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T. F. HIND ET AL
WHEEL CHAIR ATTACHMENT

2,572,149

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2 SHEETS—SHEET 1

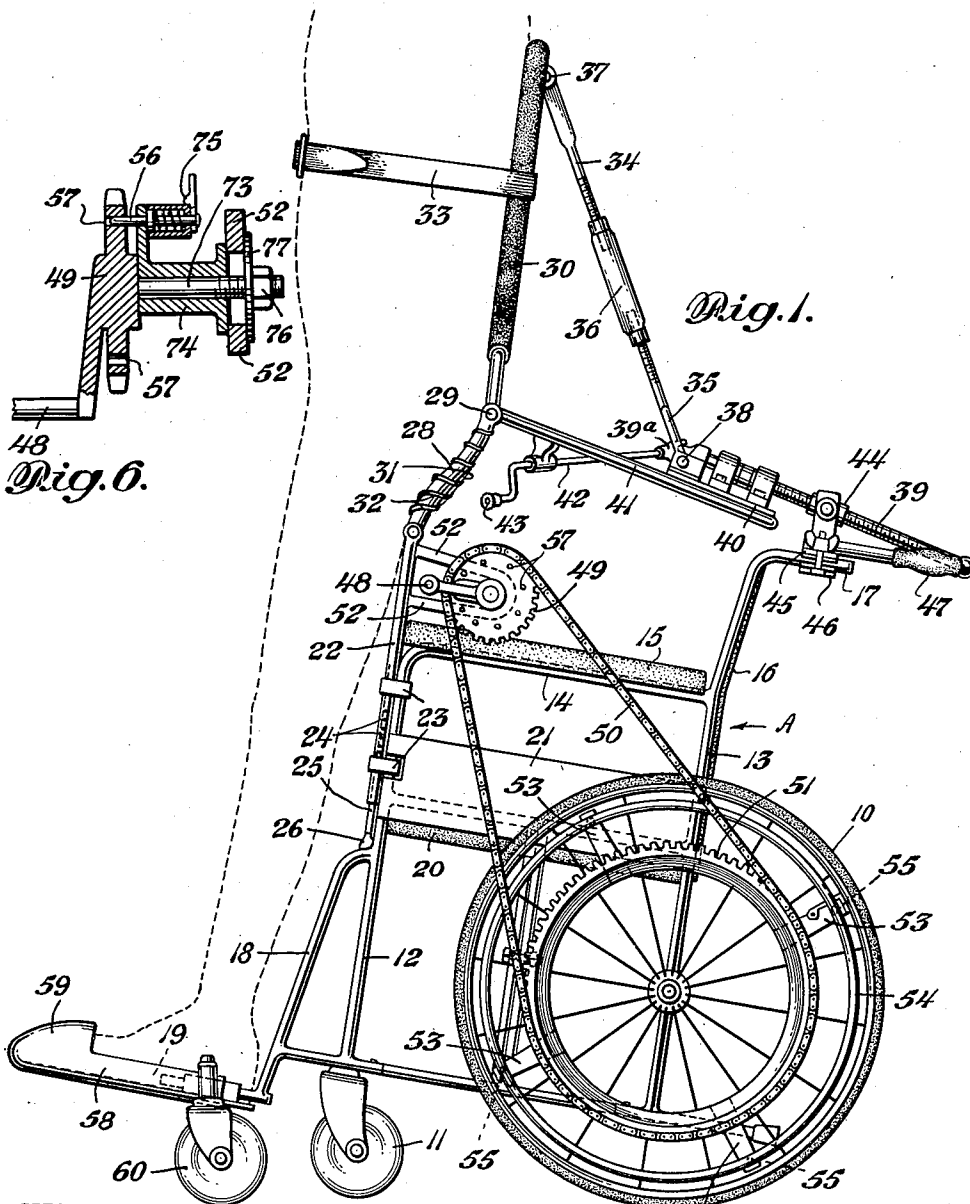


Fig. 6.

