United States Patent [19]

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[54] **TRAY ATTACHMENT FOR WHEELCHAIRS**

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[52] **U.S. Cl.** **297/155,** 297/150, 403/112

[51] **Int. Cl.** **A47c 39/00**

[58] **Field of Search** ..... 297/148, 150, 153, 154, 297/155, DIG. 4; 403/112

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[57] **ABSTRACT**

A tray which may be attached to most standard wheelchairs is disclosed which would be used by invalids or elderly people wherein the tray is constructed so that it is movable between the utilization position and the stored position which is against one of the rear large diameter wheels of the wheelchair. The storable tray is pivotally mounted to a telescoping tube which is connected to the wheelchair. When stored, the tray is pivotally rotated to the side of the wheelchair in such a position that the drive wheel thereof can still be rotated by the occupant of the wheelchair.

5 Claims, 5 Drawing Figures

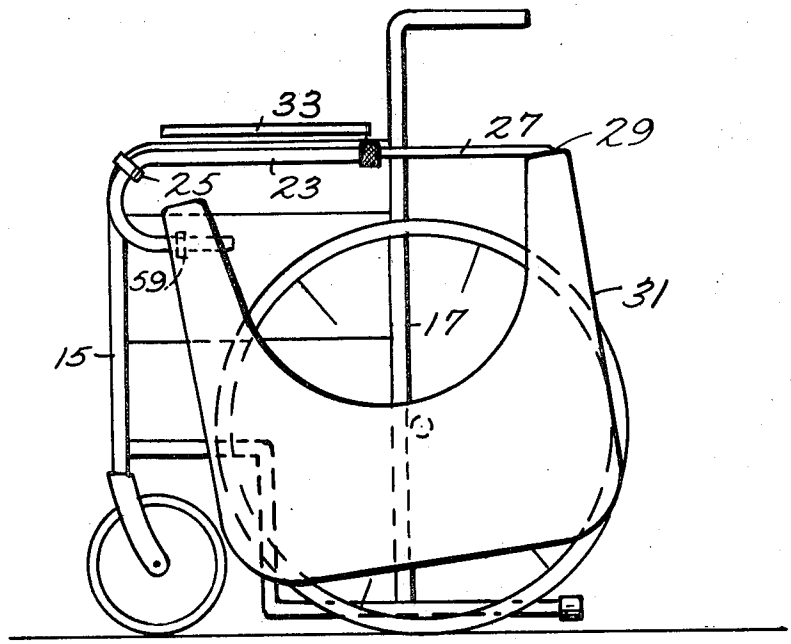


Fig. 1.

