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ORTHOPEDIC DEVICE FOR PATIENT WITH IMMOBILIZED LEGS

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FIG. 1

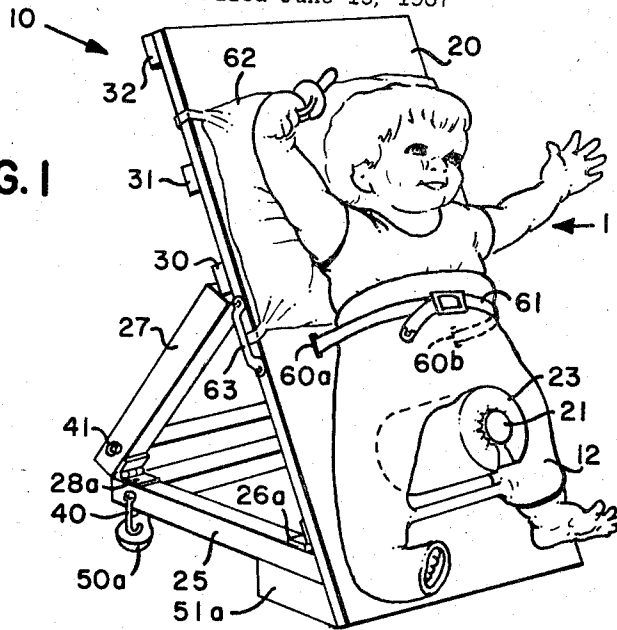


FIG. 2

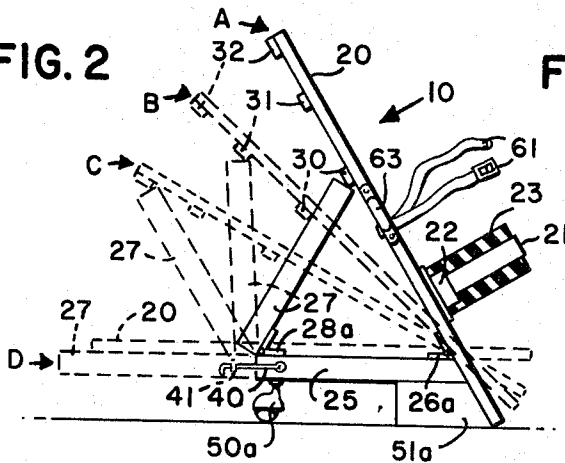


FIG. 3

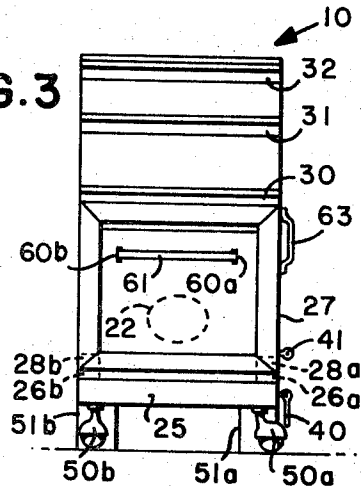


FIG. 4

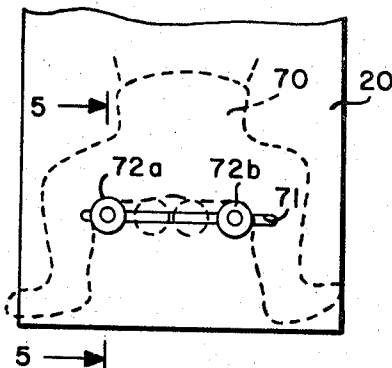
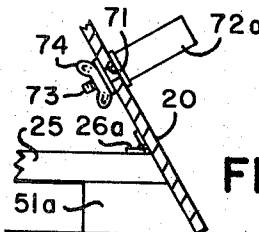


FIG. 5



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## ORTHOPEDIC DEVICE FOR PATIENT WITH IMMOBILIZED LEGS

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14 Claims

### ABSTRACT OF THE DISCLOSURE

An orthopedic device for supporting a patient whose legs are immobilized by a cast. The patient is supported on a platform by means of one or more padded posts which project from the platform and engage the cast in hanging relationship. The platform is secured by hinges to a base frame, and the base frame is secured by hinges to a rotating frame. The angle of inclination for the platform is established by engaging the free end of the rotating frame in one of a plurality of stop structures on the back of the platform. A pair of wheels attached to the bottom of the base frame permits the patient to be moved with the orthopedic device. A pair of blocks attached to the bottom of the base frame gives additional support to the inclined platform when it is in position of approximately 60° with respect to the horizontal, this being the most advantageous position for the patient to observe his environment and use his hands. The rotating frame may be locked in horizontal alignment with the base frame with the platform resting on top of these two frames for purposes of placing the patient in a reclining position for moving and storing the orthopedic device.

The present invention relates to an orthopedic device for comfortably supporting a patient whose legs are immobilized by a cast.

Although this invention is generally useful for all such patients, it has been found particularly useful for children who have undergone surgery for congenital deformities. Heretofore, it has been common practice to place such children in a prone position in which their activity is greatly restricted for a long period of time. This frequently results in added physical discomfort and in the retardation of normal maturation and learning processes.

