

Sept. 28, 1954

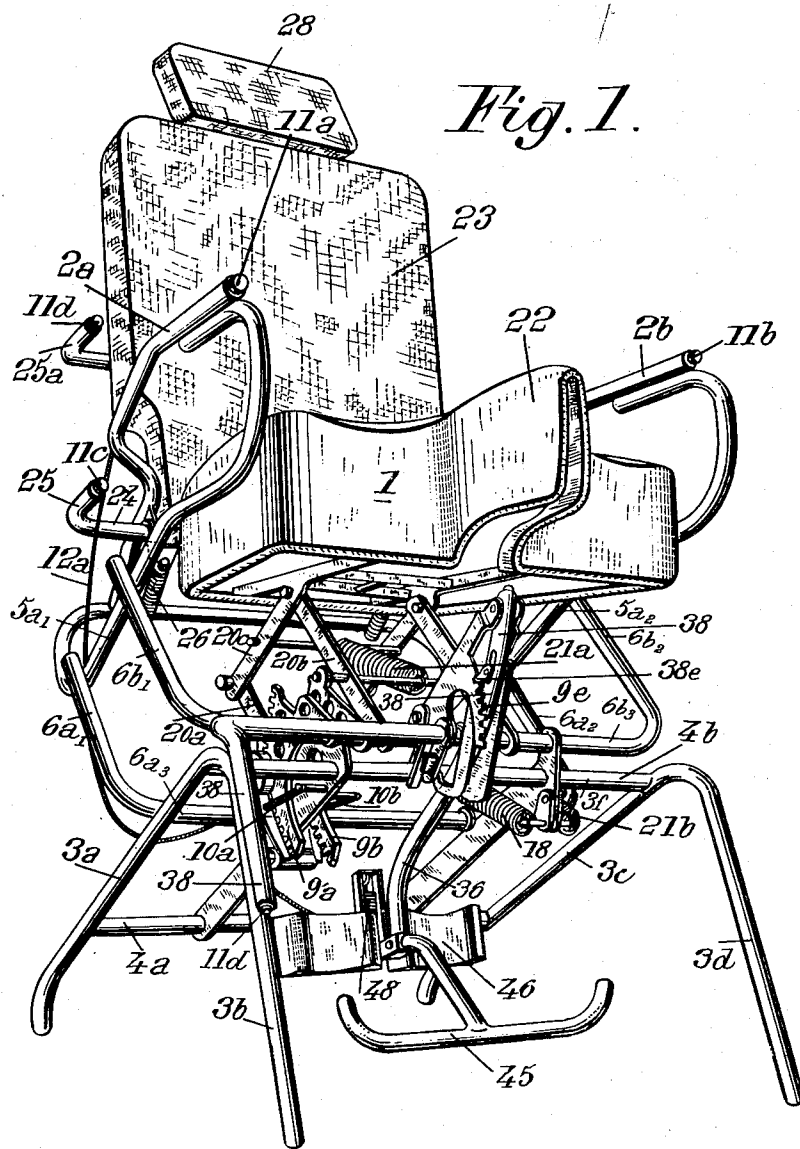
F. MARY

2,690,208

CHAIR FOR PARALYTICS

Filed July 17, 1951

7 Sheets-Sheet 1



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CHAIR FOR PARALYTICS

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Fig. 2.