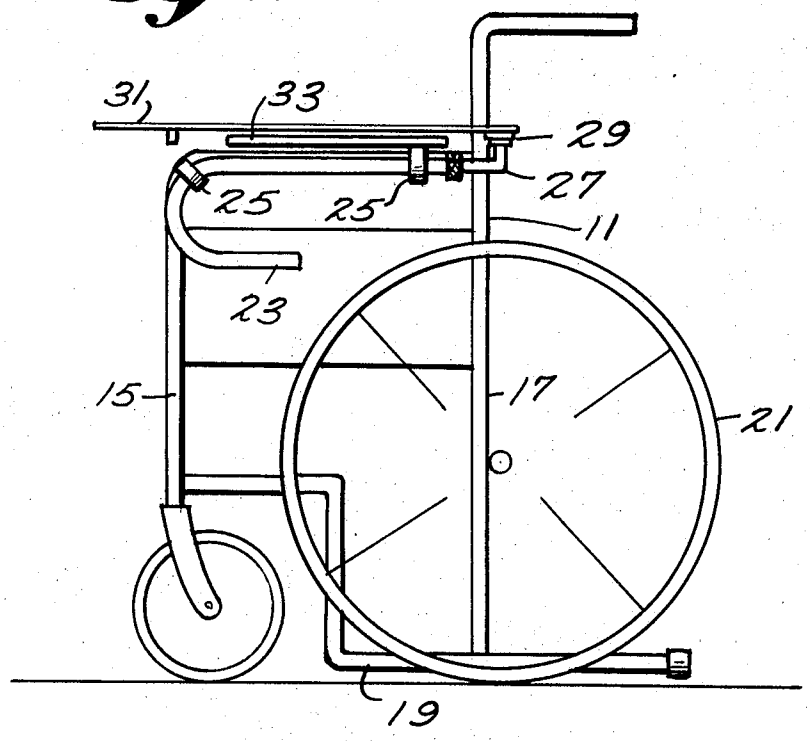


Fig. 2.

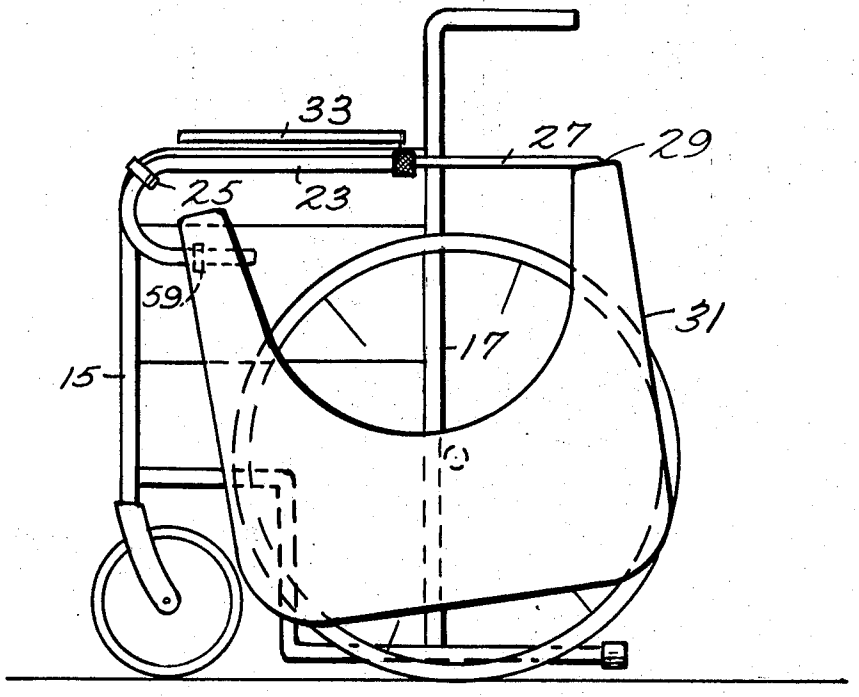


Fig. 3.

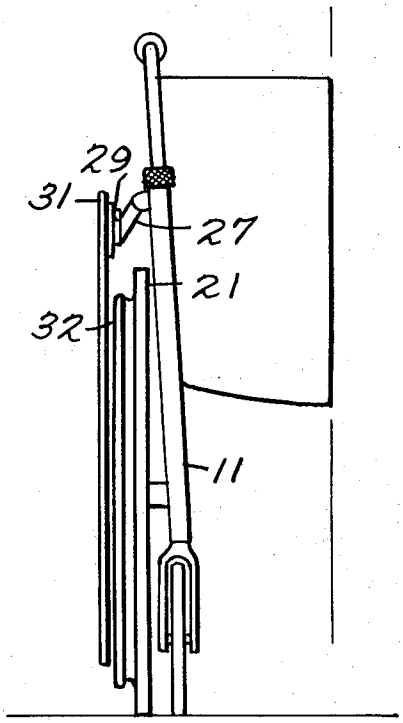


Fig. 5.

