Sept. 18, 1934. E. L. MUELLER 1,973,962

INVALID'S WHEEL CHAIR

Filed Oct. 21, 1931

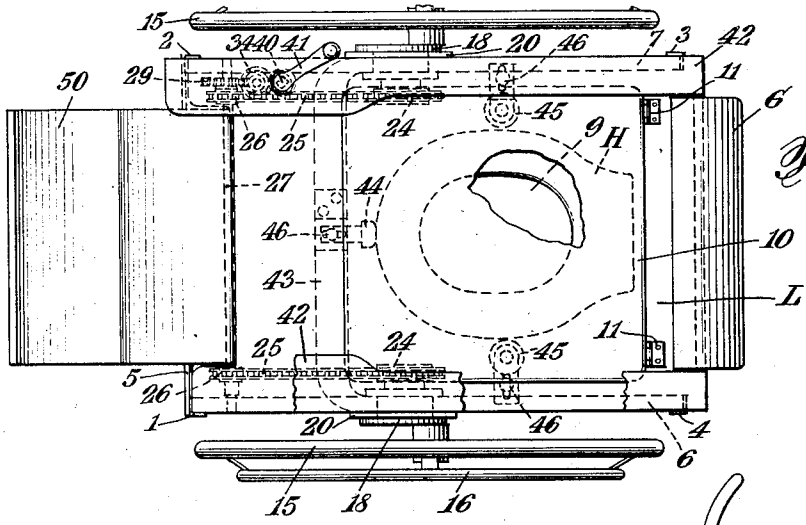


Fig. 1.

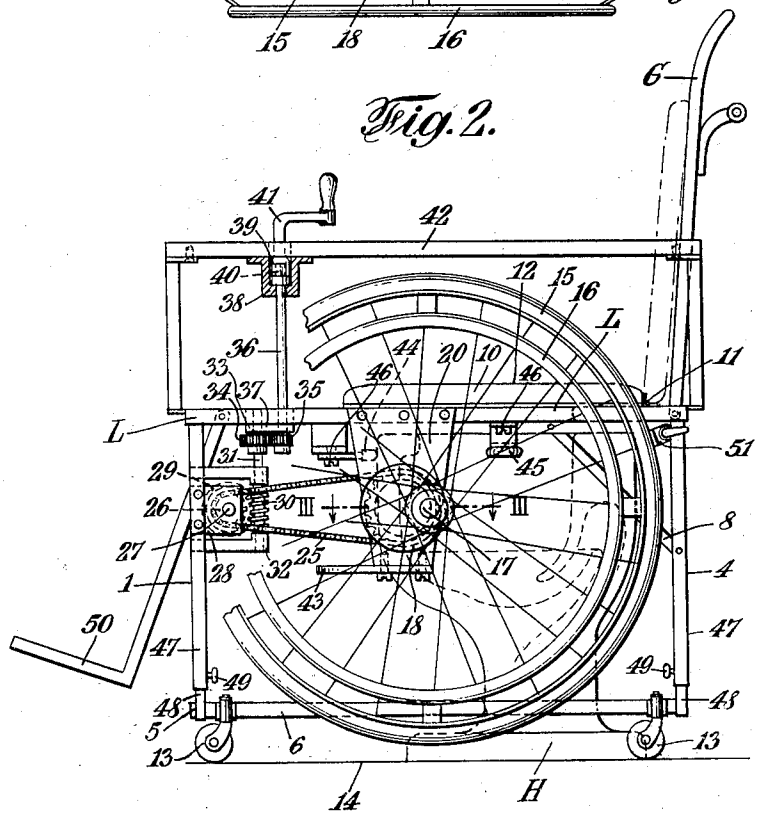


Fig. 2.

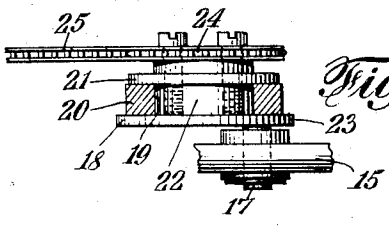


Fig. 3.

INVENTOR
Emil L. Mueller.
BY
ATTORNEY

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INVALID'S WHEEL CHAIR

Emil L. Mueller, Rutherford, N. J.

