is considered a high feedback surface because a sitting person is more aware of their instant position; whereas a softer surface dilutes sensory feedback and proprioception.

[0014] The foregoing and other objects, features, and advantages of the invention will become more apparent from the following detailed description, which proceeds with reference to the accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is an isometric view of one embodiment according to the present invention;

[0016] FIG. 2 is a bottom perspective view of one embodiment according to the present invention taken from a first side;

[0017] FIG. 3 is a bottom perspective view of one embodiment according to the present invention taken from a side opposite that shown in (FIG. 2);

[0018] FIG. 4 is a frontward elevation of one embodiment according to the present invention depicting platform at low-ermost height, and with top level;

[0019] FIG. 5 is side elevation of the embodiment shown in (FIG. 4);

[0020] FIG. 6 is a rearward elevation of one embodiment according to the present invention depicting platform 100 at lowermost height, and with top 110 level;

[0021] FIG. 7 is first detail view of a height and tilt adjust-ment assembly for top 110;

[0022] FIG. 8 is a second detail view of a height and tilt adjustment assembly for top 110;

[0023] FIG. 9 is a third detail view of a height and tilt adjustment assembly for top 110;

[0024] FIG. 10 is a perspective view showing platform 100 in fully extended position;

[0025] FIG. 11 is a perspective view showing the platform with legs folded;

[0026] FIGS. 12-14 depict a child (1) sitting on the top of the platform when preparing to rise to a standing position, (2) moving the feet under the centerline of the body; tilting for-ward, and (3) rising to a standing position;

[0027] FIG. 15 shows a child in a kneeling position using the platform for reading purposes;

[0028] FIG. 16 shows a child with one foot atop a level platform;

[0029] FIGS. 17-19 show respectively, (1) a CKC exercise in which a child is in a plantar grade position, (2) an OKC exercise in which the child is in a seated position with feet suspended above a floor, and (3) a CKC balancing exercise in which the child stands on the platform.

DETAILED DESCRIPTION OF THE INVENTION

Reference Listing

- [0030] 100 therapeutic platform
- [0031] 110 top
- [0032] 130 cross brace
- [0033] 140 pivot pin
- [0034] 142 pivot bracket
- [0035] 150 tilt adjustment knob
- [0036] 160 tilt adjustment slot
- [0037] 170 leg attachment bracket
- [0038] 180 upper leg
- [0039] 190 lower leg
- [0040] 192 post
- [0041] 194 height indicators
- [0042] 200 feet
- [0043] 210 height adjustment knob
- [0044] 220 height adjustment slot
- [0045] 230 height limit
- [0046] 240 bumper pad/rim
- [0047] 250 handle
- [0048] 260 leg release
- [0049] 270 curve

Definitions

[0050] In the following description, the term “platform” refers to platforms intended to be used as a seat, a table or other support for therapeutic purposes including physical therapy. The term “top” refers to the upper most portion of the platform. Unless otherwise explained, any technical terms used herein have the same meaning as commonly understood

by one of ordinary skill in the art to which this disclosure belongs. The singular terms “a,” “an,” and “the” include plu-ral referents unless the context clearly indicates otherwise. Similarly, the word “or” is intended to include “and” unless the context clearly indicates otherwise. Although methods and materials similar or equivalent to those described herein can be used in the practice or testing of this disclosure, suit-able methods and materials are described below. The term “comprises” means “includes.” Publications, patent applica-tions, patents, and other references mentioned herein, if any, are incorporated by reference in their entirety for all purposes. In case of conflict, the present specification, including expla-nations of terms, will control. In addition, the materials, methods, and examples are illustrative only and not intended to be limiting.

[0051] Referring generally to FIGS. 1-16, a portable plat-form 100 for therapeutic use includes a tiltable and height adjustable top 110 having spring loaded pull knobs for quickly setting the degree of tilt for the top, a height adjust-ment means including spring loaded pull knobs for quickly setting the height of the top, and a pair of folding legs. Each leg has two parts, and upper portion 180 which is pivotably attached to leg attachment bracket 170 located at each end of a cross brace 130, and a lower portion 190 with feet 200 and a post 192 that telescopes from the upper portion 180 to adjust the height of the top. Each leg attachment bracket 170 is pivotably connected to a pivot bracket 142 by pivot pin 140. Top tilt angle is set by (1) pulling tilt adjustment knobs 150 each of which preferably incorporate a spring loaded plunger-type pin (2) tilting the top until a desired setting is reached, and (3) indexing the end of the pin into another tilt adjustment slot 160. Height of the top is set by (1) pulling the height adjustment knobs 210, each of which preferably incorporate a spring loaded plunger-type pin, (2) raising or lowering the legs so that the post of the lower leg extends from, or retracts into the upper leg portion, and (3) seating the ends of the pins into height adjustment slots 220. The legs are folded by pull-ing leg adjustment knobs 202 to move and secure the legs in extended and folded positions (FIG. 11).

