United States Patent

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[54] **CURB-CLIMBING ATTACHMENT FOR WHEEL CHAIRS**
2 Claims, 4 Drawing Figs.

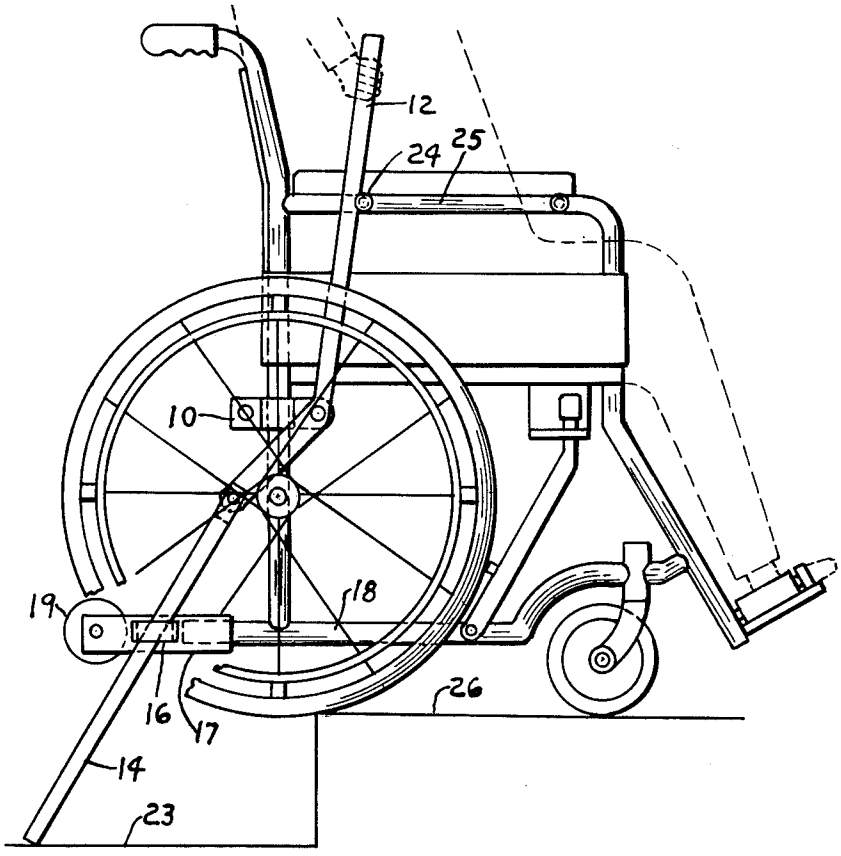
[52] **U.S. Cl.** **280/5.32,** 280/5.2
[51] **Int. Cl.** **B62b 5/02**
[50] **Field of Search** ..... 280/5.2, 5.28, 5.3, 5.32, (Stair Climber), (Chairs (Digest))

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Primary Examiner—Leo Friaglia

ABSTRACT: Curb-Climbing Structure added to wheel chairs with lifting means to be actuated by the occupant of the chair to raise the rear of the chair to a curb level after the front portion of the chair is placed on the curb.



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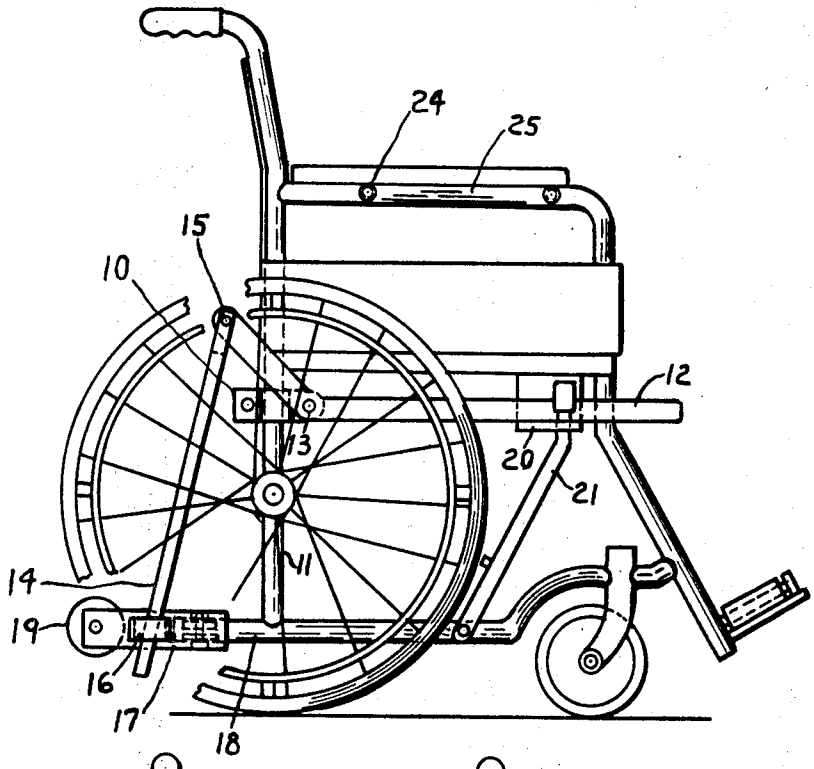