One object of the present invention is the provision of an orthopedic device which comfortably supports a patient with immobilized legs in an inclined position in which the patient can eat, observe his environment, and have his arms free for normal activities.

Another object of the present invention is the provision of an orthopedic device for a patient with immobilized legs which is readily portable, both with and without the patient.

Still another object of the present invention is the provision of an orthopedic device for supporting a patient with immobilized legs in an inclined position which can be varied.

These and other objects are attained, in accordance with the present invention, by an orthopedic device comprising an inclined platform member and means projecting from said platform member for supporting the leg cast in hanging relationship.

The various features and advantages of the present invention will become more apparent upon a consideration of the following description taken in connection with the accompanying drawing, wherein:

FIGURE 1 is a perspective view of an orthopedic de-

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vice embodying the present invention shown as supporting a child incased in one type of bilateral hip spica cast;

FIGURE 2 is a reduced side elevational view, partly in cross-section, of the orthopedic device illustrated in FIGURE 1, showing the outline of the parts for different positions of adjustment in dashed lines;

FIGURE 3 is a rear view of the orthopedic device shown in FIGURE 1;

FIGURE 4 is a fragmentary elevational view of a modification to the orthopedic device of FIGURE 1 for use in supporting a child incased in a different type of bilateral hip spica case; and

FIGURE 5 is a cross-sectional view taken along line 5-5 in FIGURE 4.

Referring to FIGURES 1, 2 and 3, there is shown an orthopedic device 10 for supporting a patient 11 whose legs are incased in a bilateral hip spica cast 12. The cast 12 is of a well-known type which is applied in orthopedic surgery with the affected right hip of the patient 11 in extension, abduction and internal rotation. This position is commonly used to maintain correction after open reduction of congenital dislocation of the hip.

The device 10 comprises an inclined platform 20, for example a wooden board, having a metal pipe or post 21 projecting perpendicularly therefrom, said post or pipe 21 being secured in the platform 20 by means of a pipe flange 22 fastened to the board 20. The pipe 21 is covered by a foam rubber pad 23.

The platform 20 is supported in position by a structure comprising a first rectangular frame 25 joined to the platform 20 by a pair of hinges 26a and 26b, and a second rectangular frame 27 joined to the frame 25 by a pair of hinges 28a and 28b.

Three spaced-apart projecting strips 30, 31 and 32, transversely running the width of the platform 20, are secured to the rear of the platform 20, and constitute stop structures for the frame 27. The frame 27 is rotated about the hinges 28a and 28b, and the platform 20 is rotated about the hinges 26a and 26b, to four fixed positions, A, B, C, and D as shown in FIGURE 2. In position A, shown in solid lines, the strip 30 rests on the outer edge of the frame 27. In positions B and C, shown in dashed lines, strips 31 and 32, respectively, rest on the outer edge of the frame 27. And in position D, also shown in dashed lines, the hinges 28a and 28b are fully opened with the frame 27 in a horizontal position in alignment with the frame 25, and the hinges 26a and 26b are fully closed with the platform 20 supported in a horizontal position on top of the frames 25 and 27. The device 10 may be locked in the horizontal position D by a hook 40 secured to the frame 25 and an eye 41 secured to the frame 27.

The device 10 is carried by a pair of wheels 50a and 50b secured to the bottom of the frame 27 below the hinges 28a and 28b, respectively, and by a pair of blocks 51a and 51b secured to the bottom of the frame 25 below the hinges 26a and 26b, respectively. The front edges of the blocks 51a and 51b are beveled so as to conform to the platform 20 when in position A (FIGURE 2), and thereby provide additional support for the platform when in this position.

The platform 20 has two horizontally aligned slots 60a and 60b therethrough for receiving a safety belt 61. Means may be provided for adjusting the position of the belt 61 for fitting individual patients. A pillow 62 is also strapped to the platform 20 to provide a comfortable support for the back and head of the patient 11.

In use, the platform 20 of FIGURES 1, 2 and 3 is secured in position A (FIGURE 2) and the patient 11 is placed on the platform so that the cast 12 actually hangs on the padded pipe or post 21. The post 21 thereby

supports the patient 11 at the bifurcation or crotch of the cast 12, but does not directly contact the patient. The patient is then secured against rotation about the post 21, and also from falling forward, by attaching the safety belt 61 around the waist.

The dimensions of the device 10 are chosen so that in position A (FIGURE 2), the platform 20 is inclined at an angle of approximately 60° to the horizontal. In this position, the patient is supported without the feeling of falling forward and without the fatigue of an unsupported perpendicular stance. This position is such that the patient may observe television and other environmental activities and, since his arms are free, he may engage in such normal activities as holding and moving objects, reading, studying, drawing and writing. The patient may be readily moved from place to place in the orthopedic device 10 by means of the wheels 50a and 50b. The patient may be safely placed in a reclining position by gradually changing positions (FIGURE 2) from position B to position C to position D.

