SITTING/STANDING TABLE/WALKER COMBINATION

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ABSTRACT

The invention is a therapeutic device or appliance for treating people, particularly children, afflicted with diseases such as cerebral palsy, muscular dystrophy, and similar incapacitating diseases. It is a sitting/standing table adapted as a walker. The seat is adjustable for standing. Vertical adjustments are provided for table and seat. Adjustable supports are provided for the patient's thighs. Attachments are provided, including commode, abduction seat, and footrest platform.

4 Claims, 8 Drawing Figures
SITTING/STANDING TABLE/WALKER COMBINATION

BACKGROUND OF THE INVENTION

In the United States, there are many persons with cerebral palsy, a large number of whom are under 21 years of age. With proper treatment and training with the aid of physical therapy, persons so handicapped often can and do improve physically.

The physical and mental development of cerebral palsied children is of extreme importance, and physical therapy plays an important role in facilitating this development. For many years, therapeutic equipment has been used to prevent deformities and to enhance physical development. However, most of the existing equipment is inadequate to meet the individual needs of the cerebral palsied; and furthermore, the design of the basic concept of this equipment has not changed for decades. Hence, no improvements were offered. Because of this inadequacy, the equipment causes problems to both the cerebral palsied child, by not providing him with the therapeutic requirements conducive to physical development and to the therapist and/or parent in necessitating undue amounts of time and physical effort to be spent in operating this equipment.

To help solve the cerebral palsied therapeutic needs, there exists on the market a wide range of equipment devices which serve separate functions and come in many different sizes but do not comply with the individual needs of the child. Each device costs a great deal and is useful only for a relatively short period of time. Some of this equipment, although partially adjustable to fit the child’s size, is inadequate and inconvenient to operate and therefore creates more problems and requires more time and effort than is necessary. This, consequently, increases the heavy burden of assisting the child in his development and management. This equipment creates a hospital-type environment in the home, as well as making the child look uglier than he is in his own self-image and creates a feeling of inadequacy and insecurity by exposing his physical handicap.

Again, as in the school, the equipment is not functional and does not comply with the child’s individual physical needs. The structure does not give the child added back and buttocks support and creates a sharp gap between the table surface and the standing child, making the child spend a great amount of energy and effort in trying to avoid hitting its edges.

Equipment and apparatus can be of great assistance in the treatment of the child handicapped by cerebral palsy and can serve a diversity of aims. It can be used to develop normal postures as far as possible and to form new motor patterns by enhancing a limited range of movement by allowing such a movement to be usefully employed or by substituting motor skills for those which may be unobtainable. By so doing, it may enable even the severely handicapped child to gain some means of self-expression and communication with his fellows. It also may be used to help the child to acquire independence in whole or part by assisting in educating in feeding, dressing, locomotion, and other motor skills which are necessary for social competence. With such equipment, the child can carry on at home in an atmosphere designed to assist him personally, rather than forcing him to try to adapt to furniture he cannot possibly use. It can lighten the very heavy domestic load carried by the parents in the home, by rendering less difficult the physical care of the handicapped child. It helps him to extend his range of tactile and visual experiences, enabling him to gain at an earlier stage than would otherwise be possible simple, manual skills which will render him more contented and self-occupied.

The chair is one of the most important devices used in the management of the cerebral palsied, and it serves many functions. If the chair is correctly designed and fits the child, it helps him to widen his sensory experience and, at the same time, to acquire increasingly normal head, neck, and sitting postures. The attachment of a suitable table enables him to obtain a widening range of manual experience. If the chair is fitted with wheels, the child can easily be transported without the necessity for lifting and carrying; and when seated securely in it, he can amuse himself over long periods without help from his mother.

The chair must fit the child and be capable of adjustment to allow for his growth. The seat must be just long enough to bring the child’s buttocks well against the back of the chair when he is sitting comfortably. Groin straps may be attached in the midline to the junction between back and seat buckling to the lateral side of the chair back at seat level, in order to maintain the sitting position and to prevent the buttocks from slipping forward with the consequent production of a flexed lumbar spine and a poor “slumped” posture. Sides may be attached to the chair seat to serve the same purpose and prevent lateral movement, but they should not be higher than the level of the flexed elbow.

