

United States Patent

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[54] ORTHOPEDIC DEVICE
5 Claims, 8 Drawing Figs.

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297/130, 297/254; 128/80; 280/47.25

[51] Int. Cl...... **A47c 1/08**

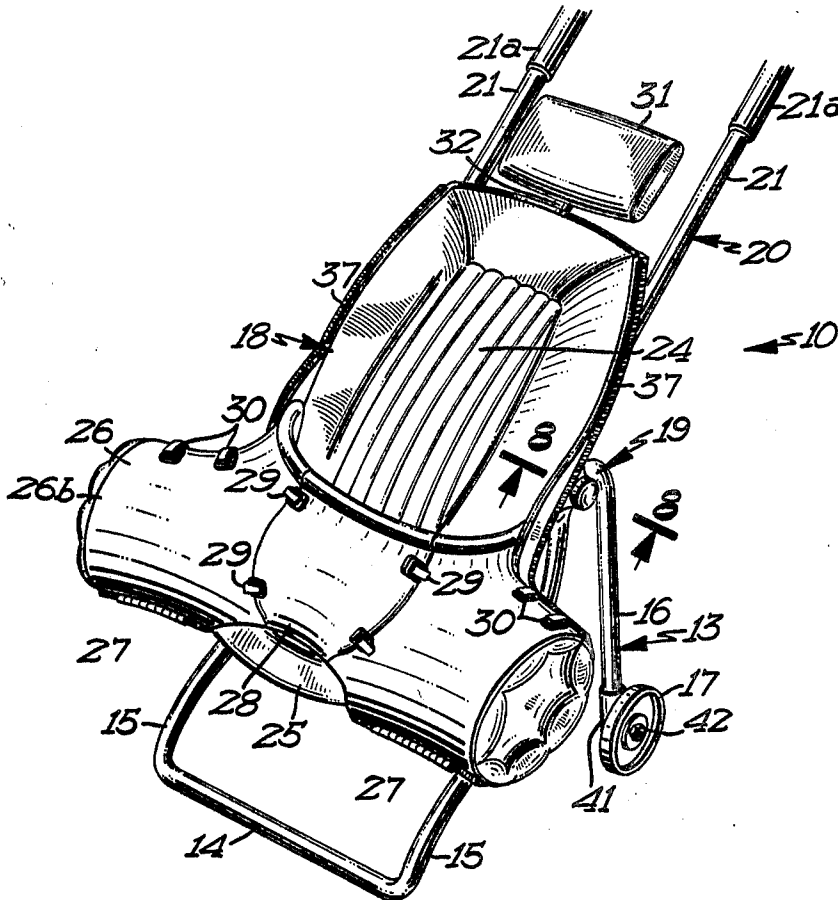
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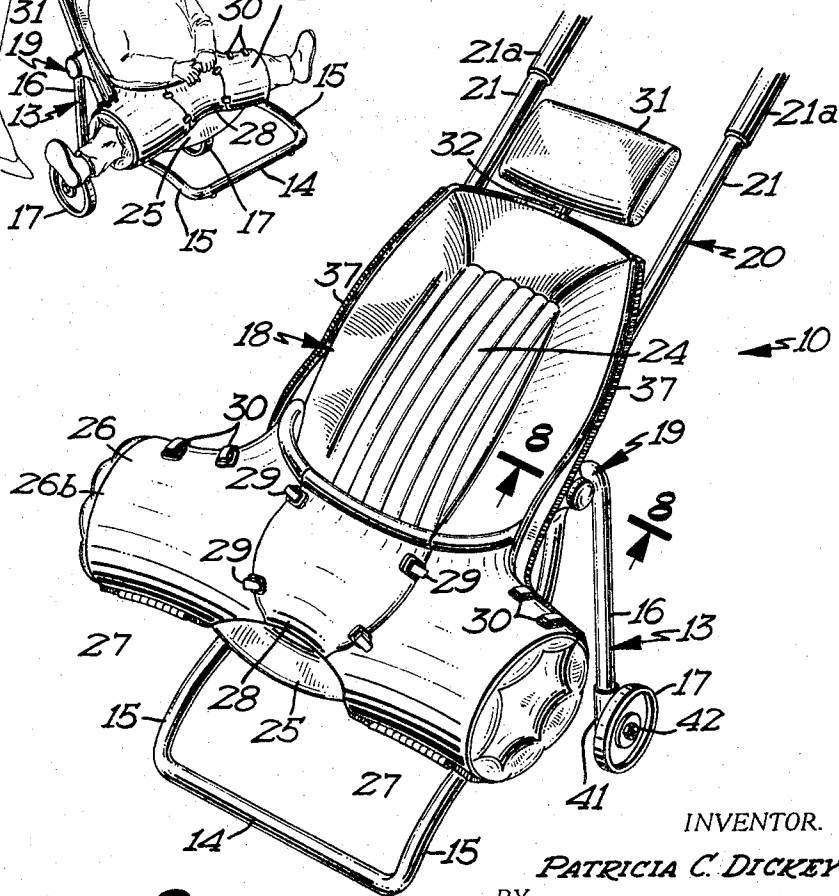
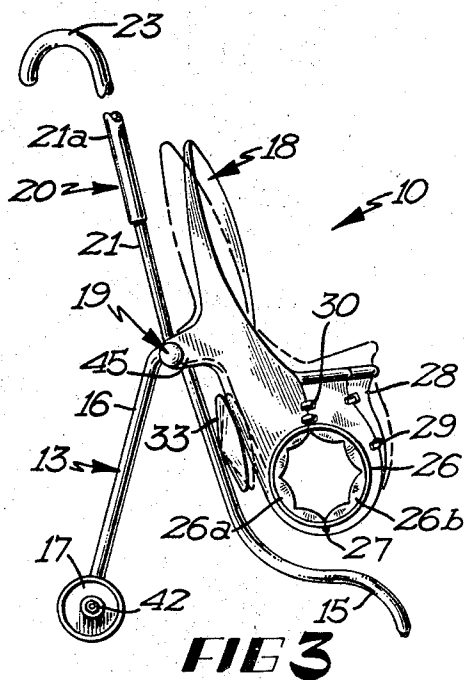
