

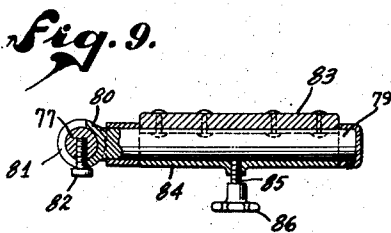
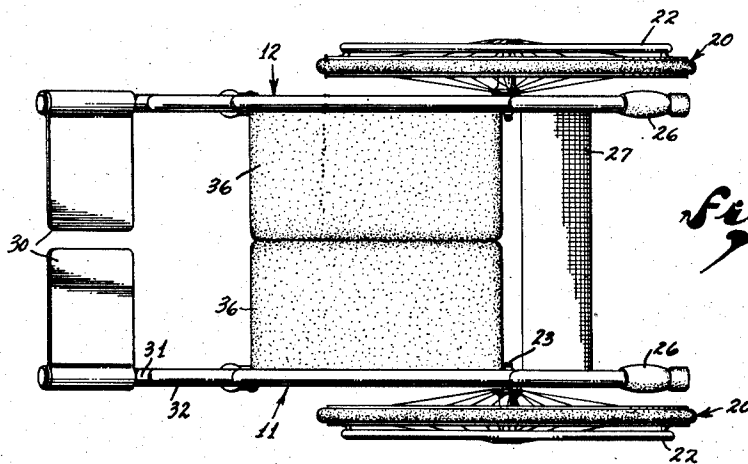
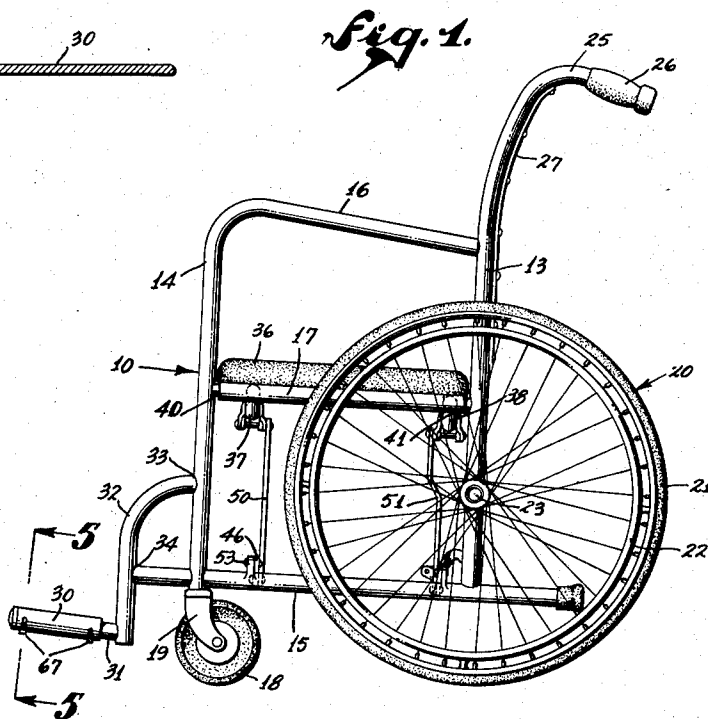
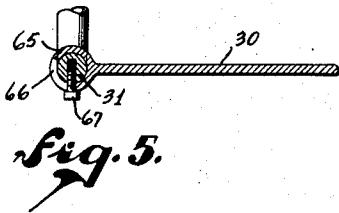
Sept. 19, 1950

D. C. TRAVIS
COLLAPSIBLE WHEEL CHAIR

2,522,729

Filed July 15, 1946

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3.