A platform on which the child’s feet may rest is provided, the distance from the front edge of the seat to the foot platform being of such a length that the child sits comfortably on the chair with his thighs resting on the seat with the soles of his feet flat on the footboard in order to assist in preventing an equinus posture. In addition, and until the sitting balance has been obtained, it is essential that a special chair be available for use at the toilet to give the child a sense of security. A table is provided cut out to fit partly around the child either when seated in the chair or when standing, so that the objects may be moved to his side without falling off and will then require rotatory movement of trunk and head and head to regain them, as well as a more complex arm motion. A rim around the edge prevents objects from being swept on the floor by involuntary movements of the hands. The table is adjustable so that the level of the table can be raised as the child grows in order to prevent a crouched reflex trunk attitude and to teach and maintain a more normal spinal posture.

The table is useful for the establishment and practice of standing posture and balance. The table is raised to a suitable height (about half way from the hips to the axilla) and provided with a standing support which will prevent the child who has not yet attained full standing balance from falling and give some support, thus, allowing the recognition of the sensory patterns of standing postures and slowly improving voluntary muscle power and control in the legs prior to training in assisted and free walking. The table surface is large enough to provide for the use of a typewriter, since there are many cases whose motor handicap is too severe to permit acquisition of legible writing by hand.
SUMMARY OF THE INVENTION

The herein invention is a standing/sitting table-/walker combination, which incorporates adjustability in height from sitting to a standing position and to serve children from 40 to 50 inches in height. It also adjusts in depth and width in order to insure individual fit of the child and to provide correct posture, both in the sitting and the standing position. The basic unit serves the largest segment of the disabled population, which is the moderately involved; it also serves the severely involved by adding auxiliary pieces, such as head rest, abduction seat, waist straps, strapped footrest, and toilet seat.

The table has a cutout to contain the child securely and soft, rounded edges with a rim to prevent articles from falling off. The cutout fits closely around the body to eliminate injury to the individual's hand from being jammed under the table. It can be snapped on and off easily, and it can be adjusted in depth by sliding. A rotary cam pin is provided to insure positive safe lock in case the child leans with his body on it. Attached to the table are two side supports that can adjust from 7 to 10 inches in width to provide straight standing or sitting posture. It is safe to operate by any person and, therefore, frees the therapist to help other children.

The table may be adjusted from a sitting to a standing position, and to do so, the table is simply unlocked and pushed to allow for the child to stand. The seat frame is raised to the required height, and by slightly dropping it, the cam pin locks in position. The seat is then lifted from the back and slides until it drops and is pushed back to line up with the back support. The table is pushed back to a convenient position for the standing child.

The frame is on four ball casters; the rear casters have locks to insure stability in the standing position and when unlocked, they facilitate mobility from one room to another.

The appliance can also be used as a walker by pushing it from the back frame with or without the table top with the side supports. The height at the back frame can be adjusted to fit the convenient position of the child's height so that he will not have to stoop. This gives the child the opportunity of continuous therapeutically exercise to assist him in his physical development and achieving new abilities. The result of this leads to normality and independence.

The appliance is flexible by way of inclusion of attachments, such as a toilet seat that can be snapped on the sitting frame while the regular seat is dropped back; also, there is an abduction seat and strapped footrest. The system is economical by elimination of separate costly equipment that occupies space and clutters the living environment. It also eliminates the unnecessary transfer from one piece to the other, which saves time and effort spent either by the mother in the home or the therapists in the school.

From the foregoing exposition, the objects of the invention will be readily apparent to those skilled in the art. Briefly, however, the objects may be summarized as follows.

A primary object is to make available an improved therapeutic appliance for afflicted persons, particularly children providing a chair seat and table within a frame with adjustability to allow for either sitting or standing of the patient.

A further object is to provide an appliance as in the foregoing, providing for adjustability as to height of the chair seat and table.

A further object is to provide an appliance as in the foregoing, wherein the frame is mounted on casters so as to constitute a walker.

A further object is to provide an appliance as in the foregoing incorporating attachments including head rests, foot rests, abduction seat and commode.

