June 23, 1970 E. G. WALTER 3,516,559

WHEELCHAIR HANDLING APPARATUS

Filed Feb. 15, 1968 2 Sheets-Sheet 1

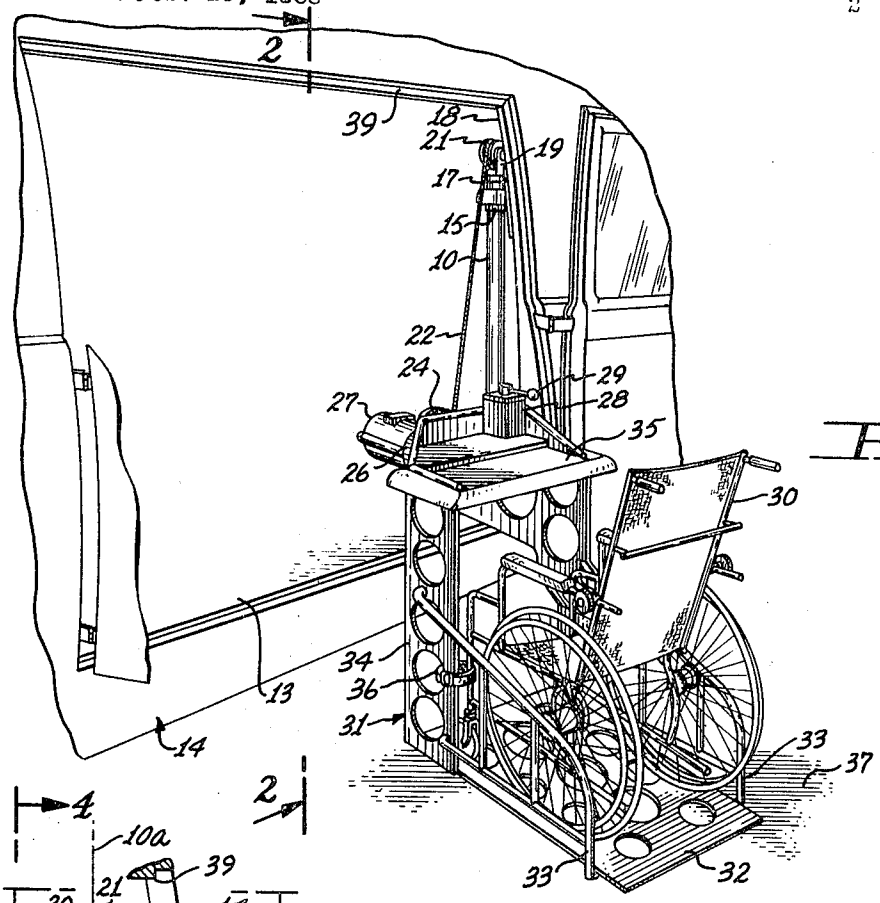

Fig. 1

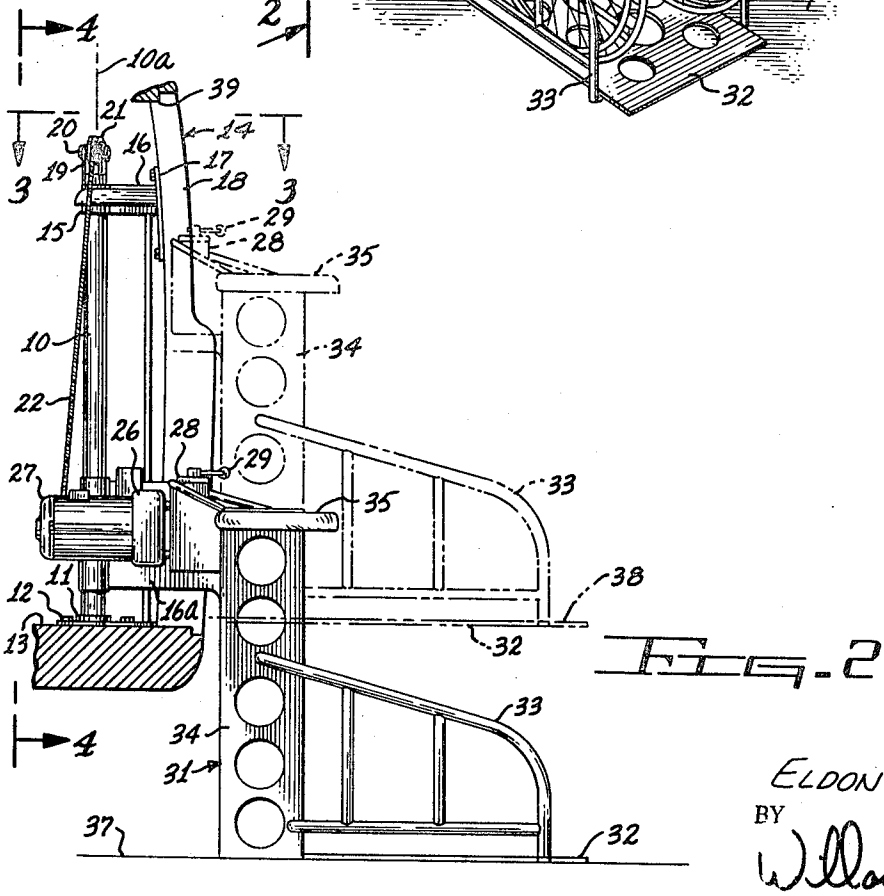