Fig. 1.

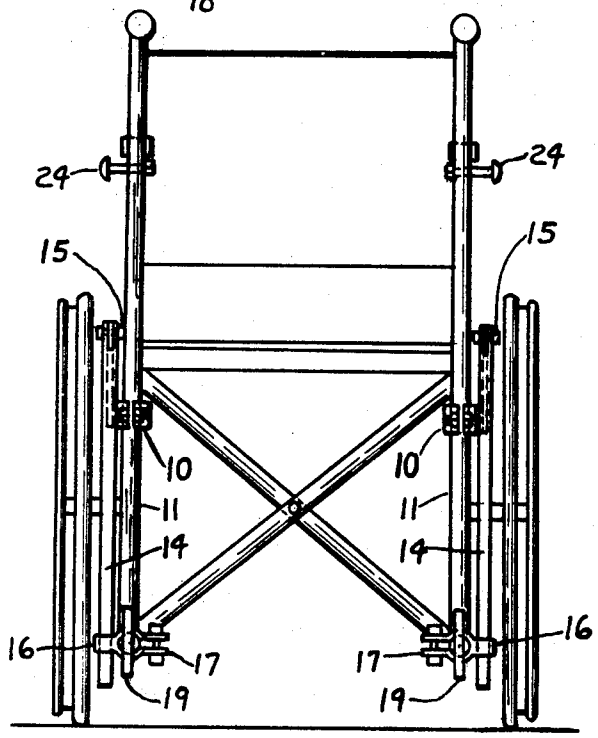


Fig. 2.

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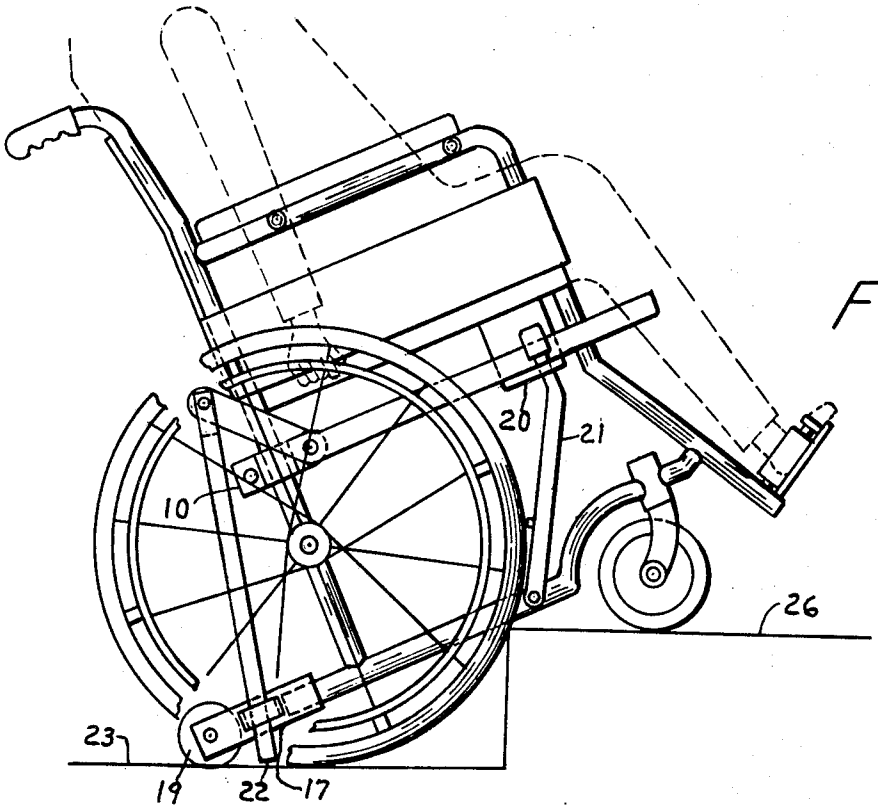


Fig. 3.