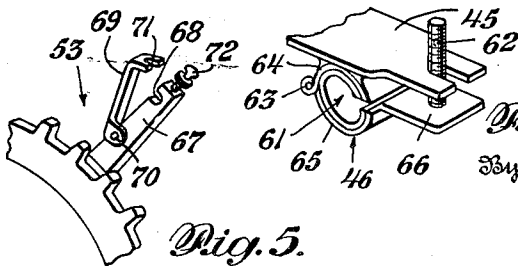


Fig. 4.

Fig. 5.

Inventors
Thomas Frank Hind,
Alfred Leon Hind.

Flocks and Simon
ATTORNEYS

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2 SHEETS—SHEET 2

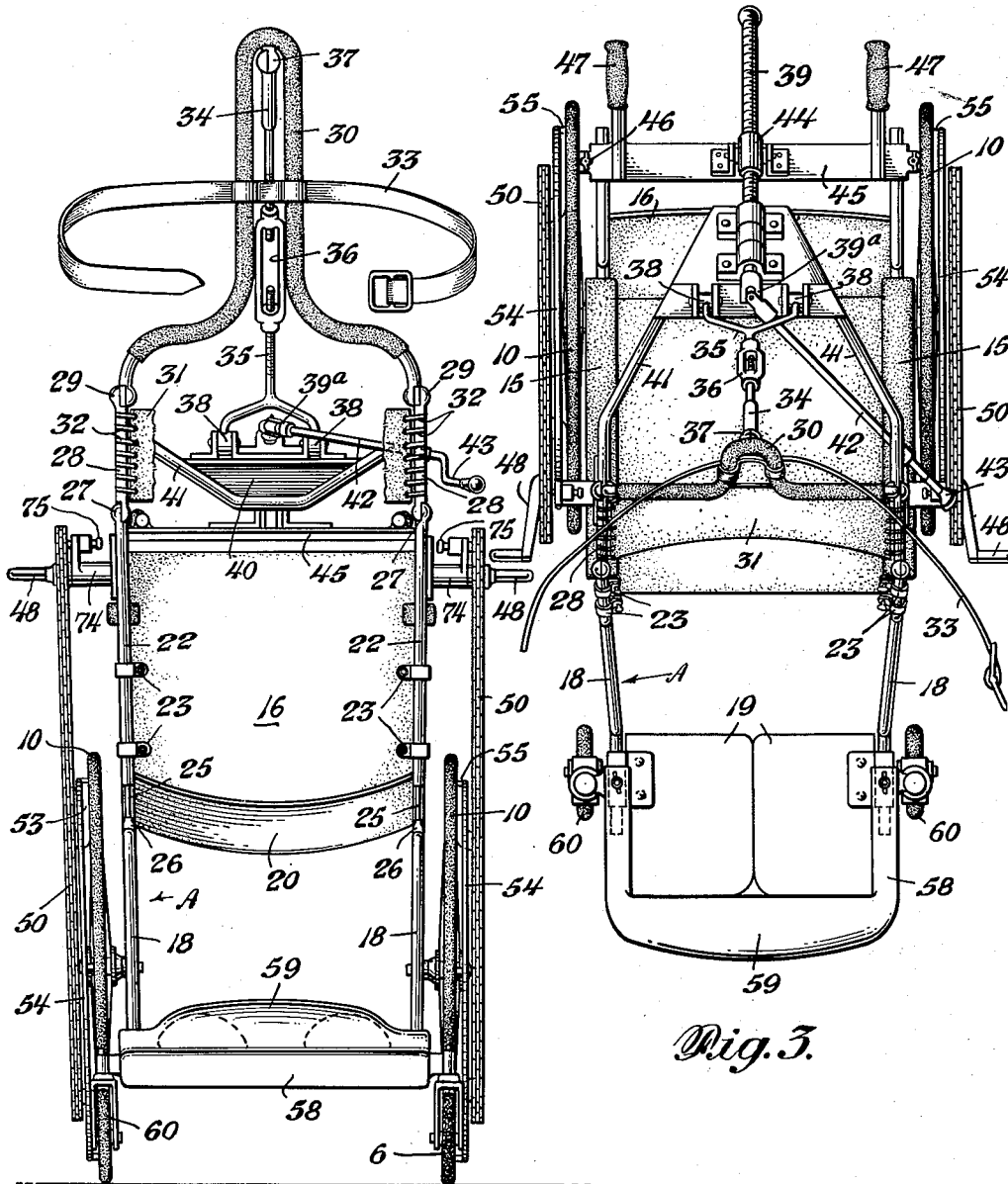


Fig. 2.