Fig. 2

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WHEELCHAIR HANDLING APPARATUS

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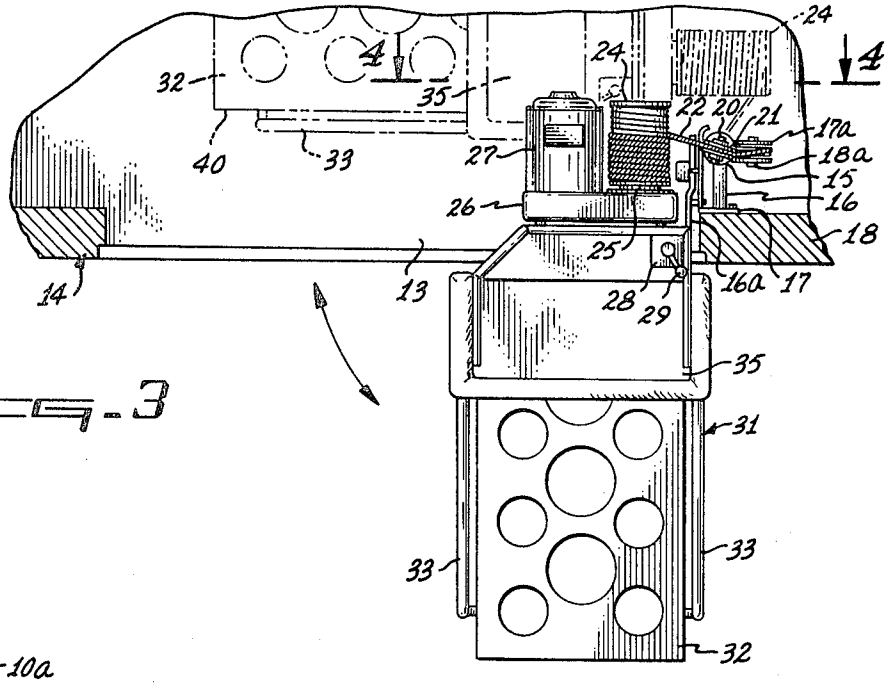