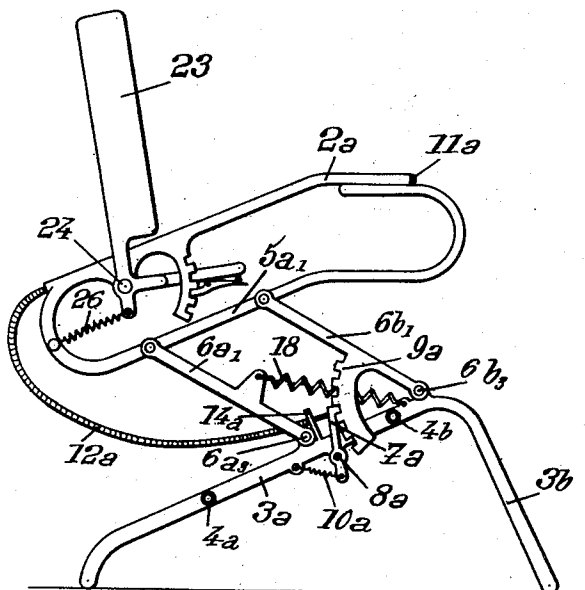
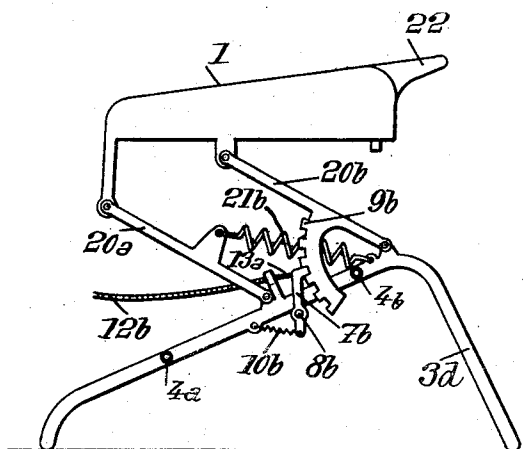


Fig. 3.



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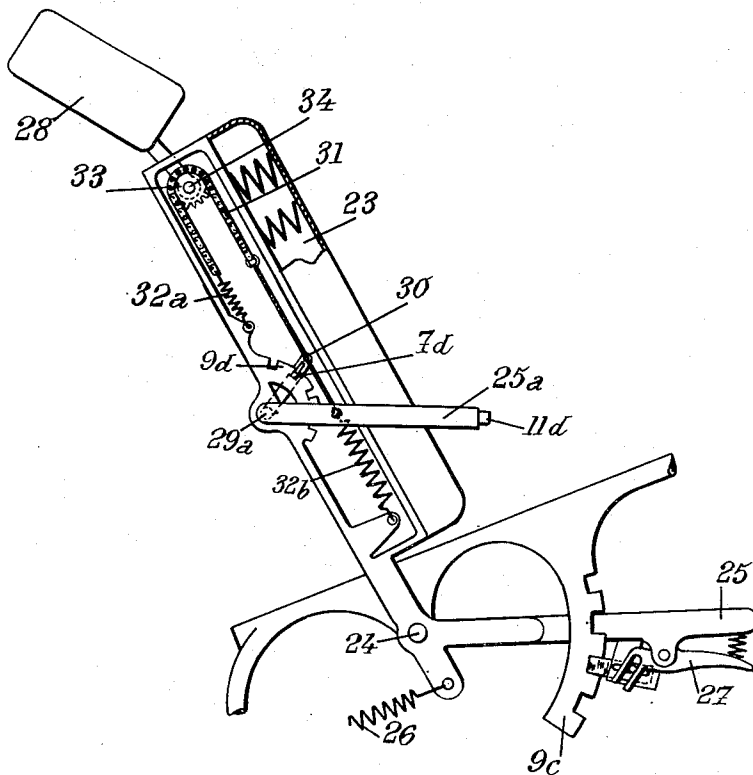
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Fig. 4.



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Fig. 5.