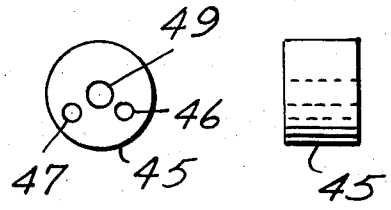
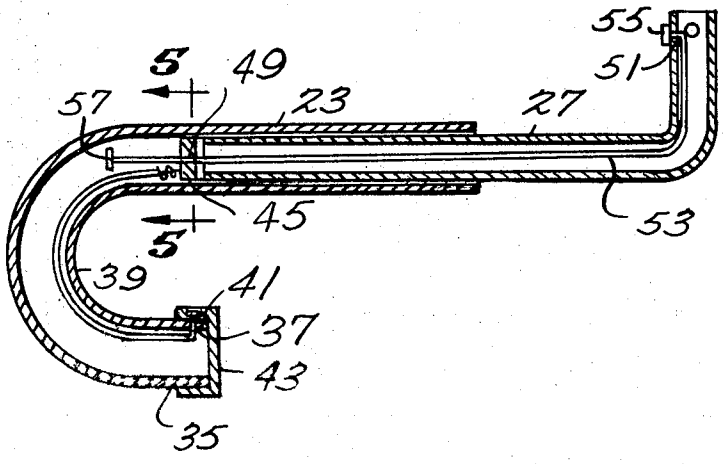


Fig. 4.



TRAY ATTACHMENT FOR WHEELCHAIRS

BACKGROUND OF THE INVENTION

This invention relates to a wheelchair tray attachment wherein the tray can be stored at either side of the wheelchair.

There are many thousands of conventional wheelchairs in service and each of the people who are confined to a wheelchair needs the convenience of having a tray at their disposal. Since a wheelchair is mobile, the wheelchair and its occupant travel from place to place and if the tray is not attached to the chair, it is left in a location to which the occupant must return in order to obtain and utilize the tray. In addition, many people confined to wheelchairs have suffered from strokes or other incapacitating afflictions to one or both of their arms. Accordingly, a tray arrangement is required in order to permit the occupant of the chair to immobilize the arm or arms by attaching the arm to the top of the tray. Many types of trays which are removable from the armrest of a wheelchair are in use; however, they have their limitations in that they must be removed from the wheelchair prior to the time that the occupant can be removed from the wheelchair. There is accordingly a need for a wheelchair having a storable tray thereon wherein the tray can be stored at the side of the chair on a continuous basis without affecting the operation of the wheelchair and which when needed can be returned to its utilization position without affecting the operation of the wheelchair.

It therefore is an object of this invention to provide a tray attachment for a wheelchair wherein the tray can be used or moved to a storage position without affecting the operation of the wheelchair and so that the tray is immediately available to the occupant of the wheelchair.

SHORT STATEMENT OF THE INVENTION

Accordingly, the present invention relates to a wheelchair having a tray attachment wherein the wheelchair includes a pair of side frame members, each including an armrest portion. A drive wheel is rotatably secured to each of the frame members, and a mounting tube is rigidly connected to one of the side frames proximate the arm rest. An extension tube is slidably and rotatably positioned in the mounting tube for telescopic movement with respect thereto and is terminated in a swivel portion. A tray is rotatably connected to the swivel portion of the extension tube such that the tray rests on the armrest portion of the side frame when in a utilization position and is rotated against the side of the frame and to a rearward position thereof when in a storage position in order to expose the drive wheel for manipulation by the occupant of the wheelchair.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of the present invention will become more fully apparent from the following detailed description, appended claims and the accompanying drawings in which:

FIG. 1 is a side elevation view of the wheelchair tray attachment of the present invention with the tray in a utilization position,

FIG. 2 is a side elevation view of the wheelchair tray attachment with the tray shown in a storage position,

FIG. 3 is a cut-away end view of the wheelchair tray arrangement showing the tray in the storage position,

FIG. 4 is a section view of the mounting tube and extension tube construction, and

