

Aug. 30, 1966

J. C. KINNEY

3,269,768

INVALID'S CHAIR

Filed Sept. 14, 1964

2 Sheets-Sheet 1

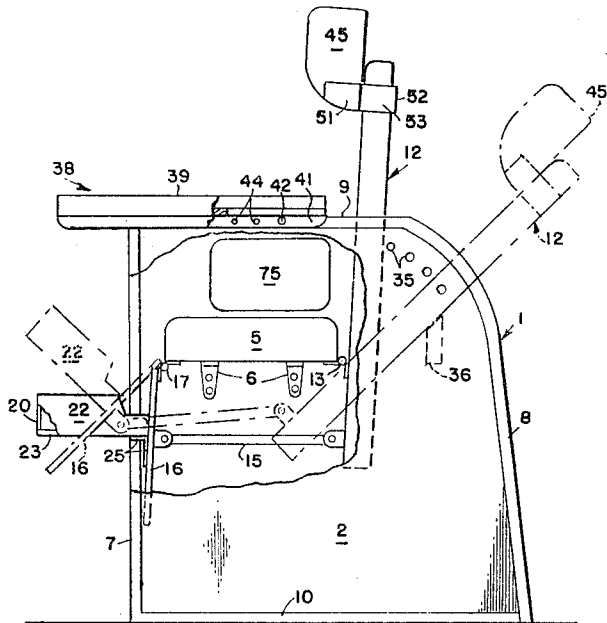


FIG. 1

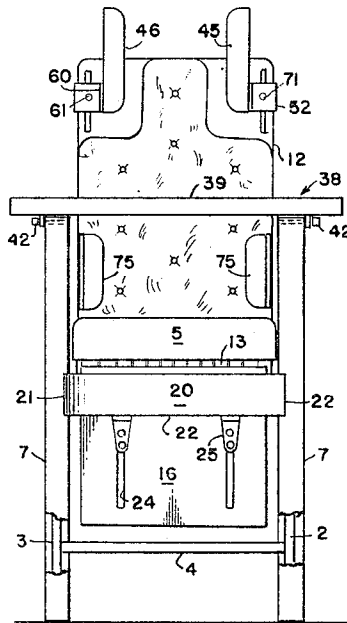


FIG. 2

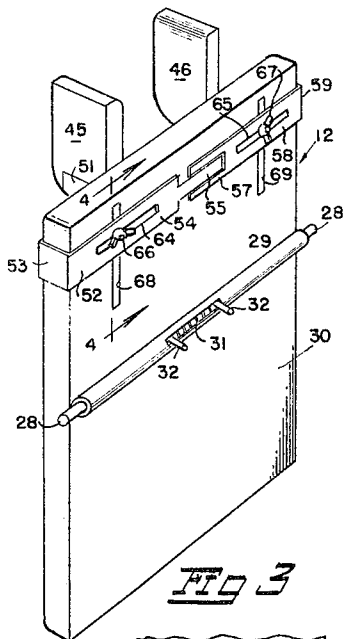


FIG. 3

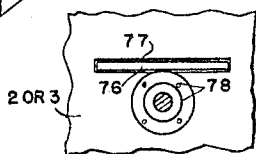


FIG. 4

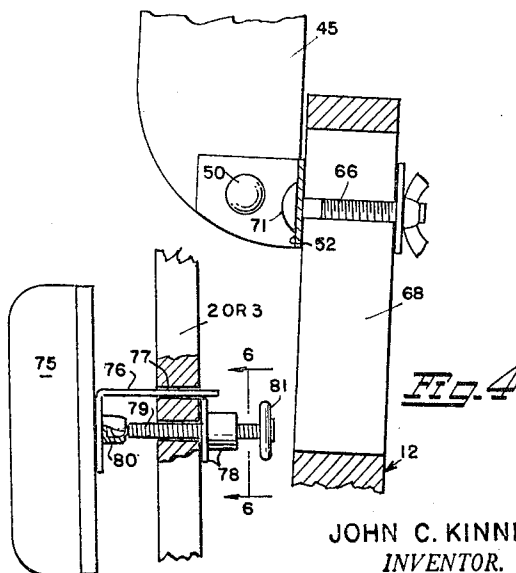


FIG. 5

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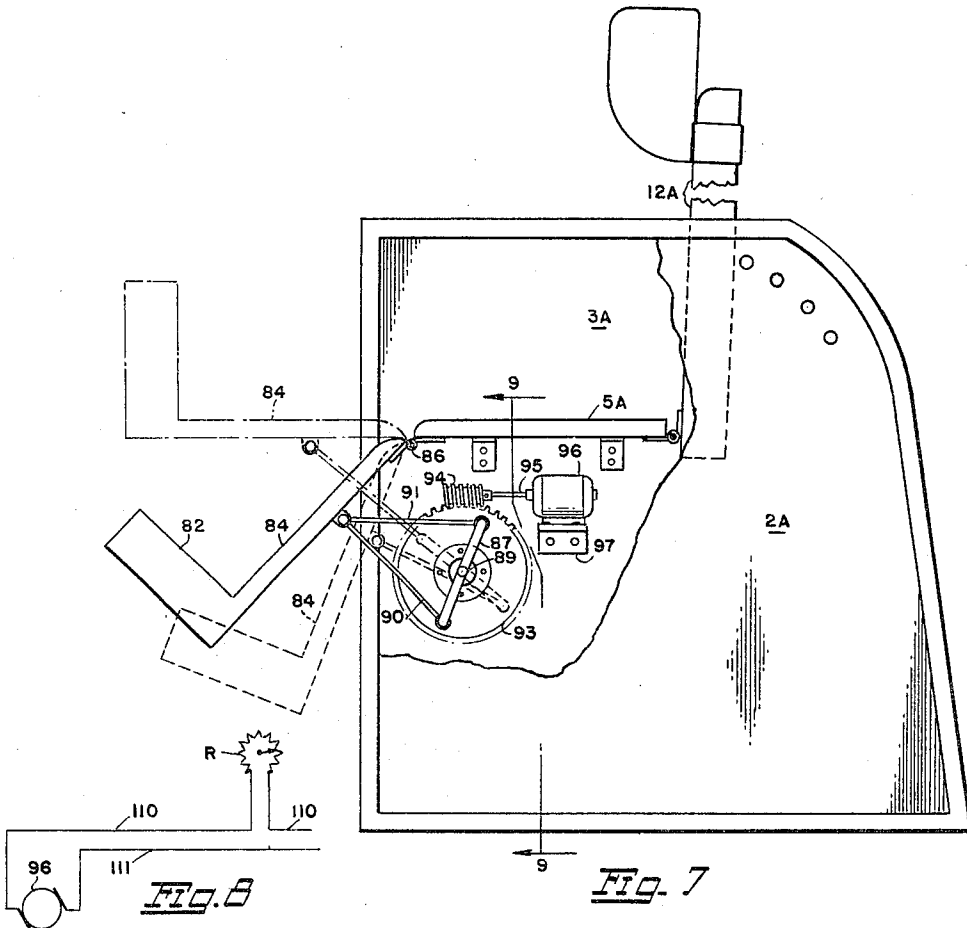