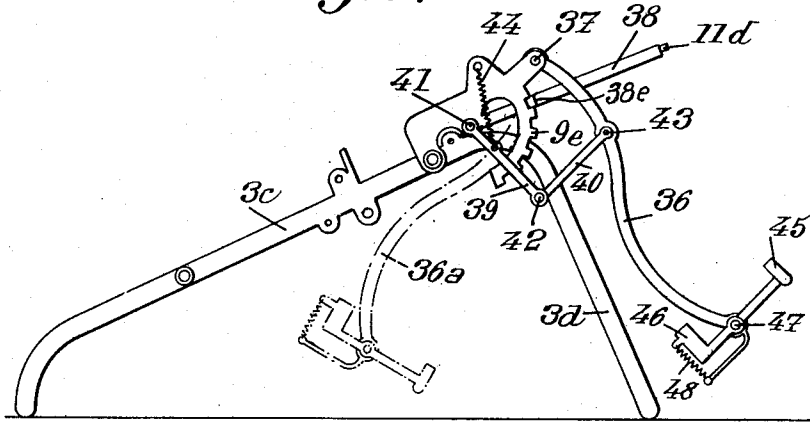
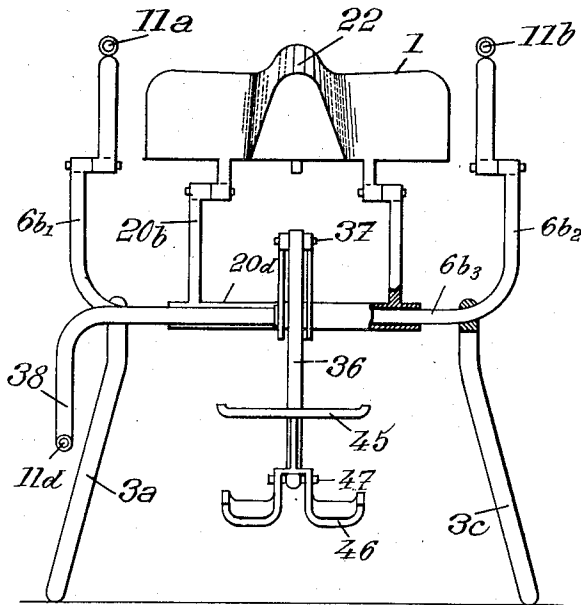


Fig. 6.



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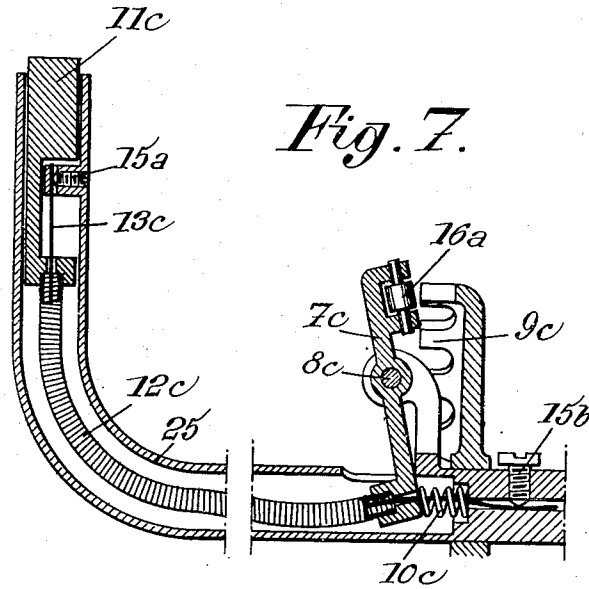


Fig. 7.

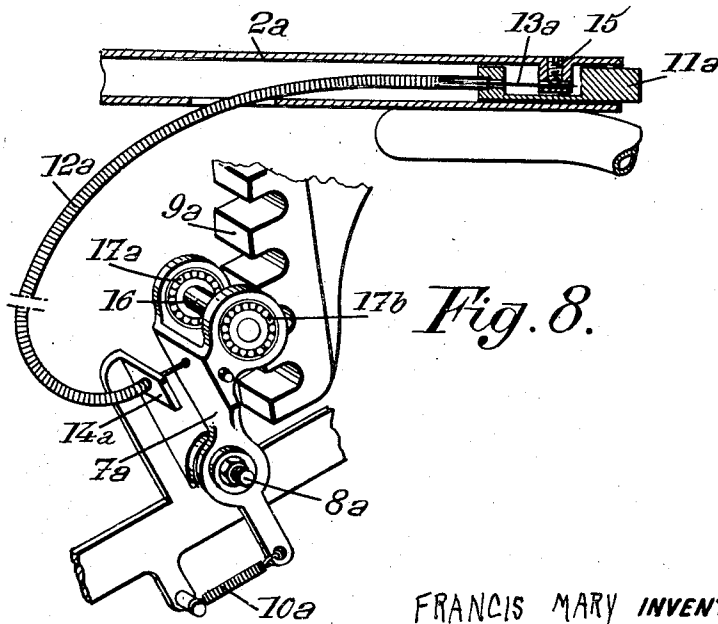


Fig. 8.