Fig. 3

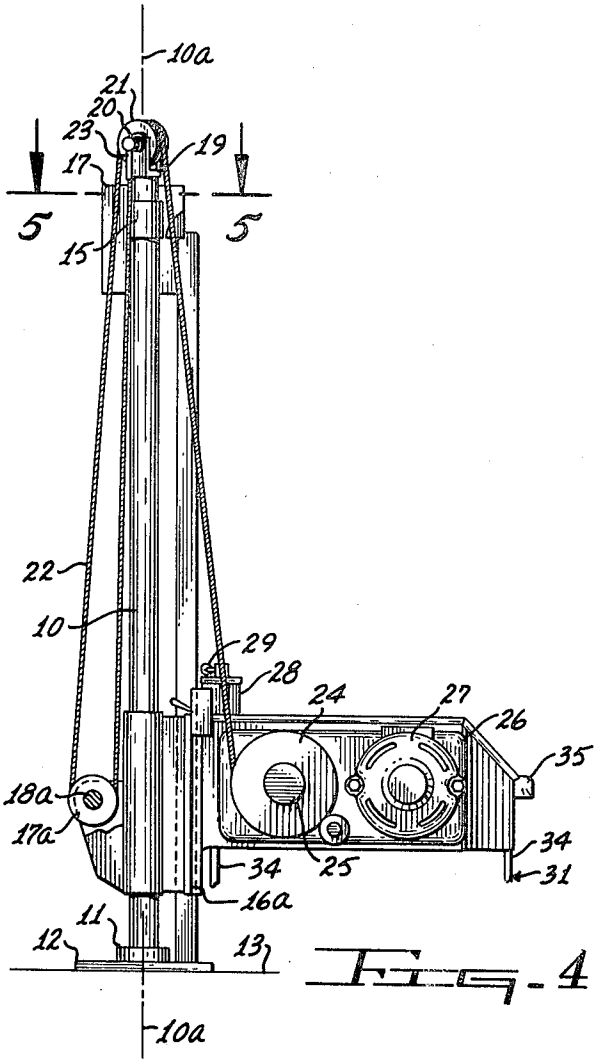

Fig. 4

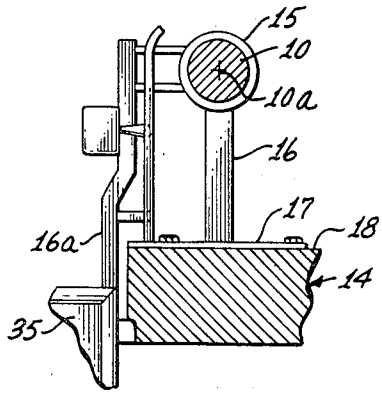

Fig. 5

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WHEELCHAIR HANDLING APPARATUS

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Int. Cl. B60p 1/46; B66f 9/14
U.S. Cl. 214—75 2 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for handling wheelchair patients, particularly the loading and unloading of patients in a wheelchair into an out of a motor vehicle under full control of the patient sitting in the wheelchair so that the patient unaided can wheel himself to the vehicle, load himself while sitting in the wheelchair into the vehicle and reverse the process with full control and safety for the patient.

BACKGROUND OF THE INVENTION

(1) The field of this invention lies in loading and unloading apparatus for motor vehicles, and is particularly directed to a device for handling a patient while in his wheel chair into and out of a motor vehicle.

(2) Heretofore it has been difficult if not impossible to load and unload a patient while remaining in the wheelchair into or out of a motor vehicle without having the assistance of other persons and lifting the patient out of the chair when placing him in the vehicle.

SUMMARY OF THE INVENTION

One of the objects of this invention is to provide a wheelchair handling apparatus by which the patient remains in the wheelchair while being loaded into and out of the vehicle and can remain in normal sitting position in the chair while riding in the vehicle.

Another object is to provide a wheelchair handling apparatus as recited above in which the patient in the chair can completely manipulate the loading and unloading operations himself without any assistance from anyone else.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view showing the wheelchair handling apparatus incorporating the features of this invention.

FIG. 2 is an enlarged fragmentary sectional view indicated by the line 2—2 in FIG. 1.

FIG. 3 is an enlarged fragmentary sectional view on the line 3—3 of FIG. 2.

FIG. 4 is an enlarged view indicated by the line 4—4 in FIGS. 2 and 3.