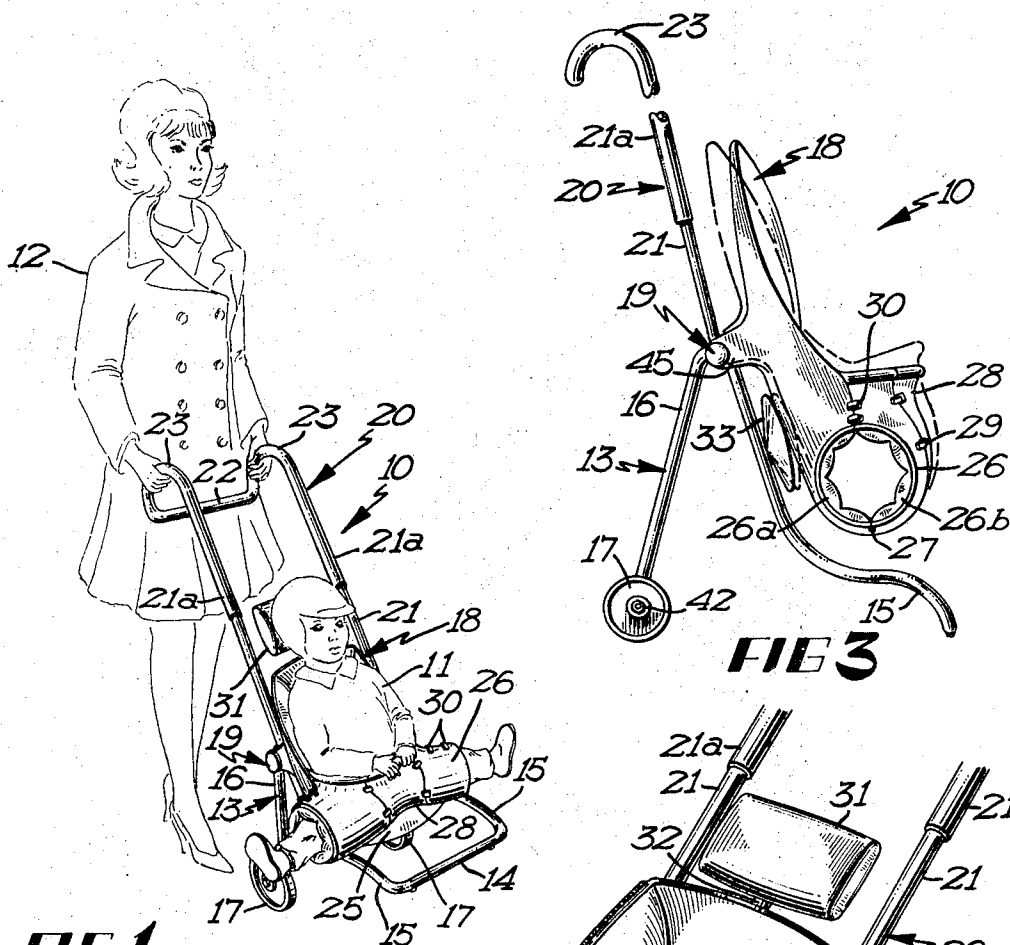
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ABSTRACT: An orthopedic device adapted for handling of a child confined within a Spigi cast or Frejka pillow splint providing the handler of the child with ease and convenience and providing the child with a proper amount of support and adequate comfort, the orthopedic device having provision for use as an infant seat, a car seat, a stroller, a bed and a jumper.