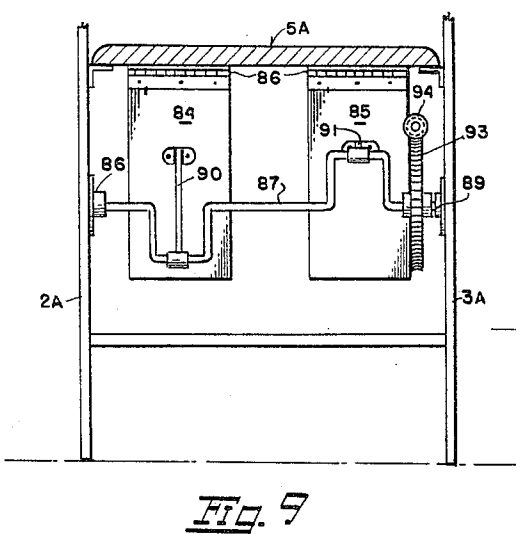
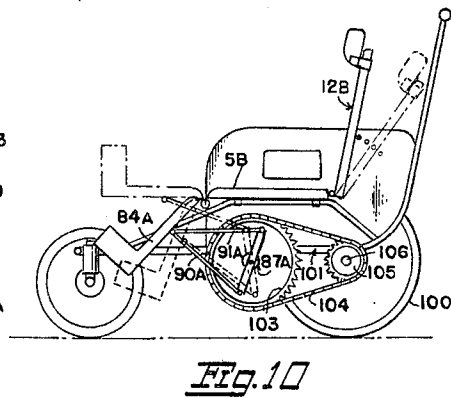
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INVALID'S CHAIR

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1 Claim. (Cl. 297—68)

This invention relates to improvements in invalid's chairs especially, though not restrictively, designed for use by patients suffering the after effects of cerebral palsy or other afflictive consequences.