Fig. 3.

Inventors
Thomas Frank Hind,
Alfred Leon Hind.

Flocks and Simon
ATTORNEYS

UNITED STATES PATENT OFFICE

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WHEEL CHAIR ATTACHMENT

Thomas Frank Hind and Alfred Leon Hind, Pen
Mar, Pa., assignors to Sylvia Hind, Pen Mar, Pa.

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10 Claims. (Cl. 155—30)

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This invention relates to a device for attachment to a wheel chair and more particularly to a wheel chair attachment which enables one to be supported in an upright position.

Heretofore, wheel chairs have been available to support and convey a patient in a seated position; however, there have been no devices available for supporting the patient in an upright position, without modifying the desirable characteristics of a wheel chair, so that the patient could participate in boxing and various sports in a standing position.

An object of this invention is to provide an attachment for a wheel chair, which is so designed that an occupant of the chair may be supported thereon in an upright position with subsequent improvement in the user's circulation and enabling the user to attend to household duties as well as participate in various sports.

A further object of this invention is to provide an adjustable attachment for a wheel chair which will permit the occupant to be supported in either an upright or in a partially sitting position.

A still further object of the invention is to provide an attachment which may be readily attached or detached from a common hospital wheel chair.

Another object of the invention is to provide means so that the occupant himself can adjust the position of the attachment.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a side elevational view of the device illustrating the manner in which it is used;

Fig. 2 is a front view thereof;

Fig. 3 is a top view thereof;

Fig. 4 shows a detail of a clamping means for attaching the device to the wheel chair;

Fig. 5 is a detail of the clamp used to attach the lower sprockets to the wheels; and

Fig. 6 is a detail illustrating the upper sprocket of the propelling means for the wheel chair.

Any wheel chair suitable for use by a convalescent patient may be chosen and such chair is generally indicated by the letter A in the drawings. The wheel chair has two large traction wheels 10, at the rear and two small castor wheels 11 at the front of the frame. The frame consists of two front arm posts 12 and two rear arm posts 13, arm bars 14 and padded arm rests 15. The back of the wheel chair 16 is secured to extensions of the rear arm posts. These extensions

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are bent horizontally at their remote ends to constitute handle bars 17 for use in pushing the wheel chair.

A bar 18 extending forwardly from the front posts 12 support the foot rests 19. The wheel chair is equipped with a seat 20 and side rests 21.

The above described parts are conventional to a common type of wheel chair. The attachment which may be clamped to such a wheel chair will now be described. Two downwardly extending portions of the attachment in the form of hollow rods 22 are clamped to the two front posts 12 by clamps 23. These hollow rods are provided with a plurality of holes 24 at spaced intervals to enable vertical adjustment of the rods with respect to the wheel chair. This is accomplished by a pair of rods 25 which fit telescopically within the hollow rods 22. The bottom of the rods 25 are provided with curved feet 26 which rest on the forwardly extending rod 18. The upper end of the rod 25 contains a hole which is aligned with one of the holes 24 in the hollow rod and a bolt is inserted through the aligned holes. In this manner, the hole in rod 25 may be aligned with any of the holes in rod 22 to permit a vertical adjustment as to height.

The rods 22 are each pivoted at 27 to one end of curved links 28. The other end of links 28 are pivoted at 29 to the back rest 30 which extends upwardly in the shape of an inverted U, the lower ends of which are pivoted to the links 28 at pivot 29. The back rest may be padded for the comfort of the users. Extending across the front of the wheel chair between the links 28 is a seat 31 of canvas, leather, or other suitable material attached to the links 28 at each side of the wheel chair. In Fig. 1, the seat is shown as being attached to links 28 by lacing with leather thongs 32. However, any method of attachment may be used. A strap 33 is attached at its center portion to the back rest so that the two ends of the strap extend forwardly. The two ends are long enough to extend around the waist of the patient and be fastened together at the front. In this manner, the patient may be strapped to the attachment. If the condition of the patient so warrants, he may first be strapped into leg and body braces and then strapped to the wheel chair attachment.