In order to remove and store the device 10, it is placed in the horizontal position D (FIGURE 2) and the frame 25 is locked to the frame 27 by inserting the hook 40 into the eye 41. The post 21 is removed from the flange 22, and the device 10 is carried by means of a handle 63 attached to the side of the platform 20.

FIGURES 4 and 5 illustrate a modification for supporting a patient whose legs are incased in a bilateral hip cast 70 (shown in dashed lines) which is of the well-known type applied in the "frog-leg" position of 90° of abduction, 90° of external rotation and 90° of flexion. The platform 20 has a transversely extending slot 71 for supporting a pair of padded posts 72a and 72b. Each post 72a and 72b has a threaded stud 73 attached to the rear thereof and extending through the slot 71. A wing nut 74 threads onto each of the studs 73 so as to secure the transverse position of the posts 72a and 72b.

In use, the patient is placed on the platform 20 of FIGURES 4 and 5 so that the cast 70 hangs on the posts 72a and 72b, which posts support the patient at the knee bend positions of the cast 70. The position of the posts 72a and 72b are adjusted in the slot 71 so as to precisely fit each individual cast 70. In other respects, the use is the same as that described with reference to FIGURES 1, 2 and 3.

It is apparent from the foregoing that one of the advantages of the present invention is the ability to provide a portable apparatus.

It is to be understood that modifications and variations of the embodiments of the invention disclosed herein may be resorted to without departing from the spirit of the invention and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. An orthopedic device for supporting a patient whose legs are immobilized by a cast comprising a platform, means projecting upwardly from said platform for supporting said cast in hanging relationship with said means, an adjustable frame connected to the underside of said platform for supporting said platform at an acute angle with respect to the horizontal, said frame comprising a horizontal section connected to said platform and projecting rearwardly therefrom and a pivotal section interconnecting the rearward portion of said horizontal section with the underside of said platform at a location above the connection between said horizontal section and said platform, said pivotal section being connected to the underside of said platform at adjusted distances therealong, and supporting surface engaging wheels mounted on said frame adjacent the interconnection between said horizontal section and said pivotal section of said frame, said wheels being spaced apart in a transverse direction with respect to said platform.

2. An orthopedic device according to claim 1 in which said acute angle is approximately 60°.

3. An orthopedic device according to claim 1 wherein said frame is arranged for varying the angle of said platform through a range from said acute angle to a horizontal position.

4. An orthopedic device according to claim 1 wherein said projecting means comprises a padded post adapted to receive a bifurcation of said cast.

5. An orthopedic device according to claim 1 wherein said projecting means includes a plurality of padded posts adapted to receive knee bend positions of said cast.

6. An orthopedic device according to claim 5 including means for varying the spacing between said padded posts in order to adapt said posts to individual casts of different dimensions.

7. An orthopedic device for supporting a patient whose legs are immobilized by a cast comprising a platform member, means projecting from said platform member for supporting said cast in hanging relationship with said means, means for supporting said platform member at an acute angle with respect to the horizontal, a plurality of spaced-apart stop structures on the back of said platform member, said supporting means comprises a horizontally-disposed frame member, said supporting means comprises a pivotal frame member, said supporting means comprises means for pivotally joining one end of said horizontally-disposed frame member to the rear of said platform member at a position spaced from said stop structures, said supporting means comprises means for pivotally joining the opposite end of said horizontally-disposed frame member to one end of said pivotal frame member, the opposite end of said pivotal frame member being adapted to engage said stop structures individually for supporting said platform member at different angles with respect to the horizontal, said pivotal frame member being adapted to pivot into a position of horizontal alignment with respect to said horizontally-disposed frame member with said platform member being adapted to pivot into a horizontal position on top of said horizontally-disposed frame member and said pivotal frame member, and supporting surface engaging wheels mounted adjacent said means for pivotally joining the horizontally-disposed frame member to the pivotal frame member to permit said orthopedic device to be moved, said wheels being spaced in a transverse direction relative to said platform member.

8. An orthopedic device according to claim 7 including a block structure attached to the bottom of said horizontally-disposed frame member, said block structure being shaped to engage and support said platform member when said pivotal frame member is engaged by the stop structure which supports said platform member at the largest acute angle with respect to the horizontal.

9. An orthopedic device according to claim 7 including means for locking said pivotal frame member to said horizontally-disposed frame member when said pivotal frame member is in the horizontal position.

10. An orthopedic device according to claim 1 further including a safety belt attached to said platform member and positioned to hold said patient around the waist of said patient.

11. An orthopedic device as claimed in claim 1 wherein the lowermost end of said platform is adapted to rest on the support surface.

12. An orthopedic device as claimed in claim 1 wherein said horizontal section at the portion thereof adjacent to said platform is adapted to rest on the support surface.

13. An orthopedic device as claimed in claim 7 wherein the lowermost end of said platform member is adapted to rest on the support surface.

14. An orthopedic device as claimed in claim 7 wherein said horizontally-disposed frame member adjacent said means for pivotally joining said horizontally-disposed frame member to said platform member is adapted to rest on the support surface.

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