FIG. 5 is an end view taken along the lines 5—5 of FIG. 4 of the spacer plug of the mounting tube.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Refer now to FIG. 1 where there is shown a side elevation view of the wheelchair tray arrangement of the present invention with the tray in a utilization position. The wheelchair includes a side frame member **11** having a rest arm portion **33,** a front leg portion **15** and rear leg portion **17.** The front and rear legs are joined by means of an interconnecting support leg **19.** A drive wheel **21** is rigidly but rotatably connected to the frame **11,** as is shown schematically in the figure. A smaller idler wheel is connected to the leg portion **15** of the frame at the front of the wheelchair. A U-shaped mounting tube **23** may be fixedly attached to the arm portion of the frame by any suitable means known in the art, however, in the preferred embodiment, the mounting tube is connected to the frame by means of a pair of clamps **25,** as illustrated in the drawing. An extension tube **27** is slidably and rotatably positioned in the mounting tube **23** for telescopic movement with respect thereto and has a swivel **29** connected to one end thereof. A tray **31** is connected to the swivel such that the tray can be rotated outwardly away from the occupant in a direction perpendicular to the plane of the figure, when not in use. The tray is shown in its utilization position resting on the arm rest **33** of the wheelchair.

Refer now to FIG. **2** where there is shown the tray attachment of the present invention in the stored position. The tray after being rotated with respect to the extension tube **27** by means of the swivel **29** is rotated with the swivel downwardly against the side of the wheelchair. The extension arm **27** and the tray **31** are then slid with respect to the mounting tube **23** toward the rear of the wheelchair so that the drive wheel **21** is readily accessible to the occupant of the wheelchair for moving the wheelchair about. With the tray in the storage position, the rear lower right corner of the tray does not protrude past the rear portion of the large drive wheel of the wheelchair. Accordingly, the wheelchair can be pulled up a set of stairs or go down the stairs without removal of the tray. It therefore, can be seen that the tray does not interfere with the operation of the wheelchair.

Refer now to FIG. **3** which shows a partial front end view of the wheelchair of the present invention. The side frame **11** is shown having the front wheel connected thereto. In addition, the rear drive wheel is shown having a hand ring **32** attached thereto for driving the wheel which as aforementioned is rotatably but fixedly attached to the frame **11.** The storage tray **31** is shown in the storage position of FIG. **2.** It can be seen from FIG. **3** that when the tray is in a storage position, the overall width of the wheelchair is increased by only the thickness of the tray. In the preferred embodiment, the thickness of the tray may vary from that of a very heavy and thick tray to one that is in the neighborhood of one-eighth inch thick. Accordingly, the wheelchair tray attachment of the present invention does not interfere with the normal use of the wheelchair.

Refer now to FIG. **4** where there is shown a sectional view of the mounting tube and extension tube arrangement. The mounting tube **23** is shown having a U-

shaped configuration. One end 35 of the mounting tube has a slot 37 cut therein for receiving a knotted wire 39. The knot 41 in the wire is positioned to the outside of the tube with the wire extending through the slot 37 therein. A cap 43 which may be of any suitable material is positioned over the end of the mounting tube to secure the knot 41 and wire 39 in position. The wire is connected at its other end to a plug 45 which is more fully illustrated in FIG. 5. The plug 45 has two small holes 46 and 47 therethrough and one large hole 49. The wire 39 is passed through hole 46 in a first direction and then through hole 47 in the opposite direction and then knotted to secure the position of the plug 45 with respect to the end 35 of the mounting tube 23.

The extension tube 27 is both slidably and rotatably positioned in the mounting tube 23 as illustrated. The extension tube has a slot 51 cut in the end thereof which is secured to the swivel 29. A second wire 53 is formed with a knot 55 in one end thereof. This knot is positioned to the outside of the tube such that the wire 53 passes through the slot 51, through the extension tube 27 and finally through hole 49 of plug 45. The end of the wire 53 passing through plug 45 is terminated in a second knot 57. In operation, when tube 27 is moved toward the rear of the wheelchair so as to position the tray as shown in FIG. 2, the tube moves with respect to mounting tube 23 and plug 45. Hence, knot 57 is forced against the plug 45 when the tube 27 is fully extended. Accordingly, it can be seen that the arrangement shown in FIG. 9 acts as a limit stop to prevent movement of the tray in a rearward manner past a predetermined point.