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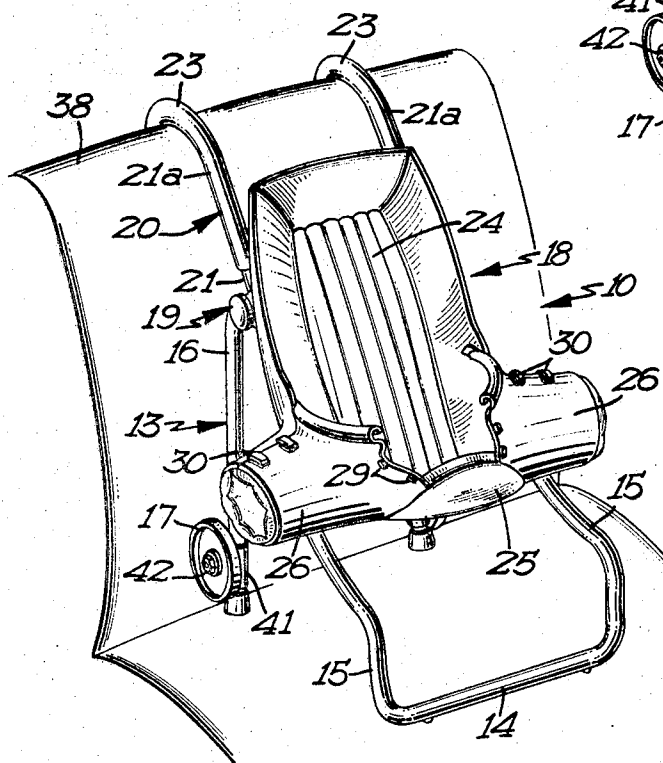
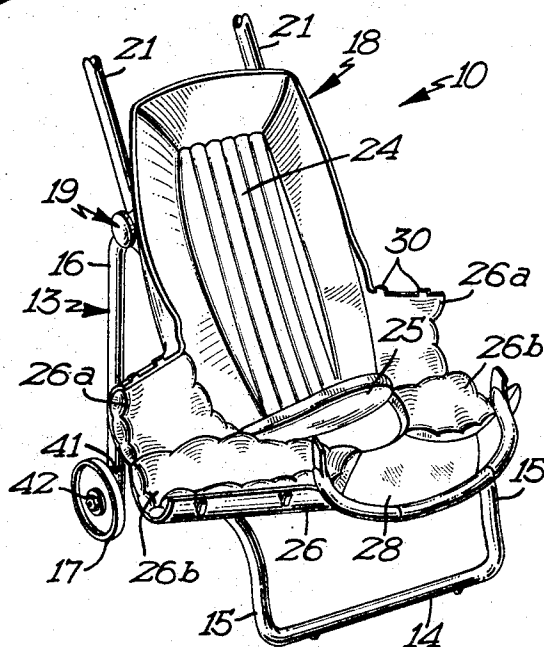
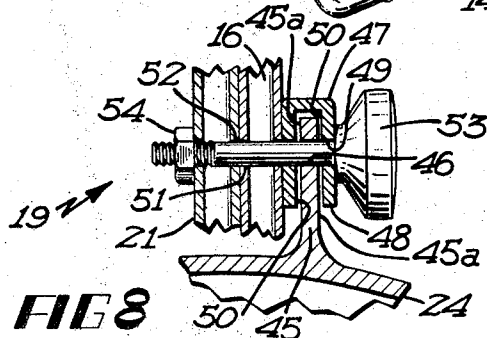
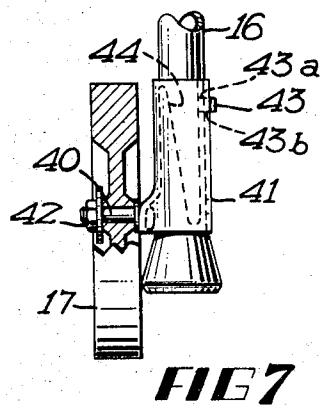
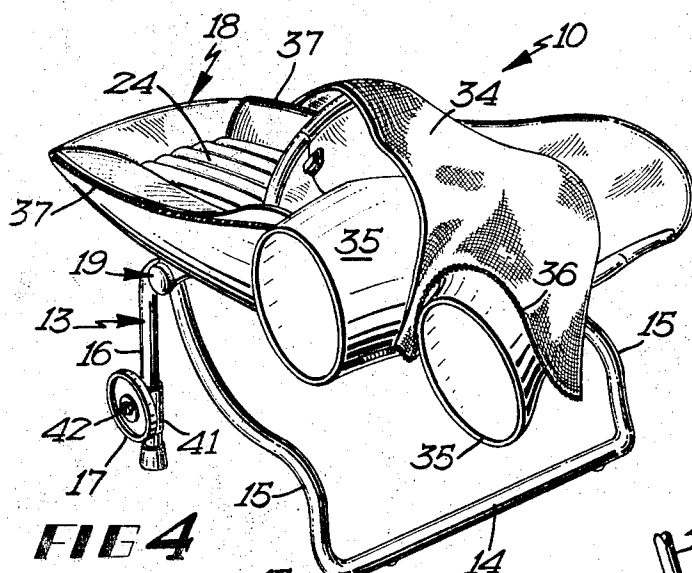