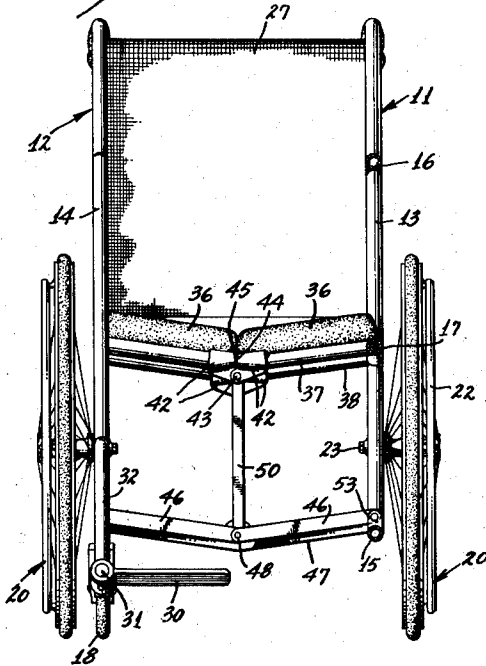


Fig. 4.

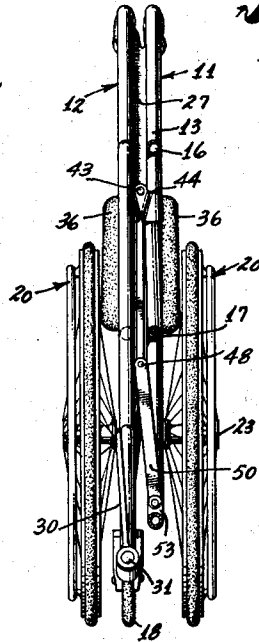


Fig. 6.

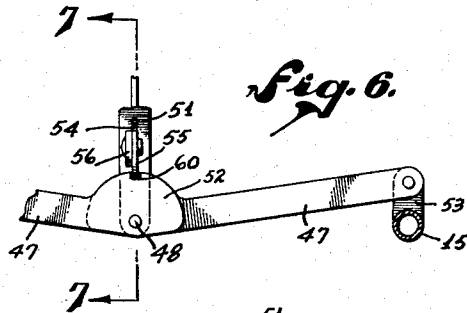


Fig. 7.

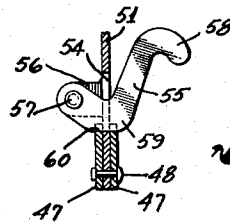
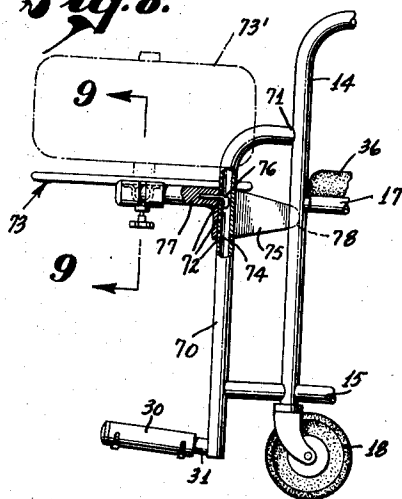


Fig. 8.



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2,522,729

COLLAPSIBLE WHEEL CHAIR

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Application July 15, 1946, Serial No. 683,633

2 Claims. (Cl. 155—140)

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The invention relates to wheel chairs and particularly wheel chairs which are adapted to be collapsed so that they can be more easily stored or, if preferred, be carried in an automobile or otherwise transported or stored in a collapsed or knocked-down condition.

Wheel chairs or invalid chairs, as they are commonly known, are customarily built along more or less conventional lines in that they feature a seat, a footrest, handles by means of which they can be pushed, small swivelled front wheels and rear wheels usually of sufficient diameter so that the occupant can move the chair about at will by pushing upon a guard attached to the wheels.

Usually, the wheel chair is built upon a substantial frame which will assure the safety of the occupant at all times. Although it is customary to provide wheel chairs of this sort which do not collapse or fold up, some attempts have been made to design and fabricate wheel chairs or invalid chairs which can be collapsed or folded so as to permit them to be packed in a relatively small space for transportation or storage when not in use.

Commonly, wheel chairs of the collapsible variety have utilized a canvas back and a canvas seat to promote ease of collapsibility. In conformance with an effort to promote safety in use features devoted to the purpose of holding collapsible wheel chairs in open position have been of such substantial design as to be cumbersome and difficult to manipulate. Moreover, invalid chairs with canvas bottoms have been found to be relatively uncomfortable and sometimes even harmful to invalid persons, especially where the chair must be occupied for a considerable length of time.