The angle at which the back rest resides may be adjusted by means of a pair of rods 34, 35 which are pivoted at their ends at points 37, 38. Their other ends are threaded and are inserted into a turnbuckle 36. As the total distance between pivots 37 and 38 is reduced by the turn-

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ing of the turnbuckle, the back rest rotates clockwise about pivot 29, thus changing the angle of the back rest to that desired for the comfort of the patient.

Links 28 may likewise be rotated clockwise about pivot 27 to vary the position of the seat from a vertical position to one that is almost horizontal. This is accomplished by the turning of a screw threaded rod 39 which is anchored to a plate 40 attached to the ends of rods 41. The pivots 38 at the lower end of the rod 35 are likewise attached to the plate 40. Rod 39 passes through a stationary threaded nut 44 which is attached to a bar 45 extending between the two wheel chair handles 17. The ends of the bar 45 are clamped to the two handles by means of a pair of clamps 46. A pair of rearwardly extending handles 47 are welded to the bar 45 to enable the wheel chair to be pushed with the attachment clamped on. Details of the clamps 46 are shown in Fig. 4. The clamp is comprised of an upper semicircular portion 64 welded to the bar 45; and a lower semicircular portion 64 hinged to the upper portion at 63. An extension 66 to the lower portion is provided with a hole therein to permit passage of a bolt 62. The wheel chair handle 17 passes through the circular hole 61 and by screwing a nut down on the threaded bolt 62 the bar 45 is clamped to the wheel chair handle.

The threaded rod 39 is rotated by turning a crank handle 43 of rod 42, which is attached to the rod 39 by a universal joint 39a. The handle 43 is located within reach of the patient so that when he desires to partially sit on the canvas seat he can turn the handle 43 and thus adjust the angle of the seat as desired.

Crank handles 48 are likewise provided within the reach of the patient for propelling the wheel chair as desired. The handles 48 are part of sprockets 49 which carry endless chains 50. The sprockets 49 are mounted onto U-shaped bars 52 which are attached to rods 22 near the top thereof. The endless chains 50 extend around the sprockets 49 and also around sprockets 51 which are clamped onto the wheels 10 by means of clamps 53. Details of the clamps are shown in Fig. 5. Each wheel 10 of the wheel chair is equipped with a metal hand rail 54 which is attached to the wheel at four points by short rods 55. The sprocket 51 is provided with four clamps 53 which clamp onto each of the four rods 55. The clamp 53 includes an extension 67 attached to the sprocket 51 provided with a semicircular recess 68 which fits over the short rod 55. A swinging keeper 69, pivoted at 70, has a semicircular recess 71 which engages a bolt 72 when in the closed position. When the bolt 72 is tightened the sprocket is clamped tightly to the short rod 55.

When it is desired to propel the wheel chair, the occupant rotates the crank handles 48. Means are also provided for locking the sprockets 49 into a stationary position. A spring actuated rod 56 when released is urged forward and enters one of a series of holes 57 arranged about the periphery of the sprocket 49. By withdrawing the rod 56 from the hole 57, the sprocket is released and may again be rotated. The sprocket 49 is integral with a handle 48 and a shaft 73 extending inwardly from the sprocket. Surrounding the shaft 73 is a stationary sleeve 74 to which is attached the spring-actuated rod 56 and means such as a cam 75 for withdrawing the rod. The shaft 73 is rotatably attached to the

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U-shaped member 52 which is integral with the rods 22. The end of the shaft 73 is threaded to receive a nut 76 bearing on a plate 77 which spans the member 52. When the nut is loosened therefor the sprocket 49 can be moved along the member 52 to adjust the chain tension. A detail of this arrangement is shown in Fig. 6.

To prevent the wheel chair from tipping forward, a plate 58 is clamped onto the forwardly extending extensions of rods 18, upon which the foot rests 19 are also attached. Plate 58 is provided with a foot guard member 59, open at the rear, at the front thereof for insertion of the front portions of the feet. Attached to the plate 58 are two downwardly extending castors 60. These castors are large enough so that when the plate 58 is clamped onto the foot rest portion of the wheel chair, the weight will rest on the castors 60, and the wheel chair front castors 11 will be raised out of contact with the floor.