Referring now back to FIG. 2, when the wheelchair tray arrangement is in a storage position, the tray, having a clip 59 thereon, engages the lower end of mounting tube 23 as shown in order to secure the tray in position. This additionally prevents the tray from moving forward once it is in the storage position.

It should be realized that the tray of the present invention can be attached to the wheelchair so that the tray does not rotate around if the occupant pushes against it. In addition, it should also be understood that the tray can be made to swivel and rotate with respect to either side of the wheelchair, depending upon the preference of the occupant. One of the advantages of the present wheelchair tray arrangement is that the tray has the capability of being stored on the wheelchair at all times and further has the advantage of not limiting the normal operation of the wheelchair. For example, the occupant who may be immobile and prevented from leaving the chair can store the tray at the side of the chair on a continuous basis and when the tray is needed, can use it and then return it back to its storage position without affecting the operation of the wheelchair.

While the present invention has been described in connection with a preferred embodiment, it should be understood that there may be other embodiments which fall within the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A wheelchair tray which is attached to the arm rest member of a wheelchair, said wheelchair including a pair of side frame members, each including an arm rest portion and drive wheels rotatably attached thereto, the wheelchair tray improvement comprising in combination:

a mounting tube rigidly but removably connected to one of said side frames, said tube being substantially horizontal and having an open end toward the rear of said wheelchair,

an extension tube slidably and rotatably positioned in said mounting tube through said open end for telescopic movement with respect thereto, said extension tube being terminated in a swivel portion, and

a tray rotatably connected to said swivel portion of said extension tube, said tray having a recessed portion, said tray resting on said arm rest portion of said frame when in a utilization position and being rotated against the side of said drive wheel and slid rearward to such position that the drive wheel is exposed so the occupant of the wheelchair can propel the wheelchair.

2. The wheelchair tray attachment of claim 1 further comprising means for limiting the rearward movement of said tray with respect to said wheelchair when in a stored position.

3. The wheelchair tray attachment of claim 2 wherein said means for limiting said rearward movement of said tray includes a plug means positioned in said mounting tube and means secured to said plug and said extension tube for permitting a predetermined movement of said extension tube with respect to said mounting tube.

4. A wheelchair tray which is attached to an arm rest member of a wheelchair, said wheelchair including a pair of side frame members, each side frame member including an arm rest portion, a rear drive wheel rotatably attached thereto and a castered front wheel rotatably and pivotably attached thereto, said wheelchair tray improvement comprising in combination:

a mounting tube rigidly but removably connected to one of said side frame members, said tube being substantially horizontal and having an open end toward the rear of said wheelchair,

an extension tube slidably and rotatably positioned in said mounting tube through said open end for telescopic movement with respect thereto, said extension tube being terminated in a swivel portion,

a tray rotatably attached to said swivel portion of said extension tube, said tray having a recessed portion, said tray resting on said arm rest portions of said frame when in a utilization position, and being rotatable into a substantially vertical plane parallel to and spaced from one of said wheelchair side frame members when in a storage position, said tray being movable in a rearward direction of said wheelchair to said storage position so that said recess portion exposes said drive wheel for propulsion by the occupant of said wheelchair, and

means for retaining said tray in a tilted position in said vertical plane so that said castered wheel is freely pivotable and so that said portion of said tray positioned to the rear of said wheelchair is flush with or forward of the rear periphery of the drive wheel.

5. The wheelchair tray attachment of claim 4 wherein said means for retaining said tray in said tilted position comprises means for fixedly securing said tray to said mounting tube.

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