Further objects of the invention will become apparent from the following detailed description and annexed drawings wherein:

FIG. 1 is a perspective view of a preferred form of the invention;

FIG. 2 is a side view, partly in section, of the appliance of FIG. 1;

FIG. 3 is a detail sectional view taken along the line 3–3 of FIG. 2;

FIG. 4 is a detail sectional view taken along the line 4–4 of FIG. 2;

FIG. 5 is a detail sectional view taken along the line 5–5 of FIG. 2;

FIG. 6 is a front view of the appliance;

FIG. 7 is a perspective view of the frame structure of the appliance; and

FIG. 8 is a detailed view of the seat strap brackets.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the various figures of the drawings, there is shown a preferred exemplary form of the invention. Numerical 10 designates the frame or chassis of the appliance or device. The frame is generally U-shaped having side members 12 and 14 connected by a rear member 16. The frame may be made of any suitable material, such as metal having appropriate strength for the purpose. Frame 10 has uprights 16 and 18 on opposite sides at an intermediate position as shown. The appliance is in the form of a walker as previously explained. The chassis 10 is mounted on ball casters as designated at 20a, 20b, 20c, and 20d.

Frame structures are provided which support both a seat and a table. The two frames are best shown in FIG. 7. One of them is designated generally at 24 and the other at 24a. Frame member 24 is of tubular construction. It is U-shaped having a longer leg 26, a shorter leg 28, and a connecting part 30. Frame member 24a is of a similar construction. Numerical 34 designates a member which fits into the upright 16 in telescoping relationship. The upper end of the member 34 is secured to the longer arm 26 of the frame 24 for supporting it. The upright 34a is similarly secured to the arm 24a.

Numerical 40 designates a seat member which is rectangular as shown and which may be of any suitable construction, that is, it may comprise a filler material of suitable consistency covered by fabric or leather or the like. At the side edges of the seat 40 are metal plates, one of which is shown at 44 secured to the seat. In the plate 44, there is an elongated slot 46 having a plurality of lateral openings or notches as designated at 50. Slot 46 in the plate 44 cooperates with a pin 51 extending inwardly from the frame 24a. The construction in this respect is similar on opposite sides of the seat. On the inside of the leg 28 of frame 24, ther is secured a tubular member 50, and a similar member 50a is secured to the leg 28a of the frame 24a. Normally, the seat 40 rests on the members 50 and 50a, and the pins
referred to extending inwardly from the frames 24 and 24a are seated in the last of the notches 50c of the slots like the slot 46, thus, holding the seat in position. The seat may be lifted and moved backward with the extending pins sliding in the slots like the slot 46. Then the seat can be tilted to a vertical position as shown in Fig. 7 with the inwardly extending pins now seated in the notches such as shown at 54 in the plate 44 of FIG. 2. As previously described, the appliance is both a sitting and standing table/walker. The seat is adjustable in the manner described to allow the user to stand as will be described in more detail presently. As may be observed, the seat is adjustable forwardly and rearwardly by the plates as shown at 40.

FIG. 8 shows a strap holder 56 welded to frame member 30a to which is attached VELCRO strap 57 which is attachable to a similar strap on the opposite side.

Numerals 60 designates a tubular frame for a back rest. The frame 60 is rectilinear having top, bottom, and side members as shown. Secured between the side members is a back rest cushion 62 which may be of construction similar to that of the seat 40 comprising interior padding or stuffing material encased in a suitable covering of fabric, leather or the like. Numerals 64 designates a head rest in the form of a cushion having a configuration as shown including a recessed intermediate portion 66 as shown. The head rest cushion may be of any suitable construction similar to that of the seat 40 and the backrest 62. As shown, it is secured at its lower edge or bottom to a transverse bar 70 which in turn is secured to the frame 60. Numerals 72 designates a protective member or the like which may be provided over the backrest frame 60. The backrest frame 60 is secured to the frames 24 and 24a by means of securing such as rivets as designated at 72 in FIG. 1.

Numerals 76 designates a table of generally rectangular shape as may be seen in FIG. 1 made of suitable material which may be fiberglass. The inside edge is formed to provide a recess or cutout as shown in 78 to accommodate the person sitting or standing in the appliance. Around the edge of the table 76 is a raised bead or border 80 which may be provided or formed in any suitable manner such as by stamping of metal or other appropriate processes.