FIG 5

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ORTHOPEDIC DEVICE

BACKGROUND OF THE INVENTION

This invention relates to a device for handling incapacitated children or children in casts of various sorts, and more particularly, relates to an orthopedic device adapted to handle a child casted in a predetermined position and yet allow the handler of the child a maximum of ease in manipulating the child throughout a typical day, while providing the child with proper support and a great deal of comfort even though confined in a cast.

Many children are born with what is termed a "congenital hip." Medical practitioners are becoming more alert to this type of problem and a greater percentage of hip disorders are being detected and treated. Although there are several congenital disorders which would require the use of the orthopedic device of this invention, attention will be directed to the hip disorder commonly called the congenital hip, wherein either or both of the meeting parts of the hip joint are defective or do not meet. This particular disorder appears to be hereditary and statistics have indicated that 100 of every 600 children born have a hip disorder in some degree.

The hip disorder is treated by providing a Spica cast or a Frejka pillow splint. The child is placed, from approximately at birth to age 8 to 12 months, in a cast which typically begins at the waist or chest and continues to above the knees. The cast is used regardless of the side on which the disorder is located. A new cast is provided at approximately five week intervals. The cast urges the legs outwardly of the trunk, and substantially perpendicular thereto, in a fashion such that the child may lie only on its back or on its front. The cast is provided with an opening whereby the child may relieve itself; typically the opening is "stuffed" with a diaper. Obviously, a child confined in a cast of the type herein described is singularly unmanageable for its mother or father. The weight of the child is greatly increased by the addition of the cast and the child cannot so much as roll over to vary its position and obtain corresponding comfort. The child cannot be conveniently maneuvered from place-to-place within a home or on a shopping trip. The child cannot be managed in an automobile and the child cannot sit in a high chair of conventional design. Strollers, car seats, beds or cribs, which are presently commercially available cannot conveniently accommodate a youngster in a cast such as the one described herein.