It is, therefore, among the objects of the invention to provide a new and improved collapsible type wheel chair which is rugged in construction when open but which can be quickly and conveniently collapsed into a compact arrangement for storage or transportation.

Another object of the invention is to provide a new and improved collapsible type wheel chair in which is incorporated a relatively hard seat which greatly increases the comfort of the occupant, enabling him to maintain a comfortable position for long periods of time.

Still another object of the invention is to provide a new and improved wheel chair of the collapsible type which has a simple locking mechanism operable at one location so that the device can be unlocked and the chair folded upon itself without it being necessary for the operator to

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move from one position with respect to the chair.

A further object of the invention is to provide a simplified lock which is adapted for use upon collapsible chairs.

A still further object is to provide in a wheel chair a new and improved leg rest which can be attached to or removed from the chair at will and which is capable of a comfortable adjustment in a number of different positions.

With these and other objects in view, the invention consists in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in the claims and illustrated in the accompanying drawings, in which:

Figure 1 is a side, elevational view of a collapsible wheel chair.

Figure 2 is a plan view of the wheel chair.

Figure 3 is a front view of the wheel chair partially in section to the extent of having one side of the footrest and one front wheel removed.

Figure 4 is a front view of the wheel chair shown in Figure 3 showing the chair in collapsed condition.

Figure 5 is a fragmentary, sectional view of the footrest taken on the line 5—5 of Figure 1.

Figure 6 is a fragmentary, elevational view of the lock device.

Figure 7 is a cross-sectional view of the lock device taken on the line 7—7 of Figure 6.

Figure 8 is a fragmentary, elevational view partially in section showing the front of a chair of modified design to which is attached a leg rest.

Figure 9 is a fragmentary, cross-sectional view taken on the line 9—9 of Figure 8.

In the design and construction of wheel chairs, among other things, there are certain features to which should be given special attention. One of these is to assure the occupant of a comfortable position which he can maintain for long periods of time whether being moved about or whether sitting still in the chair. Another is the construction of a chair frame which is sufficiently rugged so as to assure the safety of the occupant regardless of where the chair may be moved to as it is being pushed about. Still another is to provide a safe, comfortable chair which is at the same time light in weight and which can be conveniently collapsed. Although incorporation of these features has already been attempted in wheel chairs of special design, there has not been to date a satisfactory combination of all of the features in a single chair.

In an embodiment chosen to illustrate the

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invention there is shown a collapsible type wheel chair showing a frame, indicated very generally by the reference character 10, which can be considered as constituting two separate and distinct halves 11 and 12, one of which is the counterpart of the other. Each half of the chair consists of a rear post 13, a front post 14, a bottom rail 15, a top rail 16 forming an arm rest, and an intermediate rail 17.

At the bottom of the front post there is provided a swivelled wheel or caster 18 mounted upon a fork 19 and a large rear wheel 20 of more or less conventional construction featuring both a tire 21 and a rim 22 which is adapted to be grasped by hand so that the chair may be pushed about. The rear wheel is mounted upon an axle or shaft 23, in this case supported upon the rear post 13. At the top of each rear post is a rearwardly extending portion 25 to which is applied a handle grip 26. Between the rear posts may be stretched a sheet of fabric or other material providing a back 27.

Adjacent the lower end of the front post on each side is provided a footrest comprising a foot-supporting platform 30 mounted upon a rod 31 so that the platform is adapted to swivel about the rod between a foot-supporting position, shown in Figure 3, and a position moved upwardly in substantial alignment with the front post. The rod 31 is mounted upon and extends forwardly from the lower end of a vertical support 32 which is attached at its upper end at a point 33 to the front post and which is joined at the point 34 by a forward extension of the rail 15.