On the underside of the table 76 are provided guides or fittings such as shown at 82 and 82a in FIG. 6 adapted to suitably fit on and engage the legs 26 and 26a of the frames 24 and 24a. Two of these guide fittings are provided on each side of the table 76 whereby to allow it to slide forwardly and rearwardly—that is, towards and away from the seat 40 and backrest 62 to suitably accommodate it to use by the patient. The table 76 is adjustable both forwardly and rearwardly with respect to the seat 40 and backrest 62. The frames 24 and 24a along with the seat 40 and backrest 62 may be adjusted up and down with the members 34 and 34a moving within the telescoping members 16 and 18. This assembly may be set in any desired elevated position by the mechanism as shown in more detail in FIG. 3. As may be seen, the member 34a has a plurality of vertically spaced openings 90 in it. On the side of member 18 near its upper end are a pair of brackets 92 and 92a between which is pivoted a manual operating lever 94 which is pivoted on a pivot stem 96. The lever has an extending toe 100 adapted to engage in the openings 90. Similar setting levers are provided on both sides of the appliance. Thus, as may be seen, the assembly comprising the frames 24 and 24a, seat 40, backrest 62, and the the table 76 may be raised to any desired level and set at this level by way of the latching handles 94.

In addition to vertical adjustability of the seat, backrest, and table, the table is adjustable forwardly and rearwardly with respect to the seat, as previously described. Referring to the arm 26a, it has in it a plurality of spaced, aligned openings 106. The table may be set in any desired horizontal position by means of the mechanism shown in more detail in FIG. 4. Secured to the underside of the table 76 is an angle bracket 108 having an opening 110 in it. Attached to the bracket 108 at a position of opening 110 is a cylindrical fitting 112 having an extending part 114 of smaller diameter with a bevelled end surface 116. Numerals 120 designates another rotatable fitting having a bevelled end surface 122 cooperable with a surface 116. The fitting 120 may be rotated by manual operating handle 126. Extending from the fitting 120 is a stem 128 that extends through the opening 110 and may be fitted into any of the openings 106. As may be seen by rotation of the manual handle 126, the bevelled surfaces 116 and 122 cooperable to move the stem 128 axially so that it may be withdrawn and inserted into the openings 106 in any desired set position of the table. And thus, the table is secured in the set position.

FIG. 1 shows two side supports coming down from the table which come down on the sides of the patient's thighs. They support him in a sitting position so that he will not move sideways. Also in a standing position, they give him support. They are formed of sheet plastic having a shaping as shown and then they are attached underneath the table by wing screws as shown at 129 which extend through slots as shown at 131 to allow adjustability of the supports.

From the foregoing, those skilled in the art will readily understand the nature of the invention and the manner in which it achieves and realizes all of the objectives set forth in the foregoing. More particularly, it will be seen that the appliance is a walker which provides for both standing and sitting with appropriate adjustments of the level of the seat and the table and the position of the table to accommodate it to any circumstances attendant to the particular condition of the patient. The appliance is of simplified and economical construction and is of such nature and appearance to realize the ends as set forth in the foregoing of avoiding a hospital-like effect and/or depressing reaction on the part of the patient. Certain attachments may be provided for use with the appliance, the use of which is optional. The headrest 64 may be provided with or without respect to some patients, it may be desirable or necessary to provide stirrups for the feet with means for securing the feet to them. To accommodate this purpose, an attachment is provided in the form of a platform as designated at 140 having side walls, one of which is designated at 142 with outwardly extending flanges at the upper ends of the side walls as designated at 144 and 144a. These flanges fit on top of the frame members 12 and 14, and they have cutouts as designated at 146 and 146a to accommodate to the uprights 16 and 18.

The side walls of the platform structure 140 are deep enough so that the platform is at an appropriate level for the feet of the patient to rest on while sitting on the seat 40. Stirrups are provided to receive the back
part of the patient’s feet or heels and then the feet may be secured by straps as shown at 152 and 152a over the ankles. These straps may be secured by an suitable means such as being made of the material known as VELCRO which is of such construction that merely by pressing the strap ends together, they are held and secured. Numerals 154 and 154a designate brackets to receive the front part of the feet and again, the feet may be secured by similar straps 156 and 156a. As may be observed, the attachment is readily insertable and removable from the frame structure or chassis of the appliance so as to be used or not as desired.