With these comments in mind, it is to the elimination of these and other disadvantages to which the present invention is directed, along with the inclusion therein of other novel and desirable features.

An object of my invention is to provide an orthopedic device of simple and inexpensive construction and operation.

Another object of my invention is to provide a new and novel orthopedic device for receiving a child confined in a Spica cast, Frejka splint or the like, providing the child with maximum comfort and providing the parents with maximum ease in handling the child throughout a typical day.

Still another object of my invention is the provision of an orthopedic device which can be utilized as a car seat, a stroller, an infant seat, a crib and a jumper, satisfying a child's needs throughout a typical day and obviating the need for such items as a custom made highchair, infant seat, car seat, crib, stroller or jumper.

A further object of my invention is the provision of an orthopedic device which will accommodate a child at birth and into which a child may grow, up to the age of approximately 8 to 12 months, yet providing the child with comfort throughout this growing period.

A still further object of my invention is the provision of an orthopedic device which conveniently and easily receives a child within a cast and allows the handler of the child ease in "changing" the child without disturbing the comfort of the confined child.

An additional object of my invention is the provision of an orthopedic device which is so constructed to cradle and support a child confined within a cast easing the discomfort which would otherwise be experienced by the child.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same or similar parts throughout the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of the orthopedic device of my invention showing a child retained therein, the device shown as a stroller with the child's mother pushing it;

FIG. 2 is an enlarged perspective view of the orthopedic device shown as a stroller and without a child therein;

FIG. 3 is a side view which shows the shock absorbing action of the seat relative to the framework portion with the limits of movement being represented in one position by the dotted lines and in the other position by the solid lines of the seat;

FIG. 4 shows the orthopedic device with a readily detachable covering means thereon, the device in position for allowing the child to sleep and showing the wheels raised;

FIG. 5 shows the orthopedic device as a car seat with the wheels raised and the device mounted on a car seat with the diaper access open;

FIG. 6 shows the orthopedic device with the child retaining portion open ready to receive a child;

FIG. 7 is a partial enlarged view showing a wheel construction;

FIG. 8 is an enlarged sectional view taken along the line 8-8 of FIG. 2.

DESCRIPTION OF A PREFERRED EMBODIMENT

The orthopedic device of my invention is shown, in general, in FIG. 1 in use as a stroller and is indicated by numeral 10. A child 11 with cast 11a is shown positioned and retained in orthopedic device 10 and the child's mother is indicated at 12 pushing the orthopedic device in the stroller form.

The orthopedic device comprises a seat supporting structure or framework 13 made of formed tubular material, such as aluminum or metal tubing. The tubing formed in such a way as to provide a transverse element 14, a pair of substantially parallel and opposed connecting elements 15 extending from the transverse member at each end thereof substantially in a generally upwardly direction, and a pair of substantially parallel and opposed leg elements 16, which extend downwardly from each of the pair of connecting elements 15. A pair of wheels 17 are slidably mounted on the generally upright leg members. A seat 18 includes a pair of connecting assemblies 19 having a portion thereof affixed to seat 18, assembly 19 adapted to receive the seat supporting structure 13 for pivotal movement thereon. Handle member 20 joins seat supporting structure 13 at connection assembly 19 and comprises a pair of substantially parallel and opposed elongate tubular elements 21; and an extensible handle portion 21a having parallel telescoping tubes slidably mounted on parallel elements 21. Referring to FIG. 1, handle member 20 includes a transverse element 22 joining the parallel elements 21a which are formed to provide hook elements 23 at the top portion thereof.

It should be noted that the parallel extensible handle elements 21a are slidable on parallel elements 21 and may be positioned thereon at predetermined intervals in any well-known commercial method.

Seat or seat member 18 comprises a backrest portion 24, a seat portion 25 and a pair of outwardly projecting opposed leg retaining portions 26. Referring to FIG. 6, leg retaining portion 26 is shown in the open position adapted to receive a child. They each include a rear element 26a and a front element 26b. The front elements 26b are hingedly connected to the rear elements 26a along a pair of hinges 27.