It is one of the principal objects of my invention to provide a chair of the character described with readily adjustable cushioned means for effectively and comfortably supporting those parts of the occupant's anatomy which are deprived of muscular control and in such a manner that a more or less natural posture can be attained for feeding and other administrations.

A further object of the invention is the inclusion of new and novel means in the form of a tray for supporting the arms and hands of the user and of such length and width as to induce reaching forward or from side to side for attractive articles placed along or toward the outer edge or edges of the tray. A footrest of similar construction is also provided which will comfortably support the feet of the user but will not interfere with their movement and hence the movement of the legs toward the outer edge or edges of the footrest. A backrest is hingedly linked to the footrest whereby adjustment of the backrest throughout its operative range will impart movement to the footrest and thus impel foot movement.

Since users of the chair are patients afflicted as aforesaid and incapable of manipulating the adjustable instrumentalities of the chair, a still further object of the invention is to provide means within convenient reach of a nurse or other attendant for actuating or flexing the legs of the patient alternately, upwardly and downwardly.

A still further object is the provision of a chair of the character described which is of simple, efficient, durable, light weight construction and so designed that it can be manufactured and sold within a considerably lower price range than any other such equipment I am aware of.

The foregoing and other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof and in which:

FIGURE 1 is a side elevational view of an invalid's chair made in accordance with my invention and with fragments broken away for convenience of illustration.

FIGURE 2 is a front elevational view of FIGURE 1.

FIGURE 3 is a perspective rear elevational view of a backrest.

FIGURE 4 is a sectional detail view taken approximately along the line 4—4 of FIGURE 3.

FIGURE 5 is an enlarged detail view of pad-adjusting means.

FIGURE 6 is a sectional view taken approximately along the line 6—6 of FIGURE 5.

FIGURE 7 is a view similar to FIGURE 1 and on an enlarged scale of a modified form of the invention with fragments broken away and illustrating motor-driven means for imparting alternate swinging movement to the leg and footrests, for flexing the legs of a user, as above pointed out.

FIGURE 8 is a wiring diagram.

FIGURE 9 is a sectional elevational view taken approximately along the line 9—9 of FIGURE 7, and

FIGURE 10 is a longitudinal sectional side elevational view on a reduced scale of a perambulator illustrating the operative incorporation therein of the modification of FIGURE 7.

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With continuing reference to the drawings, wherein like reference characters designate like parts, and particularly FIGURES 1—3 thereof, reference numeral 1 indicates generally one form of embodiment of the invention comprising side members 2 and 3 secured near their bottom end in parallel relation to each other by a cross member 4 and by a seat 5 secured to both side members by brackets 6.

The side members 2 and 3 are preferably, though not restrictively, made of solid plywood panels in the interest of economy and lightweight construction with their front, rear, top and bottom edges trimmed with finishing strips 7, 8, 9, and 10 respectively. The strips 7—9 add to the pleasing appearance of the chair and strips 10 contribute to its stability.

A backrest, indicated generally at 12, is hingedly attached near its bottom end to the rearward edge of the seat 5 by a piano hinge 13. The bottom end of the backrest is connected by a link 15 to a panel 16 swingably suspended from the bottom of the front of the seat 5 by similar hinges 17. Adjustably mounted to the panel 16 and extending forwardly therefrom is a footrest of box-like formation comprising a front wall 20, side walls 21—22, and a bottom wall 23. The footrest is vertically adjustable by means of slots 24 and bolted brackets 25.

The backrest is adjustable throughout an operating range as indicated by full and broken lines in FIGURE 1, and is lockable in any selected position therewithin by outwardly spring-urged detents 28 slidable within, and normally extending outwardly from, a tubular housing 29 secured to the back wall 30 of the backrest 12, in any suitable manner. The detents are normally held in the extended position shown in FIGURE 3 by a compression spring 31, interposed between the inner ends of the detents which are provided with outwardly extending pins or finger grips 32, for convenience in retracting the detents when desired from engagement with openings 35 in both side members 2 and 3. A cross member 36, secured to the side members 2 and 3, serves as a limit stop for the maximum backward tilt of the backrest 12 and also contributes to the rigidity of the chair.

A tray, indicated generally at 38, is provided with an up-standing rim 39 across its front edge and along both of its sides. The tray is adjustably supported upon the top flanges 9 of the side members 2 and 3 by depending flanges 41, each of which carries a pin 42 for selective engagement with apertures 44 in the top flanges 9 for adjustably locking the tray in extended, or retracted, positions relative to the backrest 12.