Numeral 160 designates a further appliance in the form of a commode which includes a container or catch basin 162 over which is a platform 162 having a commode seat opening 166. The platform 164 is generally rectilinear with front cutouts or recesses 168 and 170 to accommodate the user’s legs. In use of the appliance 160, the seat 40 is folded back into the position as shown in FIG. 7 and the commode 160 is then inserted with the edges of the platform 164 supported on the support members 50 and 50a in the same manner as the seat 40 is supported.

The catch basin or container 162 can be made of metal or other suitable material. At upper side edges are lateral flanges 165 and 165a. Provided underneath the platform 164 are angle brackets forming rails as designated at 167 and 167a, adapted to receive flanges 165 and 165a permitting the catch basin to be slid into and out of position. Adjacent to the side edges of the platform 164 is another pair of angle members or brackets as shown at 169 and 169a. When in use, the commode, seat 40 is folded or tilted back into the position as shown in FIG. 7. The commode is inserted into position from the side. The side edges of the platform 164 come into position resting on the tubular supports 50 and 50a with the angle brackets 169 and 169a adjacent to these tubular supports and with the front corners of platform 164 directly behind the uprights 16 and 18.

A further appliance is designated at 172 in the form of an abduction seat. This attachment comprises a pair of members having a shape as shown at 174 and 174a which are parallel to each other and preferably may be of trapezoidal shape as shown, the narrower sides being connected or joined by a web 176. Spacing of the plates 174 and 174a is such that the attachment can simply be slipped over the seat or seat cushion 40 so then a firm, rigid seat surface is provided with the patient’s legs being on either side of the web 176.

The abduction seat is a device or appliance, the purpose of which is to keep the patient’s knees separated a certain amount since otherwise, the patient may be subject to a hip deformity. In the past, chairs have been provided with rigid members to keep the patient knees separated but such devices have not been adjustable. With respect to the herein abduction seat 172 as described, it is adjustable in and out with respect to the seat 40. Thus, by reason of the tapered side edges, this simple adjustment provides for varying the spacing maintained between the patient’s knees, that is, the distance that they are held apart. In a preferred form of the abduction seat as shown, it may be made from a single, integral piece of metal with the top surface 174 covered with the cushion made of foam rubber, for example. Other alternative constructions can of course be resorted to in the construction of the abduction seat. It may be formed simply from strips of spring metal at the edges of the seat as shown with cushioning material such as foam rubber between the members, the foam rubber of course resting on the seat 40 when the abduction seat is in position. Spaced cutouts may be provided along both side edges of the abduction seat to receive or accommodate the patient’s legs when the abduction seat is in position. That is, there would be a pair of cutouts formed in the abduction seat to accommodate the patient’s legs in each adjusted position of the seat inwardly and outwardly with respect to the seat 40.

From the foregoing, those skilled in the art will readily understand the utilization of the attachments as described herein.

The foregoing disclosure is representative of a preferred form of the invention and is to be interpreted in an illustrative rather than a limiting sense, the invention to be accorded the full scope of the claims appended hereto.

1 claim:

1. A therapeutic appliance comprising:
a frame having an open bottom portion mounted on casters;
upright frame members extending upwardly from said bottom portion;
a unitary secondary frame vertically adjustable on said upright frame members and having mounted thereon, a generally upright seat back, a generally horizontal seat on said unitary secondary frame extending forwardly from adjacent the bottom of said seat back, a table on said secondary frame above and forwardly of said seat and adjustable toward and away from the seat back and having a cut-out at its edge nearest said seat back;
said seat being mounted on said secondary frame for fore-and-aft sliding adjustment below said bottom of said seat back and for pivotal movement from said generally horizontal position to a generally vertical position closely adjacent, below and coplanar with said seat back about an axis intermediate the front and rear edges of said seat; and a removable platform selectively positionable within the frame for supporting the user’s feet.

2. An appliance as in claim 1, including supports depending from the table adjacent said cut-out adapted to be engaged by and to give support to the thighs of the user.

3. An appliance as in claim 1, wherein said upright members are positioned at an intermediate point of said frame, said secondary frame extending forwardly and rearwardly therefrom.

4. An appliance as in claim 1, wherein the seat comprises members having slots carried by the seat, said secondary frame having pins engageable in the slots to allow translation and tilting of the seat.