Seat 18 may be constructed of, for example, a rotationally cast polyethylene material. A vinyl covering with padding material of phenolic beads between the cast polyethylene and vinyl provides a formfitting seat. In this construction the phenolic beads retained between the vinyl cover and the polyethylene rigid backing may "flow" and shape to the child positioned in the seat. The growth of the child urges the beads to reposition to properly support the child as it grows. Of course, other materials may be used to form the seat and those suggested are for illustrative purposes only.

Referring now to FIG. 2, a removable access or diaper panel 28 is provided and is securely affixed to the front leg retaining elements 26 by commercially available latches 29. Loosening of latches 29 frees access panel 28 from leg retaining members 26 allowing the handler of the child to change its diapers without the need for removing the child from the seat 18. The front leg retaining elements 26b are secured to the rear leg retaining elements 26a by commercially available latches 30. This secures the child within the seat, properly positioning his legs outright and supporting the child within the cast. It should be noted that the padding material selected should conform to the cast and snugly enclose the child with the cast thereon within the seat thereby providing optimum comfort. A headrest 31 is provided and is adjustable longitudinally to accommodate the child as it grows. The headrest is attached to a tubular member 32, which in turn is slidably mounted on the rear side of the backrest 24 in any well-known way.

Referring now to FIG. 3, it may be seen that seat 18 is pivotally mounted at connection assembly 19 in such a way that limited rotational movement about a transverse axis is provided relative to seat supporting structure 13. A pair of commercially available leaf type spring mechanisms 33 joining the parallel connecting elements 15 of seat supporting structure 13 with the backrest 24 of seat 18 on the rear side thereof. Spring elements 33 urge the seat in a predetermined position yet allow the seat to pivot about connection 19 in such a way that shocks to the child retained within the seat are absorbed. This greatly adds to the comfort of the child, particularly when the device is used as a stroller or a car seat. Further, the provision of spring 33 results in a suspension of seat 18 on seat supporting structure 13 such that the child may "bounce" by urging rapid pivoting of seat 18 about connection 19, contributing to the entertainment of the otherwise rigidly confined child. Spring 13 may be any commercially available spring attached to frame elements 15 and back member 24 in any suitable member.

Referring now to FIG. 4 the orthopedic device of my invention is shown in position for use as a bed or a crib. Obviously, it is not necessary and in fact difficult, to provide a crib for a child which is confined in a cast of the type described herein. The child cannot turn so it is immaterial to the child as to the crib style; and conventional cribs make handling of the confined child very difficult. FIG. 4 shows handle 20 removed from connection 19 and seat 18 pivoted on connection 19 to position the backrest 24 in a substantially horizontal position. (The connection 19 is shown in detail hereinafter.) Note that wheels 17 have been moved upwardly along parallel leg elements 16 providing additional security to the child when the orthopedic device 10 is used as a bed. A cover 34 is provided and includes a pair of leg and foot receiving covers or caps 35 which are adapted to enclose the outwardly projecting opposed leg retaining members 26. Cover 34 is provided with separable fastener portion 36 along the sides thereof, which mates with separable fastener portion 37 positioned on each side of backrest 24. This securely covers a child sleeping in the orthopedic device and further provides means to warmly enclose a child in the device when the device is used as a stroller or a car seat.

As shown in FIG. 5, orthopedic device 10 is in position located on car seat 38 and is securely attached thereto. Handle elements 21 and 21a are shown in telescoped relation and hook portions 23 are gripping the backrest of car seat 38. Handle elements 21 and leg elements 16 may be arranged and secured at connection 19 in such a way that legs 16 are urged

against seat 38 to provide a secure supporting framework configuration for seat 18. Seat 18 pivots at connection 19 to provide optimum comfort for the child riding therein.

It should be noted that FIG. 5 shows access panel 28 (FIG. 2) removed therefrom for access to the child to change its diaper. This may be done without disturbing the security of the child within the orthopedic device.

