United States Patent

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Continuation of application Ser. No. 751,016, June 7, 1968, now abandoned, which is a continuation of application Ser. No. 540,652, Apr. 6, 1966, now abandoned.

[54] **WHEELCHAIR INCLUDING FOOT RESTS AND ARM RESTS**
4 Claims, 1 Drawing Fig.

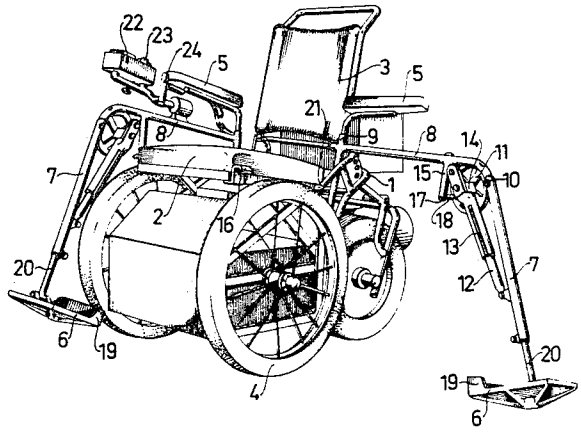
[52] **U.S. Cl.** **297/429,** 5/86, 297/417, 180/52
[51] **Int. Cl.** **A47c 7/54,** A47b 83/04
[50] **Field of Search** 297/414, 416, 417, 419, 422, 427, 429, 433, 437, 280/79.2, 30; 5/86; 180/52

[56] **References Cited**
UNITED STATES PATENTS

2,662,587	12/1953	McIlvaine	297/417
3,057,638	10/1962	Floyd	297/417X
3,205,007	9/1965	Sommer	297/429

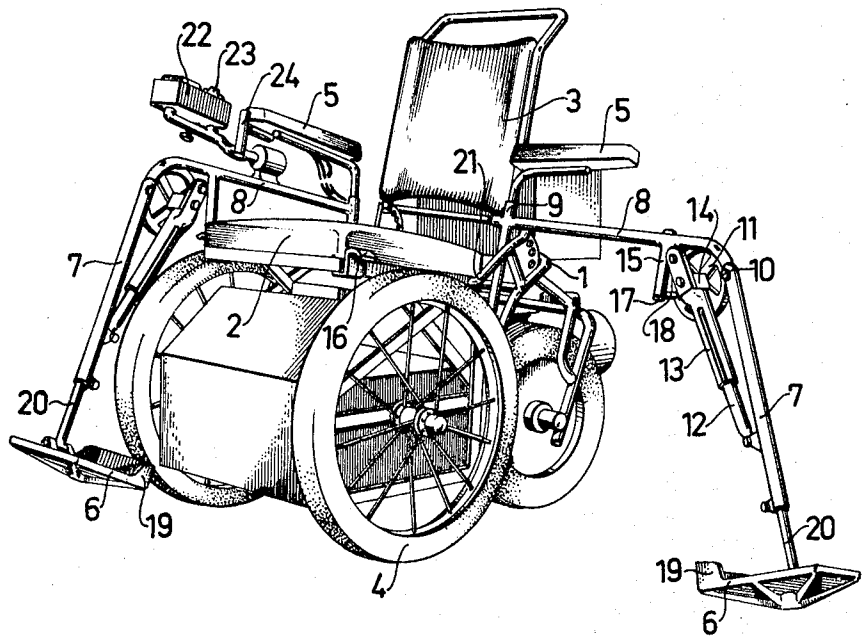
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ABSTRACT: A wheelchair is provided with a footrest and an armrest at opposite sides thereof. The footrest and armrest on at least one side of the wheelchair are supported by a frame portion which is pivotable around an axis extending substantially perpendicular to an associated supporting surface, and locking means is provided to lock the frame portion in position. The frame portion includes two swingably interconnected parts along with means for adjusting the angle between the parts. The seat and backrest of the wheelchair are pivotable around an axis disposed adjacent the back of the seat and extending substantially parallel with an associated supporting surface.



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WHEELCHAIR INCLUDING FOOT RESTS AND ARM RESTS

CROSS-REFERENCE TO RELATED APPLICATION

The present application is a continuation of a streamlined continuation application Ser. No. 751,016 filed on Jun. 7, 1968 by Per E. C. Udden for "Motor-Powered Wheelchair," which in turn was a continuation of parent application Ser. No. 540,652, filed Apr. 6, 1966, by Per E. C. Udden for "Motor-Powered Wheelchair."

BACKGROUND OF THE INVENTION

In wheelchairs of conventional design, the footrests and armrests are usually rigidly interconnected with the frame of the chair so that it is difficult for a person who is disabled to move into and out of the chair.

Known constructions have employed swingable armrests which can be laterally moved in order to make it easier for a person to move onto and off of the seat of the chair. In some forms of wheelchairs, the chairs can be pivoted around an axis extending substantially parallel with the floor so that the seat and backrest can be fixed at a suitable angle. It is also known to provide wheelchairs with detachable footrests to enable the wheelchair to be more readily handled and to closely approach walls, tables and beds or the like.