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Fig. 10.

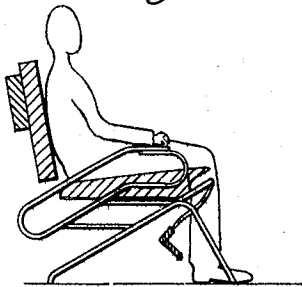


Fig. 9.

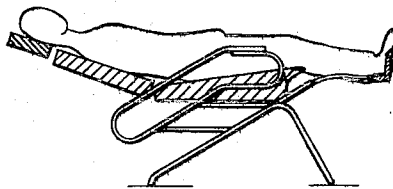


Fig. 11.

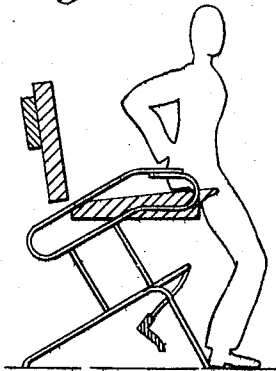


Fig. 12.

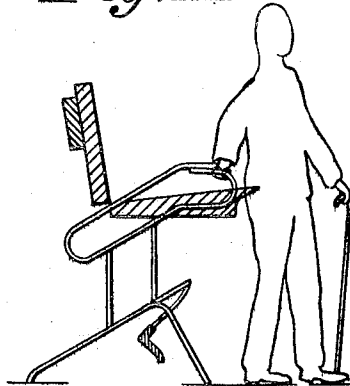
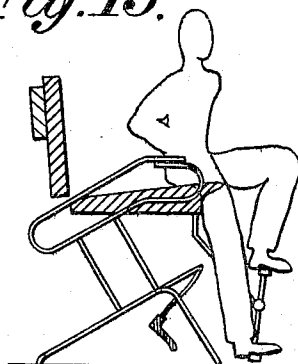


Fig. 13.



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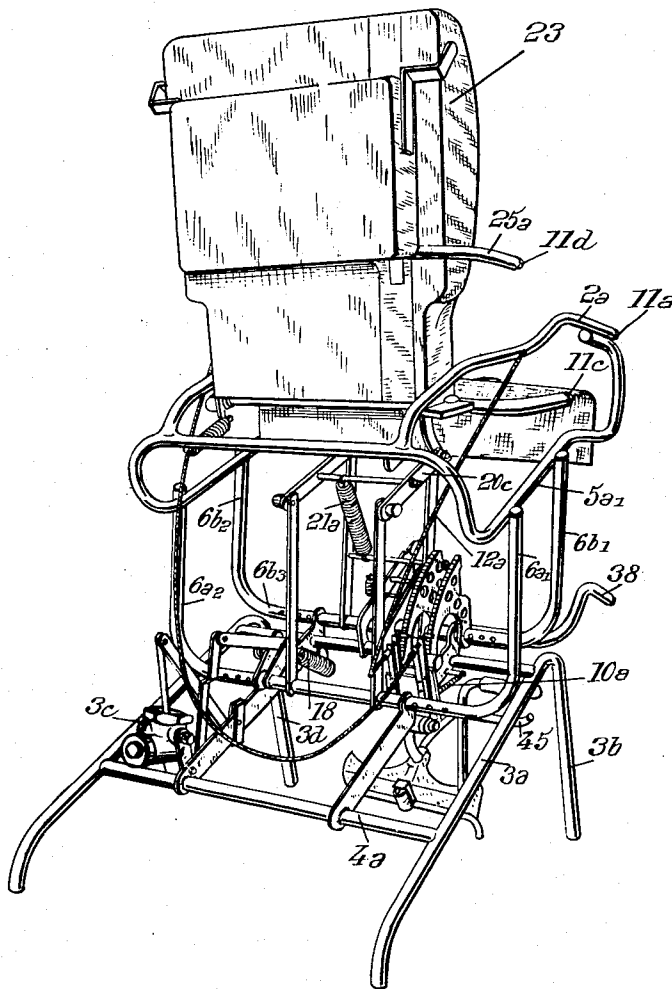
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Fig. 14.