Referring now to FIG. 7, wheel 17 is shown attached to leg member 16. Wheel 17 rotates about axle 40, which is secured to cylinder or sleeve 41 and projects outwardly therefrom. Cylinder 41 is slidably mounted on upright leg element 16. Wheel retaining nut 42 is threaded on axle 40. Release button 43 is urged outwardly by spring element 44 projecting the release button 43 through opening (43a) in leg 16 and opening 43b in sleeve 41 which is in registry with opening 43a. An additional opening to receive button 43 is spaced along upright element 16 to allow retracting of wheel 17 therealong.

One of the pair of connections 19 is shown in detail in FIG. 8. Bracket 45 projects outwardly and rearwardly from backrest 24 and may be integral therewith. Bracket 45 includes outer surfaces 45a and transverse opening 46. Alternately, bracket 45 may be of a metal type bolted in a conventional manner to the backrest. When the device is used as a stroller or a car seat, a slotted U-shaped rigid spacer bracket 47 straddles bracket 45, providing a space between bracket 47 and bracket 45. Bracket 47 includes parallel legs 48, having slots 49 therein. Legs 48 have inner surfaces 50 positioned in opposed relation to the outer surfaces 45a of bracket 45 and spaced apart a distance greater than the thickness of bracket 45, allowing pivoting of bracket 45 relative to bracket 47 when connection 19 is assembled or disclosed hereinbelow.

Leg 16, having opening 51 therein, and handle element 21, having opening 52 therein, are placed side by side in such a way that slots 49, opening 46, and openings 51 and 52 are in registry to receive a bolt 53 projecting therethrough. A wing nut 54, when tightened on bolt 53, secures bracket 47, leg 16, and handle element 21 in nonrotative alignment. However, it should be noted that the space between bracket 47 and bracket 45 is not lessened by the tightening of the nut and bolt and, therefore, bracket 45 may pivot on bolt 53 at opening 46. In this way seat 18 may be shock absorbing since bolt 53 acts as an axle on which shiftable movement of seat member takes place, biased by spring mechanism 33.

As such time as the child's handler may desire to position the device for use as a bed, wing nut 54 is loosened and U-shaped bracket 47 is removed. Seat 18 is then repositioned horizontally and, with bracket 47 removed, wing nut 54 is tightened, urging bracket 45 into nonrotative contact with leg 16 and handle element 21. Of course, before seat 18 may be pivoted on bolt 53, spring 33 must be disassembled from connecting element 15.

From the foregoing it will be seen that I have provided a new and improved orthopedic device which provides for the efficient and convenient handling of a child confined in a Spica cast or a Frejka pillow. The device may be readily converted from a stroller to a car seat or to a crib and provides maximum comfort for the child, including a shock absorbing feature which provides the child with added comfort and entertainment. The device is so constructed as to allow ease in changing a child and manipulating a child from place-to-place as well as caring for the child during a typical day.

The operation of my device is such that the mother of the child can readily prepare the device for receiving the child or for removing the child therefrom as well as converting the device from one configuration to an alternate configuration. In placing a child in the device, the leg retaining members 26 are opened along hinge 27. This may be done by unlatching of latches 30. The infant's legs project from its cast outwardly in the leg retaining members and are comfortably cradled therein. As the child grows or shifts within the device, the phenolic beads flow to properly support the child. The child may be additionally comforted by the headrest which is adjustable providing for the growth of the child. In changing the

child, access panel 28 is removed by the unlatching of latches 29 and the child may be changed without the need for taking the child from seat 18.

In converting the device from a stroller to a car seat, wheels 17 may be raised by depressing button 43 and sliding cylinder 41 upwardly on legs 16, retracting the wheels. Next, handle portions 21a are telescoped on elements 21 to the desired position and hook 23 may then be placed over the backrest of the automobile cushion. In the event that the seat is not angulated properly relative to the car seat, bolt 53 may be loosened and handle element 21 repositioned relative to leg 16 to achieve the desired position of the seat 18 relative to the car seat. At this position bolt 53 is then tightened.

In converting the orthopedic device from a stroller or car seat to a bed, bolt 53 is loosened and bracket 47 is removed from connection assembly 19. With bracket 19 removed, seat 18 may no longer pivot at connection 19 and then it may be resecured in the horizontal position. The spring 33 which provides the shock absorbing feature is removed from the backrest or from connecting element 15 before the seat is repositioned relative to the supporting structure 13.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts of my orthopedic device without departing from the scope of my invention.