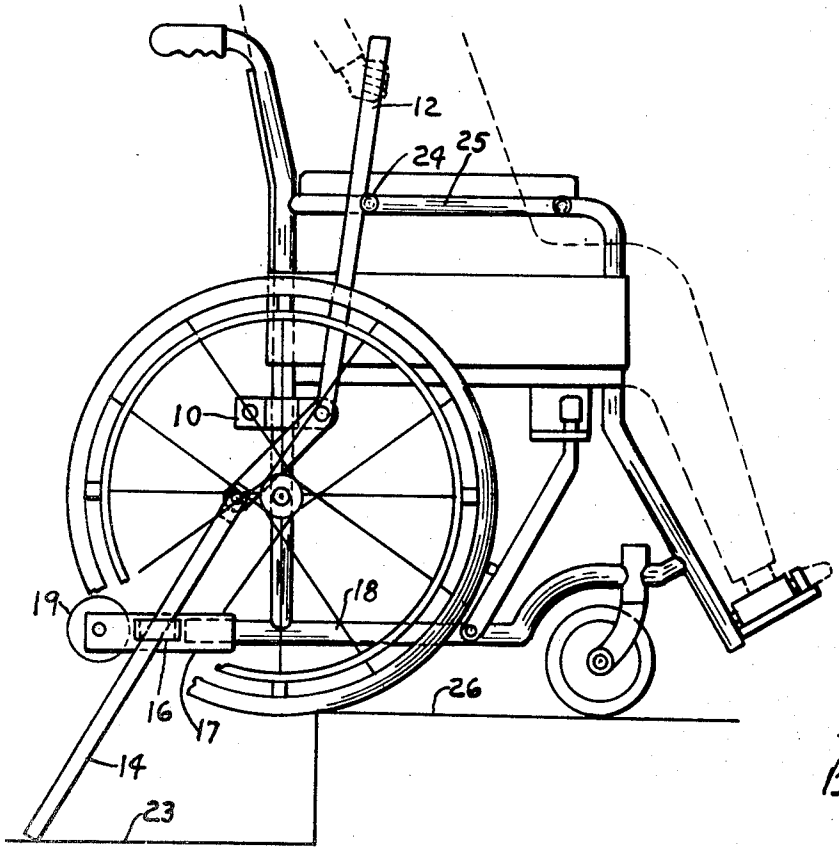


Fig. 4.

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CURB-CLIMBING ATTACHMENT FOR WHEEL CHAIRS

This invention relates to improvements to conventional self-propelled wheelchairs for the use of handicapped persons. The main object of this invention is to provide mechanism that is attached to, or can be attached to, or can be made an integral part of conventional manually operated wheelchairs to provide means that can be manipulated by the occupant of the chair to climb upon curbs or other elevated surfaces or descend therefrom, as the case may warrant.

Another object is to provide simple inexpensive structure that can be quickly manipulated and will not interfere with the normal utility of the chair, such as the operation thereof; the folding and storing thereof; and otherwise the normal handling of the chair. In the accompanying drawing:

FIG. 1, is a side elevation of a conventional wheel chair with my improvements attached thereto;

FIG. 2, is a rear elevation of the same;

FIG. 3, is a side elevation of the same with the chair in the first position to accomplish climbing a curb, the front portion being on the curb; and

FIG. 4, is a side elevation of the chair after the rear portion has been raised up to the level of the curb.

The drawing show a conventional wheelchair with my improvements attach thereto. Therefore, for reason of simplicity it is thought unnecessary to describe the wheelchair structure since a wheelchair structure is widely known throughout the world.

My improvement to wheelchairs comprises in general a clamp **10** attached to the rear vertical bar **11** of each side frame of a conventional wheelchair to each of which a relatively thin lever **12** which can be flexed sidewise is pivotally mounted at **13**. A plunger **14** is pivotally attached to the rear end **15** of each lever **12** and each plunger **14** extends through a guide **16** that is integral to a clamp **17** attached to the rear end of the bottom horizontal bar **18** of each respective side frame of the chair. A relatively small wheel **19** is rotatively mounted at the rear of each clamp **17** for the purpose of checking the backward tipping of the chair, and thus insuring safety to the occupant, which is required to place the front portion of the chair upon a curb, as shown in FIG. **3**.