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5 Claims. (Cl. 155—30)

This invention relates to an invalid's wheel chair, and an object of the invention is to provide a wheel chair by means of which an invalid may be moved into position over a fixed toilet bowl.

A further object is to so construct the wheel chair that it may be readily manipulated and moved into position over the toilet bowl even though the toilet bowl may stand in crowded proximity to other bathroom fixtures.

A further detailed object is to so construct the wheel chair that it may be readily manipulated at all times by the invalid and without necessity for assistance by other persons.

A further object is to so construct the wheel chair that it may be used selectively as an ordinary roll chair within which the invalid may rest and move about at any time or as a means for conveying the invalid to the toilet bowl.

A further and more detailed object is to so construct the wheel chair that it will include guide means to assist in guiding it into proper position with respect to the toilet bowl.

A further detailed object is to so construct the wheel chair that it will include two independent sets of wheels and means for moving said sets of wheels so that either or both of said sets will have rolling engagement with the floor.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles constituting the invention; and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawing which is to be taken as a part of this specification, and in which I have shown merely a preferred form of embodiment of the invention:—

Fig. 1 is a side elevational view of an invalid's wheel chair constructed in accordance with this invention.

Fig. 2 is a top plan view of the structure seen in Fig. 1, parts being broken away to illustrate details of structure, and

Fig. 3 is a detail sectional view of one of the main wheel bearings employed.

Referring to the drawing for describing in detail the exemplary structure which is illustrated therein, the reference character L indicates the main seat board of the chair and the reference character G indicates the back of the chair.

The seat board L is provided with opposite front legs as 1 and 2 and opposite rear legs as 3 and 4. The two front legs are connected together adjacent their lower ends by a horizontal brace rod 5. The front leg 1 is similarly connected with the rear leg 4 by a horizontal brace 6, and the front leg 2 is connected with the rear leg 3 by another similar horizontal brace rod 7. Diagonal braces as 8 may be employed if desired for strengthening the structure, but it is particularly to be noted that the space between the two rear legs 3 and 4 is not encumbered with unnecessary bracing but is left open and sufficiently unobstructed to permit of easy movement of the chair over a toilet bowl, as H, by backing the chair over said bowl.

The seat board L is provided with an opening 9 therethrough to register with the opening of the toilet bowl when the chair has been properly positioned with respect to the bowl.

The opening 9 is normally covered by means of a cushion seat member 10 which is preferably formed separately from the board L and pivotally connected thereto as by means of hinges 11—11 near the back G so that this cushion seat member may be selectively placed in either of two positions, namely swung downwardly upon the seat board L so as to cover the opening 9, or upwardly against the back G so as to uncover the opening 9 and provide a suitable back rest auxiliary to the back G.

The cushion seat member 10 may preferably be upholstered upon one side as at 12 so as to constitute a comfortable seat when the member is swung down upon the board L. The opposite side may preferably be plain, or it may be covered with cloth or cane so as to constitute a temporary back rest when the member is swung up against the chair back G.

At the lower end of each of the legs 1, 2, 3 and 4 suitable caster wheels as 13—13 are provided for resting upon the floor 14. These wheels swivel readily in all horizontal directions and thereby enable easy shifting movement of the chair in all directions along the floor, the direction of movement being easily changeable in a minimum of space as will be readily understood.

A pair of main traction wheels as 15—15 is provided, being disposed at opposite sides of the seat board L and these are preferably fitted with hand grip rings 16—16 whereby the person sitting in the chair may readily propel himself from place to place by gripping the rings 16 as a means by which to cause rotation of the wheels 15 in the manner which is common to invalid wheel chairs.

The wheels 15 are intended to be bodily movable in vertical planes so that, at the will of the user of the chair, said wheels may be moved into

and out of traction engagement with the floor or they may be pressed against the floor and the remainder of the chair lifted upon them sufficiently to move some or all of the wheels 13—13 out of engagement with the floor. To this end the wheels 15—15 are mounted upon stub axles as 17—17. Each of these axles is formed as an eccentric extension from a carrying disc 18 which is rotatably mounted within a bearing 19 formed within a bracket 20, said bracket 20 being rigidly connected with the seat board L at the respective side of said board. An auxiliary disc 21 is bolted rigidly to the disc 18 and is rotatable therewith.