I claim:

1. An orthopedic device for handling of a child confined within a Spica cast or the like, said device comprising:
 - a seat member supporting structure, said structure having a plurality of ground engaging leg elements, and mounting means adapted to receive a seat member;
 - a seat member mounted on said seat supporting structure, said seat member having a backrest portion, a seat portion affixed to the backrest portion projecting substantially outwardly and forwardly therefrom;
 - a pair of opposed leg retaining portions affixed to the backrest portion and projecting outwardly and sidewardly from each side thereof whereby the legs of a child confined in a Spica cast or the like are retained in a position projecting outwardly from the sides of the trunk of the child, each of the leg retaining portions having;
 - a rear portion and a front portion hingedly connected in such a way as to provide an opening whereby a child may be inserted in said device at such times as the front and rear portions are opened and whereby a child may be supported in the pair of opposed leg retaining portions at such times as the front and rear portions are closed;
 - detachable latching means affixed to said front and rear portions whereby they may be secured in the closed position; and
 - a spring mechanism detachably connecting said seat member supporting structure and said seat member, the spring mechanism biasing said seat member in a predetermined position relative to said seat member supporting structure and absorbing impact from shock loads between said seat member supporting structure and said seat member.
2. The orthopedic device of claim 1 wherein:
 - the mounting means adapted to connect said seat member and said seat member supporting structure includes;
 - a pair of bracket element affixed to the backrest of said seat member projecting outwardly and rearwardly therefrom, each of the bracket elements having a transverse opening therethrough;
 - a pair of substantially U-shaped rigid spacer brackets, each positioned to straddle a corresponding backrest bracket and having transverse slotted opening positioned in registry

try with the transverse opening in the respective backrest bracket element, and wherein;

each of a pair of the plurality of ground engaging leg elements includes a transverse opening therethrough positioned in registry with the openings in the spacer bracket and backrest bracket and including;

a bolt assembly for each bracket having the bolt positioned through the openings in the bracket element, spacer bracket and ground engaging leg element and a nut tightened on the bolt to secure said seat member to said supporting structure and provide shiftable movement of said seat member thereon about a transverse axle provided by each of the bolts.

3. The orthopedic device of claim 2 including:

a handle member, said handle member having;

a pair of substantially parallel handle elements having transverse openings at the ends thereof, each of the elements positioned at corresponding backrest bracket elements and having the openings thereof in registry with the openings of the backrest bracket elements, spacer bracket openings and ground engaging leg element openings; and

the handle elements positioned in predetermined relation relative to the pair of ground engaging leg elements and secured to said seat member supporting structure by the bolt assemblies.

4. An orthopedic device for handling of a child confined within a Spica cast or the like, said device comprising;

a seat member supporting structure, said structure having a plurality of ground engaging leg elements, and mounting means adapted to receive a seat member; and

a seat member mounted on said seat supporting structure, said seat member having a rigid backrest portion;

a rigid seat portion affixed to the backrest portion projecting substantially outwardly and forwardly therefrom;

a flexible covering material securing to the backrest portion and the seat portion of said seat member;

a granular material sandwiched between the backrest and seat portions and the flexible covering material therefor whereby said seat member conforms to a child confined in said seat member;

a pair of opposed leg retaining portions affixed to the backrest portion and projecting outwardly and sidewardly from each side thereof whereby the legs of a child confined in a Spica cast or the like are retained in a position projecting outwardly from the sides of the trunk of the child, each of the leg retaining portions having a rear portion and a front portion hingedly connected in such a way as to provide an opening whereby a child may be inserted in said device at such times as the front and rear portions are opened and whereby a child may be supported in the pair of opposed leg retaining portions at such times as the front and rear portions are closed; and

detachable latching means affixed to said front and rear portions whereby they may be secured in the closed position.

5. The orthopedic device of claim 4 wherein each of the pair of opposed leg retaining portions comprises:

a rigid rear leg retaining portion,

a rigid front leg retaining portion,

a flexible covering material secured to the front and rear leg retaining portions; and

a granular material sandwiched between the rigid front and rear leg retaining portions and the corresponding flexible covering therefor whereby each of the leg retaining portions conforms to a child confined in said seat member.