The footrests may be secured in the frame of the chair by means of chains or the like so that it can be readily loosened and removed by the patient. However, conventional foot- and armrests cannot be readily handled by severely disabled persons.

SUMMARY OF THE INVENTION

In the present invention, the footrest and armrest at one side of the chair are mounted on a frame portion which is pivotable around an axis extending substantially perpendicular to the floor. This enables the footrest and armrest at one side of the chair to be simultaneously swung sidewards and outwardly so that it is easy to gain access to the chair and to leave the chair when so desired. Locking means is also provided for locking the footrest and armrest in position relative to the chair so that they will not swing out accidentally when the wheelchair is in use.

The frame portion includes two swingably interconnected parts the fulcrum of which corresponds to the level of the knee joint of a person sitting in the chair. The angle between the two swingably interconnected parts of the frame can be adjusted by pulling or pushing a wheel which controls screw members, or by operating electrical contact devices for an electric motor, such contact devices being disposed on or close to one of the armrests within easy reach of the patient.

BRIEF DESCRIPTION OF THE DRAWING

The drawing is a perspective view of a wheelchair according to the present invention illustrating the frame portion at one side thereof swung outwardly of the wheelchair.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The wheelchair includes a frame **1** made for example of steel tubing and provided with a seat **2** and a backrest **3**. The chair includes two large front wheels **4** at opposite sides thereof which are not steerable.

The chair is also provided with armrests **5** and footrests **6** disposed at opposite sides thereof, each of the armrests and footrest being mounted on an associated frame portion including two swingably interconnected parts **7** and **8**. Each of these frame portions is laterally pivotable around a substantially vertical shaft **9**, and are accordingly swingable about an axis extending substantially perpendicular to an associated supporting surface.

The two parts **7** and **8** of the frame portion at each side of the wheelchair are interconnected for example by a bolt **10**. The angle between the horizontal part **8** and the part **7** carrying the footrest is adjustable by means of screw devices controlled by a wheel **11**. Two telescopic tubes **12** and **13** are

adjustable by means of a screw and a housing **14**. Turning of the wheel **11** in either direction changes the angle between the two parts **7** and **8** of the frame portion thereby causing the footrest to be raised or lowered.

The level of the fulcrum **10** provided between parts **7** and **8** of the frame portion corresponds substantially to the position of the knee joint of a person sitting in the chair whereby changing the angle between the parts of the frame portion causes a swinging movement of the legs of the patient around the axis of the knee joint.

The horizontal part **8** of the frame portion is also provided with locking means **15** intended to cooperate with a locking heel **16** mounted on the frame of the chair. The locking means **15** comprises a tubular part in which a spring-loaded piston **17** is arranged to be displaced by means of a handle **18**.

Each of the footrests consists of a plate **6** provided with a flangelike support **19** for the foot. The distance between the plate **6** and the fulcrum **10** is individually adjusted by displacement of the fastening tube **20** at the end of which the plate **6** is swingably connected.

The backrest **3** and the seat **2** are pivotable around a horizontal axis **21** disposed adjacent the back of the seat. A control box **22** is disposed close to one armrest, said control box having a knob **23** for controlling an electrical driving mechanism for the wheelchair in the case of a self-propelled type of wheelchair. This box is swingable around an axis **24** extending downwardly from one of the armrests **5** whereby it can be laterally moved to enable a patient to drive the chair close to a table or the like.

All of the means by which the footrests and armrests are controlled as well as the backrest and the seat-swinging motion can be operated either manually or by suitable electric motors controlled by regulating means disposed in the control box **22**.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

I claim:

1. A wheelchair including footrests at opposite sides of the wheelchair and armrests at opposite sides of the wheelchair, the footrest and armrest on at least one side of the chair being supported by a frame portion which is pivotable around an axis extending substantially perpendicular to an associated support surface to enable the footrest and armrest on said one side of the chair to be simultaneously swung sidewards and outwardly to gain access to the chair and to leave the chair when so desired, and locking means for retaining said frame portion and the associated footrest and armrest in a predetermined locked position.

2. A wheelchair including footrests at opposite sides of the wheelchair and armrests at opposite sides of the wheelchair, the footrest and arm on at least one side of the chair being supported by a frame portion which is pivotable around an axis extending substantially perpendicular to an associated support surface, and locking means for retaining said frame portion and the associated footrest and armrest in a predetermined locked position, said frame portion including two parts swingably interconnected with one another about an axis, the axis corresponding to the level of the knee joint of a person sitting in the chair, screw means for controlling the angle between said swingably connected parts and means for operating said screw means.

3. Apparatus as defined in claim **1** wherein said wheelchair includes a seat and backrest, said seat and backrest being pivotable around an axis disposed adjacent the rear of the seat and extending substantially parallel with an associated supporting surface.

4. Apparatus as defined in claim **2** including an electric motor for controlling the angle between the two swingably interconnected parts of the frame, and selectively operable contact devices for controlling said electric motor.