When it is desired to utilize the attachment, it may be readily assembled onto the wheel chair by the following operations: The back rest and seat assembly is clamped onto the front arm posts by means of clamps 23. The bar 45 is next clamped onto the handles 17 of the wheel chair. Sprocket wheels 51 are clamped onto the wheels 10, and endless chains 50 are each mounted on the two sprockets 49 and 51. Finally, the plate 58 is clamped onto the foot rest. The patient then stands on the foot rests inserting the front part of his feet into the stirrups 59, and is strapped to the attachment resting his body on the seat and the padded back rest. He is now in position to partake of various sports in an upright position. This attachment has been found particularly useful in allowing the patient to punch a boxing bag, and is in general helpful to relieve the monotony of sitting all day.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

We claim:

1. An attachment for a wheel chair comprising detachable supporting means adapted to be clamped to the foot rests of a wheel chair to support the front end thereof and prevent overturning when said foot rests are supporting the weight of a person, and adjustable person supporting means adapted to be detachably clamped to the wheel chair to enable said person to be supported in an upright position on the wheel chair foot rests.

2. An attachment for a wheel chair to enable a person to be supported in an upright position on the wheel chair foot rests comprising detachable supporting means for attachment to the foot rests so that the front end of the wheel chair rests on the supporting means to prevent overturning when said foot rests are supporting the weight of a person, an adjustable back and hip supporting means detachably clamped to the front arm posts and to the handles of the wheel chair, means for adjusting the back and hip supporting means vertically, and means for adjusting the angle of the said back and hip supporting means.

3. An attachment for a wheel chair comprising a detachable plate adapted to be clamped to the foot rests of a wheel chair, castor wheels extending downwardly from the said plate to

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support the front end of the wheel chair and prevent overturning when said foot rests are supporting the weight of a person, a hip and back supporting means adapted to be detachably clamped to the wheel chair to enable said person to be supported in an upright position on the wheel chair foot rests, means within reach of the said person for adjusting the angle of the hip supporting means from a vertical to a nearly horizontal position.

4. An attachment for a wheel chair comprising a detachable hip and back supporting means including means for clamping the same to the front arm posts and to the rear handles of a wheel chair to enable a person to be supported thereon in an upright position, means for adjusting the height of the hip and back supporting means with respect to the wheel chair, means for adjusting the angle of the back supporting means, means for adjusting the angle of the hip supporting means from a vertical to a nearly horizontal position, said last named means within reach of the said person while supported in an upright position.

5. An attachment for a wheel chair to enable a person to be supported in an upright position comprising a pair of tubular rods, means for clamping said rods to the front armposts of a wheel chair, a back rest assembly, a pair of links pivoted at their lower ends to the said tubular rods and pivoted at their upper ends to the lower ends of the said back rest assembly, a seat extending across the wheel chair, means for attaching said seat at each side to the said links, means for clamping the rear of said back rest assembly to the handles of the wheel chair, means for increasing or decreasing the distance between said points of attachment and the said upper pivots so that the said links will be rotated about their lower pivots and thus adjust the said seat between a nearly vertical and a nearly horizontal position.

6. An attachment for a wheel chair to enable a person to be supported in an upright position comprising a pair of tubular rods, means for clamping said rods to the front arm posts of a wheel chair, a back rest, a pair of links pivoted at their lower ends to the said tubular rods and pivoted at their upper ends to the lower ends of the said back rest, a seat extending across the wheel chair, means for attaching said seat at each side to the said links, a rod assembly extending rearwardly from the said upper pivots, means for clamping the rear end of the said rod assembly to the wheel chair, means for moving said rod assembly forwardly and rearwardly with respect to the point of attachment to the wheel chair so as to rotate the links about their lower pivots and thus adjust the seat between a vertical and a nearly horizontal position, and a turnbuckle assembly pivoted at its upper end to the top of the said back rest and pivoted at its lower end to the rear end of the said rod assembly to thus form a triangular relationship between the said back rest, turnbuckle assembly and rod assembly so that as the turnbuckle assembly is made shorter or longer, the opposite angle of the triangle will be made correspondingly smaller or greater to adjust the angle of the back rest.