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UNITED STATES PATENT OFFICE

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CHAIR FOR PARALYTIKS

Francis Mary, Paris, France

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Claims priority, application France July 20, 1950

6 Claims. (Cl. 155-28)

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The present invention relates to chairs for paralytics who cannot use their legs but can make use at least partly of their arms.

The object of my invention is to provide a chair of this kind which is better adapted to meet the requirements of practice than those used up to the present time and in particular which enables the paralytic to change himself his position in said chair and to pass from a seated or recumbent position into an upright position where he can generally move by means of crutches, sticks or the like.

Preferred embodiments of my invention will be hereinafter described with reference to the accompanying drawings, given merely by way of example, and in which:

Fig. 1 is a general perspective view of a chair according to my invention;

Fig. 2 is a diagrammatic side view showing the elbow rests and the back of the chair;

Fig. 3 is a similar view showing the seat;

Fig. 4 is a similar view showing more especially the back and the head rest of the chair;

Fig. 5 is a similar view showing more especially the foot rest;

Fig. 6 is a view of the elbow rests, the seat and the foot rest;

Figs. 7 and 8 are detail views showing transmissions to be used in the arm chair according to my invention;

Figs. 9 to 13 are diagrammatic views illustrating different positions of the paralytic on the chair according to my invention.

Fig. 14 is a view from the rear of the chair shown by Fig. 1.

According to the embodiment shown by the drawing, the chair according to my invention essentially includes a frame 3a-3b-3c-3d, a seat 1, and two elbow rests 2a-2b rigid together.

The frame is essentially constituted by four feet 3a, 3b, 3c, 3d, two of which, to wit 3a and 3c, are oblique with respect to the ground, said feet being connected together by bracing members 4a and 4b.

Each of the elbow rests 2a, 2b is supported by the frame through two parallel arms, to wit 6a₁ and 6b₁ for elbow rests 2a and 6a₂ and 6b₂ for elbow rest 2b, the tops of the two parallel arms 6a₁ and 6b₁ being pivoted to a part 5a₁ rigid with elbow rest 2a and the tops of the two parallel arms 6a₂ and 6b₂ being pivoted to a part 5a₂ rigid with elbow rest 2b. The bottom ends of arms 6a₁ and 6a₂ are interconnected by a cross piece 6a₃ integral therewith and the bottom ends of arms 6b₁ and 6b₂ are interconnected by a cross

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piece 6b₃ integral therewith, these cross pieces 6a₃ and 6b₃ being journaled in the frame so that arms 6a₁, 5a₁ and 6b₁ form three sides of a parallelogram while, similarly, arms 6a₂, 5a₂ and 6b₂ form three sides of a parallelogram located in a plane parallel to the first one.

Owing to this arrangement, the elbow rests can be raised from the position shown by Figs. 9 and 10 to that shown by Fig. 12, the difference of level thus obtained being equal to the length of each of the arms 6a₁, 6b₁, 6a₂, 6b₂.

My chair includes means for locking the elbow rests in any of a plurality of different positions and resilient return means urging the elbow rests upwardly when they are released by said locking means.

The locking means include a pawl 7a pivoted to the frame at 8a and cooperating with a toothed sector 9a rigid with one of the arms 6a₁, 6b₁, for instance with 6b₁. Pawl 7a is urged by a spring 10a toward its position of engagement with sector 9a.

Pawl 7a is controlled by the paralytic through a transmission provided between said pawl and one of the elbow rests, where the control member is constituted by a push-button 11a. Advantageously, this transmission is of the Bowden cable type, including, as shown by Fig. 3, a flexible sheath 12a fixed at one end to said push-button 11a and at the other end to a part 14a rigid with the frame and a cable 13a slidable in said sheath and fixed at one end to a part 15 rigid with the elbow rest 2a and at the other end to pawl 7a.

It should be noted that Fig. 8 shows modifications of construction as compared with that of Fig. 2.