The disc 18 has a hub portion 22 which wears within the bearing 19, and it has a flange portion 23 which rests against the outer surface of the plate 20, while the disc 21 serves as a flange at the inner surface of the plate 20 and includes a sprocket wheel 24.

A sprocket chain 25 engages the sprocket 24 and extends into engagement with a second sprocket 26 which is carried at one end of a cross shaft 27.

The cross shaft 27 is mounted to rotate within bearings 28 carried preferably by the front legs 1 and 2 and has a sprocket 26 at each end for receiving the sprocket chains at opposite sides of the chair, it being understood of course that the mechanism for controlling the position of the wheels 15 from the shaft 27 is duplicated at opposite sides of the machine.

Fixed to the shaft 27 is a worm wheel 29 and engaging this wheel is a worm 30 which is fixed to a vertical shaft 31 journaled in bearings 32 and 33. The shaft 31 has a spur gear 34 fixed thereto, and meshing with this gear is a spur pinion 35 which is fixed to a shaft 36 journaled in bearings 37 and 38. The upper end of the shaft 36 terminates within a socket 39 formed by the bearing member 38 and is squared as at 40 so as to be capable of detachably receiving a separately formed handle 41 which may be inserted into the socket 39 for rotating the shaft 36 at the will of the chair user.

The bearing 38 may be conveniently fixed to one of the arm rests as 42 of the chair.

It will be seen from this arrangement that rotation of the handle 41 will cause the stub shafts 17 of the opposite wheels 15 to move in unison about the center of the bearing openings 19 and to thereby force the wheels 15 to move bodily with respect to the remainder of the chair. If the user of the chair desires to utilize the wheels 15 as traction wheels for propelling him along the floor he has simply to rotate the handle 41 so as to press the wheels downwardly against the floor. The degree of pressure will depend upon the amount of rotation of the handle and may readily be carried to the point of lifting some or all of the caster wheels 13 off of the floor if desired, and it is to be particularly noted that the worm 30 and worm wheel 29 constitute an efficient lock to hold the wheels 15 in any position into which they are moved with respect to the remainder of the chair by the handle 41.

If on the other hand the user of the chair desires to move the chair to a greater or less extent in some directions not practical while the wheels 15 have traction engagement with the floor he may rotate the handle 41 to lift the wheels 15 clear of the floor so that the whole structure will rest upon the caster wheels 13 and be thus capable of movement along the floor in all angular directions.

A suitable brace rod as 43 may connect together the lower ends of the brackets 20 if found necessary to strengthen said brackets for the proper performance of their functions, but such brace rod if used will preferably be of U shape so as to extend across the chair at a point forward of the brackets so as thus to leave an open space beneath the board L between said brackets for the unhindered accommodation of the toilet bowl.

A suitable cushioned stop as 44 is provided at the underside of the seat board L for limiting backward movement of the chair over the toilet bowl, and a pair of cushioned rollers as 45—45 is provided also beneath the board L disposed to stand one at each side of the toilet bowl adapted to guide the chair with respect to the bowl as the chair is moved backwardly over the bowl.

The guide elements 44 and 45 are all adjustably connected with the bottom surface of the board L as by adjustable fastening means 46 so that they may be conveniently adjusted with respect to each other and to the opening 9, thus to enable a given chair to be made to properly cooperate with toilet bowls of different dimensions.

Any suitable means may be provided for adjusting the height of the board L with respect to the floor, in order to enable the given chair to be used in connection with toilet bowls of different heights and for this purpose the drawing herewith suggests that the legs 1, 2, 3 and 4 may be formed each of two parts as 47 and 48 telescoping one within the other and held in any adjusted position by means of a clamp screw or the like as 49.

The chair of course may be fitted with any desirable auxiliaries such as the foot board 50, or otherwise.