For seating the occupant the chair is provided with a seat separated into two elements or portions 36, one of which is mounted upon each half portion of the frame. Each seat portion is supported upon a transverse beam 37 at the front and a similar beam 38 at the rear. These beams are attached to the rail 17 at the respective ends. The rail 17 in each case is swivelly mounted upon the post 14 at a joint 40 and on the post 13 at a joint 41. By means of this mounting the rail and the seat portion are adapted to move about a substantially horizontal axis.

At the inside ends of the transverse beams 37 and 38 there are provided abutting hinges 42 each with a pin or pivot 43 connecting together opposite elements of the abutting hinges. These special hinges include faced off ends 44 which are adapted to abut against each other along the line 45 when the chair is in open position. The hinges just described are provided at both the forward and rear ends of the seat portions along a longitudinal line of junction.

Lower horizontal or transverse beams or levers 46 are provided adjacent the front posts and similar beams 47 adjacent the rear posts. The beams in each case are hinged to brackets 53 which form a part of the lower rail 15. The beams 46 are joined by a pin 48, and the beams 47 are similarly joined by a pin along the same longitudinal axis.

Between the lower beams 46 and the upper beams 47 there is provided a vertical link 50 which is attached at the point of rotation of the hinged connection in each case between the beams. A similar vertical link 51 is connected between the beams at the rear in the same manner.

In order to fix or anchor the collapsible chair in open position, which is the position shown

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in Figures 1, 2 and 3, there is provided a lock device shown in Figures 6 and 7. This consists essentially of an enlargement 52 on one of the rear beams 47 and a corresponding enlargement on the other rear beam 47, one of which is the complement of the other.

In the rear vertical link 51 there is provided a vertical slot 54 within which is positioned a latch 55 which is mounted upon a bracket 56 by means of a pin 57, the bracket being on the forward side of the link. The latch, in the embodiment chosen, has the form of a hook with a downwardly depending end 58 at the rear and a lower projecting angular portion 59.

In each of the enlargements 52 is a recess 60 of sufficient width to accommodate the angular portion 59. The recesses are adapted to assume a position of alignment in a longitudinal direction with respect to the chair when the chair is in open position, and the beams 47 extend inwardly and downwardly as shown in Figures 3 and 6.

Operation of the footrests previously described is apparent from an examination of Figure 5 wherein the platform 30 is provided with a sleeve 65 surrounding the rod 31 and rotatable relative thereto. The sleeve is provided with segmental slots 66 which are adapted to slide about bolts 67 between the position shown in Figure 5 and an upward position wherein it is removed from immediately beneath the feet of the occupant.

In a modified form of the device shown in Figure 8 there is provided a vertical support 70 substantially higher than the support 32 shown in Figure 1. The vertical support 70 is adapted to be attached at a point 71 to the front post 14 at a location above the seat 36. On the forward side of the vertical support is a series of forwardly facing slots 72 located one above the other. The leg rest, indicated generally by the reference character 73, comprises a bracket 74 including a pair of lateral guides 75. At the bases of the guides is provided a downwardly extending hook 76. The guides are adapted to overlie the sides of the vertical support 70 and extend rearwardly to a point 78 where they may be in lateral contact with the front post 14. As shown, the hook 76 is adapted to enter and engage any one of the slots 72, depending upon the height at which it is desired to have the leg rest.

In addition, there is provided a forwardly extending arm 77 which preferably forms an integral part of the guides and is shown in cross-section in Figure 9. A second transversely disposed arm 79 is provided with a sleeve 80 surrounding and adapted to revolve about the arm 77. An arcuate slot 81 in the sleeve 80 is adapted to slide about a screw 82 which extends into the arm 77.

As shown, the leg rest is adapted to move to a stop position, illustrated in Figures 8 and 9, wherein it is located in front of the seat and a broken line position 73' shown in Figure 8 removed therefrom. Upon the arm 79 is a platform 83 which is secured to a sleeve 84 in turn pivotally mounted upon the arm 79. A tightening screw 85 provided with a handle 86 is adapted to be screwed against the arm 79 so that the platform may be anchored in one or another of several different tilted positions. The desired angle of tilt may be determined by the vertical location of the leg rest upon the vertical support 70. Either one or both leg rests can be

quickly removed by merely lifting the bracket so as to disengage the hook 76 from its retaining slot.