First, in the construction of Fig. 8, rack 9a is rectilinear.

Secondly, the pawl, instead of being made of a single piece, includes a spindle 16 journaled in two ball bearings 17a, 17b, so that it is easier to withdraw said spindle from the interval between two teeth of rack 9a.

The resilient return means for urging the elbow rests upwardly are constituted, in the example shown by the drawing, by a spring 18 interposed between the frame and arm 6a₁.

I will now describe the mounting of the seat 1 of the chair.

This seat is connected with the frame by means of two pairs of parallel arms 20a, 20b the lower ends of which are pivoted to the frame about axes such, for instance, as those of tubes 6a₃ and 6b₃, respectively. The top end of arm 20b

is pivotally connected with seat 1 about an axis parallel to the above mentioned axes. The top end of arm 20a is pivotally connected, about an axis parallel to the above mentioned ones, either directly to seat 1 as shown by Fig. 3 or to an arm 20c rigid with said seat as shown by Fig. 1.

This seat supporting device is provided with resilient return means for urging the seat upwardly and constituted by a spring 21a or 21b. Spring 21b is mounted in a manner similar to spring 18 above referred to for urging the elbow rests upwardly. But it must be stronger, so as to compensate, at least partly, for the weight of the paralytic.

The means for locking the seat in any of a plurality of different positions are controlled by a push-button 11b carried by elbow rest 2b and acting upon a pawl 7b pivoted at 8b to the frame and cooperating with a toothed sector 9b rigid with arm 20b. This pawl is urged toward sector 9b by a spring 10b. The transmission between push-button 11b and pawl 7b is analogous to that above described and includes a sheath 12b and a cable 13b.

Abutments are provided for limiting the displacements of seat 1 and elbow rests 2a-2b.

In order to adjust the height of the seat and elbow rests, the paralytic acts as follows:

If it is supposed that initially the paralytic is seated in the position shown by Fig. 10, he first lifts his arms from the elbow rests, then he pushes for a short time push-button 11a. Under the effect of spring 18, the elbow rests rise above their initial level. They are locked in this position when push-button 11a is released. The paralytic then applies his arms on the elbow rests and shifts a great part of his weight from the seat to the elbow rests. He then pushes push-button 11b. Under the action of spring 21a or 21b, the seat is lifted and for instance restored to the relative position it occupied initially with respect to the elbow rests. It suffices to repeat this succession of operations a sufficient number of times to bring the seat from the position of Fig. 10 to that of Fig. 11 and finally to that of Fig. 12. When the seat is in this position, the back of the paralytic is at the height it occupies when he is standing upright so that he can leave his chair with the minimum of difficulty.

In order to prevent any risk of the paralytic losing his balance when he is going to leave the chair, the upper part of the seat carries a frontward projection 22 on which the paralytic can support himself astride, somewhat as on the saddle of a bicycle.

Advantageously, as shown by the drawing, the back 23 of the chair is pivoted at 24 to the elbow rests (Figs. 1 and 4). This back 23 can be more or less inclined by means of a lever 25. A spring 25 urges the back 23 frontwardly and locking means are provided for holding it in the desired position. Said locking means may be constituted by a pawl pivoted to lever 25 and cooperating with a toothed sector rigid with elbow rest 2a.

However, preferably, according to the construction illustrated by Figs. 1 and 7, the inclination of the back 23 is controlled, through a Bowden device 12c-13c, from a push-button 11c slidable in lever 25 so as to operate a pawl 7c, as shown by Fig. 7.

This pawl includes a roller 13a and turns about an axis 8c, a spring 10c urging said pawl toward engagement with toothed sector 9c.

The respective ends of cable 13c are fixed by means of screws 15a and 15b. One end of sheath

12c is fixed to push-button 11c and the other end to pawl 7c.

Back part 23 carries a head rest 28 pivotable with respect to said seat.