[0052] FIG. 1 is a top down isometric view of an adjustable platform of the present invention, with a top 110, upper 180, and lower 190 legs, feet 200, and pull knobs 210 to adjust the platform height.

[0053] FIG. 2 is bottom up perspective view of the platform shown in (FIG. 1), depicting feet 200, and upper legs 180. A sliding post 192 (FIG. 10) which is attached to the feet tele-scopes from the upper legs which are formed from channel stock when pull knobs 210 are disengaged. Also shown are two pivoting brackets 142, one pivotably connected to each leg attachment bracket 170 located at the terminal ends of the cross brace 130. When tilt adjustment knobs 150 are disen-gaged, brackets 142, which are connected to the underside of top 110, pivot the top to four predetermined tilt settings. Legs 200 are moved from an extended position (shown) to a col-lapsed position (FIG. 11) by disengaging leg releases 260 which like the tilt adjustment knobs 150 and the height adjust-ment knobs 210, employ spring-loaded pull pins.

[0054] FIG. 3 shows a bottom up perspective view of the platform taken from a side opposite that shown in (FIG. 2). Cross brace 130 is attached to the top 110 via pivoting brack-ets 142 by mechanical fasteners that can be screws, bolts, rivets, pins or any suitable fasteners that would be appreciated by those having skill in the art.

[0055] FIGS. 2-6 are various views showing the platform in the fully down position.

[0056] FIGS. 7-9 are detail views of the tilting components of the platform that shows progressive tilting if top 110. Pivoting bracket 142 is pivotably connected to leg attachment bracket 170 via pivot pin 140. When tilt adjustment knob 150 is pulled, a spring-loaded pin is withdrawn from a tilt adjustment slot 160 and is relocated to an adjacent slot pair coaxially aligned in both the pivoting brackets and the leg attachment brackets.

[0057] FIG. 10 shows the platform in a raised position. By adjusting height adjustment knobs 210, the lower legs posts 192 are telescopically extended from upper legs 180. While preferably, height adjustments are provided in one-inch increments, other increments, including fractional height adjustment settings are intended to be encompassed by this disclosure.

[0058] FIG. 11 shows the legs (200, 190, 180) of the platform in a collapsed position for storage or transport. Upper legs 180 are pivotably attached to the leg attachment brackets 170 by any customary pivoting arrangement that would be appreciated by those skilled in the art and benefit of this disclosure. The legs are collapsed and extended by disengaging and engaging leg release knobs 260 which possess a spring-loaded pin that is reversibly seated in a slot (not shown) of the upper leg.

[0059] For purposes of conciseness and clarity, FIGS. 12-19 omit certain platform elements to better illustrate various therapeutic positions possible with the platform of the present invention. The depicted positions are merely exemplary, and do not attempt to show all the myriad of therapeutic applications of the present invention which will be appreciated by rehabilitation therapists and others having skill in the art and benefit of this disclosure.

[0060] Persons having skill in the art and benefit of this disclosure will appreciate that a myriad of accessories are pairable with the platform, including, but not limited to a back rest removably affixable to one side of the platform, paper

holding means, e.g., clips to temporarily affix a roll or sheet of paper to the top, knee blocks and other such additions useful in a therapeutic environment. It is also conceivable that the invention may be used for certain exercises with a rocker board placed beneath the feet of the platform.

[0061] In view of the many possible embodiments to which the principles of the disclosed invention may be applied, it should be recognized that the illustrated embodiments herein are only preferred examples of the invention and should not be taken as limiting the scope of the invention.

I claim:

1. A therapeutic platform to facilitate increased functioning of trunk and upper extremities of a subject including means for measuring and documenting specific height and angle adjustments and permitting reliable repeatability of platform position comprising:

- (1) a lightweight frame with a pair of telescoping legs each having an upper portion and a lower portion with feet and wherein a top with an inwardly curved edge is connected to the frame,
- (2) incremental settings for adjusting height and angle of the top, and,
- (3) an unobstructed region between the feet when they are extended.

2. The therapeutic platform according to claim 1 wherein the angle adjustment includes at least 0°, 7°, 14° and 21° settings.

3. The therapeutic platform according to claim 1 wherein the height adjustment includes plunge pins and corresponding slots.

4. The therapeutic platform according to claim 1 wherein the legs are collapsible against an underside of the top for carrying purposes.

5. The therapeutic platform according to claim 1 further comprising plural covers of varying degrees of resiliency for fitting over the top.

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