7. An attachment for a wheel chair to enable a person to be supported in an upright position comprising a pair of tubular rods, means for clamping said rods to the front arm posts of the wheel chair, a back rest, a pair of links pivoted at their lower ends to the said tubular rods and

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pivoted at their upper ends to the lower ends of the said back rest, a seat extending across the wheel chair, means for attaching said seat at each side to the said links, a rod assembly extending rearwardly from the said upper pivots, means for clamping the rear end of the said rod assembly to the wheel chair, means for moving said rod assembly forwardly and rearwardly with respect to the point of attachment to the wheel chair so as to rotate the links about their lower pivots and thus adjust the seat from a vertical to a nearly horizontal position, a turnbuckle assembly pivoted at its upper end to the top of the said back rest and pivoted at its lower end to the rear end of the said rod assembly so that as the turnbuckle assembly is turned the distance between the pivots is shortened and the back rest is rotated about the said upper link pivots to vary the angle of the back rest, a plate including means for clamping the same to the foot rests of the wheel chair, and castor wheels extending downwardly from the said plate to support the front end of the wheel chair and to prevent overturning when said foot rests are supporting the weight of a person.

8. An attachment for a wheel chair to enable a person to be supported in an upright position comprising a pair of hollow tubular rods, means for clamping said rods to the front armposts of a wheel chair, a plurality of holes in said tubular rods at spaced intervals, a pair of rods of a diameter small enough to telescope into the hollow portion of the said tubular rods, curved feet at the bottom of the said rods adapted to rest on the wheel chair, a hole in the upper end of each of the said rods, a bolt which can be inserted through a hole in each of the tubular rods and the hole in each of the rods when the two holes are aligned for adjusting the distance between the tubular rods and the wheelchair, a back rest assembly, a pair of links pivoted at their lower ends to the said tubular rods and pivoted at their upper ends to the lower ends of the said back rest assembly, a seat extending across the wheel chair, means for attaching said seat at each side to the said links, means for clamping the rear of said back rest assembly to the handles of the wheel chair, means for increasing and decreasing the distance between said point of clamping and the said upper pivots so that the said links will be rotated about their lower pivots and thus adjust the said seat between a nearly vertical and a nearly horizontal position, a turnbuckle assembly incorporated into the back rest assembly to permit the back rest to be rotated about the upper pivots to vary the angle of the back rest, a plate including means for clamping the same to the foot rests of the wheel chair, and castor wheels extending downwardly from the said plate to support the front end of the wheel chair and to prevent overturning when said foot rests are supporting the weight of a person.

9. An attachment for a wheel chair to enable a person to be supported in an upright position comprising a pair of hollow tubular rods, means for clamping said rods to the front armposts of a wheelchair, a plurality of holes in said tubular rods at spaced intervals, a pair of rods of a diameter small enough to telescope into the hollow portion of the said tubular rods, curved feet at the bottom of the said rods adapted to rest on the wheel chair, a hole in the upper end of each of the said rods, a bolt which can be inserted through a hole in each of the tubular rods and the hole in each of the rods when the two holes

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are aligned for adjusting the distance between the tubular rods and the wheel chair, a back rest assembly, a pair of links pivoted at their lower ends to the said tubular rods and pivoted at their upper ends to the lower ends of the said back rest, a seat extending across the wheel chair, means for attaching said seat at each side to the said links, means for clamping the rear of said back rest assembly to the handles of the wheel chair, means for increasing and decreasing the distance between said point of clamping and the said upper pivots so that the said links will be rotated about their lower pivots and thus adjust the said seat between a nearly vertical and a nearly horizontal position, and a turnbuckle assembly incorporated into the back rest assembly to permit the back rest to be rotated about the upper pivots to vary the angle of the back rest.

10. An attachment for a wheel chair comprising supporting means on the foot rests of a

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wheel chair to support the front end thereof and prevent overturning when said foot rests are supporting the weight of a person, and adjustable person supporting means adapted to be detachably clamped to the wheel chair to enable said person to be supported in an upright position on the wheel chair foot rests.

THOMAS FRANK HIND.
ALFRED LEON HIND.

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