FIG. 5 is an enlarged fragmentary sectional view on the line 5—5 of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As an example of one embodiment of this invention, there is shown a wheelchair handling apparatus comprising an upright column **10** having a vertical axis of rotation **10***a* rotatably supported on a suitable thrust bearing **11** carried in the base plate **12** fixed to the floor **13** of a motor vehicle **14**. The upper end of the upright column **10** is journaled on a suitable bearing **15** carried in the support bracket **16** fixed by a suitable mounting plate **17** to the side panel **18** of the motor vehicle body **14**.

A lifting carriage **16***a* is slidably mounted for vertical movement on the column **10** and has an idler pulley **17***a* journaled on a pin **18***a* fixed in the carriage **16**. A bifurcated bracket **19** is mounted on the top of the column **10** and has a cross pin **20** upon which is journaled an idler pulley **21**. A lifting cable **22** has one end **23** fixed to the cross pin **20** from which the cable extends downwardly and around the idler pulley **17***a*, then upwardly over the idler pulley **21** and then downwardly to wrap up on the cable drum **24** which is fixed on the output shaft **25** of a suitable gear reduction unit **26** fixed to the carriage **16***a*. A reversing drive motor **27** connected to the gear reduction unit **26** is energized from the usual vehicle battery and reversably controlled by the reversing drum switch **28** conveniently located on the lifting carriage **16** for manipulation of its control lever **29** by the patient sitting in the wheelchair **30**.

Fixed to and depending downwardly from the lifting carriage **16***a* is the integral rigid wheelchair support frame **31** comprising a ground engaging plate **32**, guide railings **33**, and the upright plates **34** tied together by shelf **35** at the upper ends of the plates **34**, the shelf being for the convenience of the patient sitting in his wheelchair on the ground engaging plate **32**. Suitable restraining belts **36** may be strapped by the patient between the upright plates and the wheelchair **30** to secure it in lifting and lowering position on the ground engaging plate **32**.

In use: the patient sitting in his wheelchair at ground level **37** simply runs his wheelchair on the ground engaging plate **32** resting on the ground **37**. He then straps on the restraining belts **36** and reaches the control lever **29** of the switch **28**, and operates it to energize the motor **27** which causes the cable **22** to wrap up on the drum **24** raising the platform to the required height at position **38**, a suitable limit switch (not shown) being utilized to automatically de-energize the motor **27** when the platform **32** reaches the position **38**, FIG. 2. Having arrived at the raised position **38**, the patient in the wheelchair reaches for the top edge of the door opening at **39** and swings himself into the vehicle to the position **40**, FIG. 3. He then reverses the control switch to lower the ground engaging plate to the floor **13** of the vehicle where it remains securely during travel of the vehicle with the patient remaining in and facing forwardly in normal comfortable riding position in the vehicle. Reversal of the above sequence of steps enables the patient to readily discharge himself from the vehicle backdoor down to ground level and to continue on from the vehicle in his wheelchair, all under his own control and without any assistance from someone else.

While the apparatus herein disclosed and described constitutes a preferred form of the invention, it is also to be understood that the apparatus is capable of mechanical alteration without departing from the spirit of the invention.

What is claimed is:

1. In a motor vehicle having a body and including a floor and a door opening, wheelchair handling apparatus comprising:

(A) a vertically disposed column mounted within said vehicle,

(B) a lifting carriage mounted for vertical movement on the column and swingable about a vertical axis of the column,

(C) power means interconnected between the carriage and the column energizable to raise and lower the carriage on the column,

(D) a wheel chair receiving and supporting frame mounted on the carriage for carrying a patient in the wheelchair to be loaded and unloaded in and out of the motor vehicle,

(E) the wheelchair receiving and supporting frame includes a ground engaging plate, guide railing on the sides thereof, and upright plates, and including

a shelf fixed to top ends of the upright plates and a control switch on the carriage mounted above said shelf and manipulatable by the patient in the wheelchair to reversibly energize and de-energize the power means to raise and lower the patient in the wheelchair, located convenient to the patient sitting in the wheelchair in the receiving and supporting frame.

2. A wheelchair handling apparatus as in claim 1 wherein:

(F) the power means in item (C) is mounted on the carriage and includes a cable drum and a cable wrappable on the cable drum by energizing the power means.

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U.S. Cl. X.R.

214—730