The top of the backrest is provided with a pair of cooperating laterally spaced apart padded head supports, indicated generally at 45—46, which, as best illustrated in FIGURE 3, are mounted to the backrest for simultaneous vertical adjustment and individual lateral adjustment relative to each other for supporting the head of the user. The head support 45 is secured, as at 50, to a forwardly extending end 51 of a metal band 52 bent, as at 53, around its respective side of the backrest then inwardly, as at 54, and terminates in a reduced inner end or tong portion 55 adjustably engaged within the bifurcated end 57 of a similar band 58 bent, as at 59, around the opposite side of the backrest and terminates on the front surface thereof in a forwardly projecting portion 60 to which is secured, as at 61, the companion headrest 46. The rearward inwardly bent portions of the bands 52 and 58 are provided with elongated slots 64 and 65, respectively, to accommodate locking bolts 66 and 67 which extend through vertical slots 68 and 69, respectively, and provided with heads 71 and wing nuts as shown.

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Arranged above the seat 5 at both sides thereof are laterally adjustable padded supports (see also FIG. 5) 75 carried by angle plates 76 extending outwardly through slots 77 in the side members 2 and 3, and each thereat additionally supported by a flanged nut 78 secured to the side members 2 and 3. For convenience in adjusting the pads 75 inwardly or outwardly relative to the torso of the user to hold it in an upright position or for adjustment more to one side than the other into firm, but comfortable, supporting contact with both sides of the occupant, I provide each pad plate 76 with a shaft 79 threaded through the nut 78, swivel connected as at 80 to the angle plate 76 and provided at its outer end with a hand wheel 81.

From the foregoing it will be readily apparent that I have provided an invalid's chair of greatly simplified and relatively inexpensive construction, and wherein the back rest and footrest are adjustable simultaneously into various positions for comfortable repose of the occupant with very little effort on the part of an attendant.

In the modified form of the invention illustrated in FIGURES 7 and 9, the side members 2A-3A backrest 12A and its related parts, and the seat 5A are the same as their counterparts in the first form of the invention.

The dominant features of this modification are the two individual footrests 82 and 83 secured to and extending outwardly from the bottom end of supporting panels 84 and 85 respectively, both hingedly attached, as at 86, to the underside of the forward edge of the seat 5A.

As shown in full lines in FIGURES 7 and 9, both footrests are on a common horizontal plane.

To provide the means as aforesaid for actuating or flexing the legs of a user alternately outwardly, inwardly, and upwardly and downwardly, I provide a crank shaft 87 journaled at both of its ends, as at 88 and 89 in the side members 2A and 3A, respectively, and linked to the panels 84-85 by connecting rods 90 and 91.

One end of the crank shaft is provided with a worm wheel 93 at all times enmeshed with a worm gear 94 secured to the outer end of the shaft 95 of an electric motor 96 mounted in any suitable manner as by bracket 97 to the side frame member 3A.

The further modification shown in FIGURE 10 is illustrative of the fact that the seat (5B), leg rests 84A-85A and their related parts, may be readily applied to a wheel supported perambulator, or the like, wherein motive power for swinging the leg rests to flex the legs, as aforesaid, is derived from the rear wheels 100 of the vehicle as it is pushed along by an attendant.

The crank shaft 87A is journaled in bearings, not shown, depending from the sides of the vehicle frame 101 and is connected by links 90A and 91A to the leg rests 84A-85A.

Secured to one end of the crank shaft 87A is a sprocket wheel 103 driven by a chain 104 entrained

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over a driving sprocket wheel 105 secured to the rear axle 106 of the perambulator.

From the foregoing it will be readily apparent that the rate of swinging movement of both leg rests in FIGURE 7 will be determined by the speed of the motor 96 regulated by manipulation of the rheostat R (FIG. 8) in electrical circuit with the motor and a source of current (not shown) through conductors 110-111. In FIGURE 10 the rate of leg rest movement is regulated by the speed of travel of the perambulator through the medium of its driven parts above pointed out.

While I have shown particular forms of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention. Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

An invalid's chair comprising in combination,
a vertically disposed frame made of two spaced apart plywood panels,
a seat fixedly secured within the frame and maintaining said panels in said spaced apart relation,
a backrest and a foot rest,
means hingedly attaching said backrest to the seat whereby the backrest extends above and below said seat,
cooperating adjustable detent means carried by the backrest and said frame panels for regulating the angulation of said backrest relative to said seat,
means hingedly depending said footrest from said seat,
means interconnecting said backrest and footrest for imparting alternate upward and downward swinging movement to the footrest,
a tray, and
means adjustably mounting said tray forwardly and rearwardly on the top of said frame.

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