A chair as herein suggested is of simple and inexpensive construction and is yet strong and substantial and thoroughly efficient and practical for its purpose. An invalid seated in a chair thus constructed may propel himself about a house or hospital floor in the same manner as he would in an ordinary standard type of wheel chair and yet when he desired to use the chair in a bath room he may readily bring either the set of wheels 15 or the set of wheels 13 into engagement with the floor at will in order to enable him to conveniently manipulate the chair through the most intricate and close fitting passage-ways and back it over the toilet bowl and into a correct and proper position with respect to the toilet bowl without requiring the assistance of any one except himself.

After the chair has been properly positioned with respect to the bowl, if desired, the wheels 15 may be lowered into firm engagement with the floor and a brake as 51 applied thereto, as by a finger lever 52 or the like so as to hold the chair against any unintentional movement.

In moving from the bath room the handle 41 may again be used to bring into engagement with the floor either of the two sets of wheels as occasion requires, and the movement of the chair out of the bath room may thus be accomplished with as great ease as movement into the bath room.

Since rotation of handle 41 causes an upward or downward movement of the seat board, this handle may be used as a means to alter the level of the seat board into conformity with the height of the particular bowl over which the chair is moved.

As many changes could be made in this construction without departing from the scope of

the invention as defined in the following claims, it is intended that all matter contained in the above description, or shown in the accompanying drawing, shall be interpreted as illustrative only and not in a limiting sense.

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

1. An invalid's wheel chair comprising a seat board intended to be moved over a toilet bowl and having an opening therethrough adapted to register with the opening of the toilet bowl, wheels upon which said board is supported, mountings for said wheels by which said wheels are connected with the board said mountings being arranged to define an opening between them within which to receive the toilet bowl into co-operative relation with said board, guide means connected with the board adapted to engage the toilet bowl for guiding the board and bowl with respect to each other when the board is being moved over the bowl, and means by which said guide means is adjustably mounted so as to co-operate with bowls of varying dimensions.

2. An invalid's wheel chair comprising a seat board intended to be moved over a toilet bowl and having an opening therethrough adapted to register with the opening of the toilet bowl, wheels upon which said board is supported, mountings for said wheels by which said wheels are connected with the board said mountings being arranged to define an opening between them within which to receive the toilet bowl into co-operative relation with said board, guide means connected with the board adapted to engage the toilet bowl for guiding the board and bowl with respect to each other when the board is being moved over the bowl, means by which said guide means is adjustably mounted so as to co-operate with bowls of varying dimensions, and means by which to alter the elevation of the board to properly co-operate with bowls of varying height.

3. An invalid's wheel chair comprising a seat board intended to be moved over a toilet bowl and having an opening therethrough adapted to register with the opening of the toilet bowl, a pair of propelling wheels and mountings for said wheels by which said wheels are connected with the board said mountings for said wheels respectively including discs rotatably mounted within bearings provided upon the board said discs each having an eccentrically projecting stub axle thereon upon which the wheels are rotatably mounted, and means manually operable to rotate said discs within said bearings for thereby raising or lowering the board according to the direction of rotation of said discs.

4. An invalid's wheel chair comprising a seat board intended to be moved over a toilet bowl and having an opening therethrough adapted to register with the opening of the toilet bowl, a pair of propelling wheels and mountings for said wheels by which said wheels are connected with the board said mountings for said wheels respectively including discs rotatably mounted within bearings provided upon the board said discs each having an eccentrically projecting stub axle thereon upon which the wheels are rotatably mounted, and means manually operable to rotate said discs within said bearings for thereby raising or lowering the board according to the direction of rotation of said discs, together with a set of caster wheels carried by the board arranged to engage the floor when the board is lowered.

5. An invalid's wheel chair comprising a seat board intended to be moved over a toilet bowl and having an opening therethrough adapted to register with the opening of the toilet bowl, a pair of propelling wheels and mountings for said wheels by which said wheels are connected with the board said mountings for said wheels respectively including discs rotatably mounted within bearings provided upon the board said discs each having an eccentrically projecting stub axle thereon upon which the wheels are rotatably mounted, and means manually operable to rotate said discs within said bearings for thereby raising or lowering the board according to the direction of rotation of said discs, together with a set of caster wheels carried by the board arranged to engage the floor when the board is lowered, and means by which said caster wheels are adjustable with respect to the board to alter the distance of movement required of said board to bring said caster wheels into engagement with the floor.

EMIL L. MUELLER.