In operation of the chair itself normal position will be the open position shown in Figures 1, 2 and 3. Usually in this position the footrest will be in a horizontal position, as likewise shown. In open position, also, the parts of the locking device will be as illustrated in Figures 6 and 7 with the hook engaging the recesses 60. In this position the seat portions 36 will be pitched, as best illustrated in Figure 3, slightly downward toward the longitudinal center line where they will be firmly held in position by abutment of the faced off ends of the hinges. The weight of the body is supported upon the hinges in this manner.

When it is desired to collapse the chair, it is necessary only for a person to pass to the rear of the chair and there, grasping the handles for guidance, lift the latch 55, with the foot, out of engagement with the recesses 60. By continuing the lift upon the latch the beams 47 are lifted, thereby lifting through the adjacent vertical link 51 the center edges of the seat portions so that they extend upwardly, at which point the handles can be pressed laterally inwardly, and the halves of the chair can be readily collapsed against each other.

Preferably, when the chair is being collapsed the foot supports will be in raised position as will also be the leg supports if the latter are still mounted upon the chair. When the chair is collapsed, as is clearly shown in Figure 4, the seat portions 36 will occupy substantially a vertical position extending outwardly from the front and rear posts on each side. This slight outward balance of the weight of the seat portions, together with a certain amount of frictional resistance, is normally sufficient to hold the chair in collapsed position. When the chair in collapsed position is resting upon a supporting surface, friction upon the rear wheels will also tend to hold the frame halves together.

To open the chair it is necessary only to grasp the handles 26 and separate them a slight amount. This will be sufficient to pull the seat portions inwardly to a location where they will fall by gravity into open position. In open position the latch will automatically engage and safely lock the chair in the desired position for occupancy.

By the provision of a lightweight chair constructed in two complementary halves in the manner shown with a single lock attachment the chair is adapted to be readily collapsed whenever it is desired to have it packed away for storage or transportation and can immediately be opened for occupancy at a moment's notice without difficulty or loss of time. Designed as shown the chair is rugged in construction, perfectly safe and provides a maximum amount of hard seat comfort for the occupant at all times.

Although the invention has been herein shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so

as to embrace any and all equivalent structures.

The invention having been herein described, what is claimed and sought to be secured by Letters Patent is:

1. A collapsible chair having a frame comprising complementary longitudinal halves hinged together along the longitudinal center line, each half being provided with interconnected front and rear posts and seat portions adapted to join in open position forming a seat, means for hinging said halves together comprising upper and lower transverse beams horizontally pivoted on the respective halves of the frame having inwardly extending ends, hinges at the inwardly extending ends, vertical link means between hinges on the upper and lower beams, abutments at the hinges at one end of the link means limiting movement thereof in a downward direction and a lock for holding the hinges in a downward position wherein the chair halves are spread open comprising enlarged parts at the ends of adjoining beams adjacent the hinge, a latch pivotally mounted on the adjacent link having a part thereof adjacent the enlarged parts, cooperating recesses and projections on respective parts adapted to engage when the chair is in spread open position and adapted to be disengaged when the chair is to be collapsed.

2. A collapsible wheel chair having a frame comprising complementary longitudinal halves hinged together along the longitudinal center line, each half being provided with front and rear posts, horizontal rails, seat portions connected to the front and rear posts and wheels, means for hinging said halves together comprising upper and lower transverse beams horizontally pivoted on the respective halves of the frame having inwardly extending ends, hinges at the inwardly extending ends joining beams on the opposite halves, vertical links between hinges on the upper and lower beams, abutments at the hinges at one end of each link limiting movement thereof in a downward direction, and a lock for holding the hinges in a downward position wherein the chair halves are spread open comprising enlargements at the ends of adjoining beams adjacent the hinge, corresponding recesses at the edges of said enlargements in alignment when in downward position, a latch pivotally mounted on the adjacent link having an edge engageable simultaneously in both said recesses and a hook on the latch adapted to be grasped for lifting the latch from engagement when the halves are to be collapsed.

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