To control the position of said head rest, I provide a lever 25a pivoted to the back part 23 and carrying a pawl 7d adapted to cooperate with a toothed sector 9d fixed with respect to the back. This pawl can be disengaged from this toothed sector by means of a device analogous to that shown by Fig. 7 and controlled by a push-button 11d. A finger 30 rigid with lever 25a serves to pull a chain 31 passing around a toothed pinion 33 rigid with the head rest 28, the ends of said chain being secured to springs 32a and 32b fixed to the back part 23. Spring 32a serves merely to stretch the chain, whereas spring 32b is stronger.

The arm chair according to my invention includes another movable structure, to wit a foot rest. This foot rest is supported by an arm 36 pivoted to the frame about an axis 37. Arm 36 can be retracted under the seat. It is controlled by means of a crank lever 38-39 pivoted to the frame at 41 and the end 42 of which is connected to a point 43 of arm 36 by a link 40. This system is arranged in such manner that for a given effort exerted on handle 38, the force applied to arm 36 is the greater as said arm is getting nearer to the horizontal position.

Arm 36 can be locked in any of a plurality of positions by means of a pawl 38e carried by lever 38 and cooperating with a toothed sector 9e carried by the frame and controlled through a push-button 11e, and a spring 44 urges lever arm 39 toward the horizontal position.

Arm 36 carries the foot rest structure, constituted by a bar 45 and heel supports 46, arranged to maintain the feet in position thereon. This foot rest structure is pivotable about a spindle 47 and it is urged by a spring 48 secured to a part rigid with arm 36 toward a position of rest.

In order to use the foot rest, the paralytic brings, by means of handle 38, arm 36 from the retracted position 36a (Fig. 5) into a position for which heel supports 46 are substantially vertical. Supporting himself on his arms, he places his feet in their supports. Then, he again operates handle 38 to move arm 36 upwardly, for instance, if so desired, into a substantially horizontal position as shown by Fig. 9.

My chair is mostly constituted by steel tube elements. Such elements may serve to house the Bowden cable transmissions.

Of course, the maximum and/or minimum levels of the seat may be adjusted, in particular according to the size of the paralytic, for instance by means of telescopic elements.

The resilient return means may be provided either with brakes or with means for supplying additional energy, such as a hydropneumatic piston.

The chair according to my invention may further carry pedal training means such as diagrammatically shown by Fig. 13.

In a general manner, while I have, in the above description, disclosed what I deem to be practical and efficient embodiments of my invention, it should be well understood that I do not wish to be limited thereto as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claims.

What I claim is:

1. A chair for paralytics which comprises, in combination, a frame adapted to rest on the ground, a seat carried by said frame and movable upwardly and downwardly with respect thereto, two elbow rests carried by said frame and movable as a whole upwardly and downwardly with respect thereto, independently of the upward and downward movements of said seat, resilient means for urging said seat upwardly, means for locking said seat at any of a plurality of different levels with respect to said frame, means, including a control member carried by said chair within reach of the paralytic, for operating said locking member, resilient means for urging said elbow rests upwardly, means for locking said elbow rests at any of a plurality of different levels with respect to said frame, and means, including a control member carried by said chair within reach of the paralytic, for operating said last mentioned locking means.

2. A chair according to claim 1 further including a back pivoted to said elbow rests about a transverse horizontal axis, elastic means for urging said back toward upright position, and means operative by the paralytic for locking said back with respect to said elbow rests in any of a plurality of different positions.

3. A chair according to claim 1 further including a back pivoted to said elbow rests about

a transverse horizontal axis, elastic means for urging said back toward upright position, means operative by the paralytic for locking said back with respect to said elbow rests in any of a plurality of different positions, a head rest pivoted to the top part of said back about a transverse horizontal axis, elastic means for urging said head rest upwardly, and means operative by the paralytic for locking said head rest with respect to said back.

4. A chair according to claim 1 further including a foot rest pivoted to said frame about a transverse horizontal axis, and means operative by the paralytic for adjusting the position of said foot rest with respect to said frame.

5. A chair according to claim 1 further including a frontward projection carried by the front edge of said seat at the middle thereof, for supporting temporarily the paralytic astride thereon.

6. A chair according to claim 1 in which said seat and said elbow rests are connected with said frame each through two pairs of parallel links.

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