Each lever **12** extends to the front of the chair and normally rests on the normal locking plate **20** of the brake lever **21** normally provided on each side frame of the chair. The plungers **14** are such that when the levers **12** are in this normal position and the chair is tipped backward onto the rear wheels **19**, as shown in FIG. **3**, the lower end **22** of the plungers will just clear the level **23**.

To climb a curb, the front portion of the chair is first placed upon the curb by the occupant throwing his body backward and pushing forward on the drive wheels simultaneously and this action also moves the chair forward until the drive wheels contact the face of the curb as show in FIG. **3**, as well as to tip the chair backward onto the rear wheels **19**. The occupant then pulls upward on each lever simultaneously and flexes them outwardly to pass by and be hooked on stud, or the like, **24** provided in the normal upper horizontal bar **25** of each side frame, respectively, of the chair.

This movement of the levers **12** forces each respective plunger **14** downward against the lever surface **23** and thereby raises the rear of the chair upward substantially to the top **26** of the curb, as shown in FIG. **4**. This chair is then driven forward until the drive wheels are well on top of the curb. The levers **12** are then lowered to their normal position on top of the brake-holding plates **20**, as shown in FIG. **1**.

To descend from a curb, the chair is first backed near the edge of the curb and the levers **12** are raised and hooked on the studs **24** which lowers the plungers **14** to contact the level below. The chair is then backed substantially to the position shown in FIG. **4**. The levers **12** are then lowered in control of the occupant which lowers the rear of the chair y to the position shown in FIG. **3**. The chair is then backed until the front portion drops from the curb to the level below. A plurality of studs **25** could be provided in bar **25**, as shown, to accommodate various heights of curbs.

In the transition of the chair from position shown in FIG. **3** to that shown in FIG. **4**, it will be noted that the plungers **14** are forcibly inclined toward the front of the chair by the manipulation of the levers **12**. This action forces the drive wheels against the face of the curb during the raising of the rear of the chair and is most essential to insure proper operating. This inclination of the plungers **14** is effected by the fulcrum of the levers **12** being positioned above and forward of the center of the drive wheels of the chair.

Whereas I show my improvement to wheelchairs as attachments thereto, it is obvious that the same could be built into wheel chairs as an integral part thereof when the chair is manufactured. Therefore, I do not wish to be confined to the exact details set forth as the same are susceptible of modification within the spirit and scope of the invention.

I claim:

1. In combination with a conventional wheelchair an attachment to accomplish a curb-climbing and descending function comprising a clamp attached to each side frame of the chair and near the back thereof and a lever pivotally attached to each clamp, to swing fore and aft relative to the chair the forward end of each lever, including a handle disposed for manipulation by the occupant of the chair means attached to each side frame of the chair for use in holding said levers at various operational positions, an upwardly extending plunger pivotally attached to the other end of each lever and disposed to contact the lever surface when the levers are manipulated to raise or lower the rear portion of the chair, which ever the case may warrant, when the front portion of the chair is upon a curb or other elevated surface, an apertured guide means for slidably engaging each said plunger attached to the lower horizontal bar of each side frame of the chair, and a wheel rotatively mounted at the rear of each guide and disposed to check the backward tipping of the chair as required to place the front portion of the chair upon a curb or other elevated surface.

2. An occupant propelled and controlled curb-climbing wheelchair comprising a pair of rigid side frames sustained in spaced relationship by lateral structure, said structure forming a chair comprising a seat, a back and a footrest, a drive wheel rotatively mounted on each side frame at the rear of the chair and a swivel wheel rotatively mounted to each side frame at the front or footrest end of the chair, a manually operated brake for each drive wheel attached to each side frame, curb-climbing means integral with each side frame comprising a lever pivotally mounted to each side frame near the back of the chair to swing fore and aft relative to the chair, the forward end of each lever including a handle disposed for manipulation by the occupant of the chair, means on each side frame for use in holding said levers at various operational positions an upwardly extending plunger pivotally attached to the other end of each lever and disposed to contact the level surface when the levers are manipulated to raise or lower the rear of the chair, which ever the case may warrant, when the front portion of the chair is upon a curb or other elevated surface an apertured guide for slidably engaging each said plunger integral to each side frame of the chair, and a wheel rotatively mounted to each side frame at the rear of each guide and disposed to check the backward tipping of the chair as required to place the front portion of the chair upon a curb or other elevated surface.