

June 11, 1935.

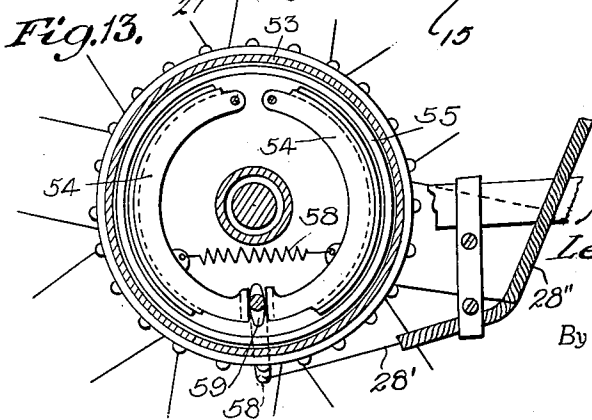
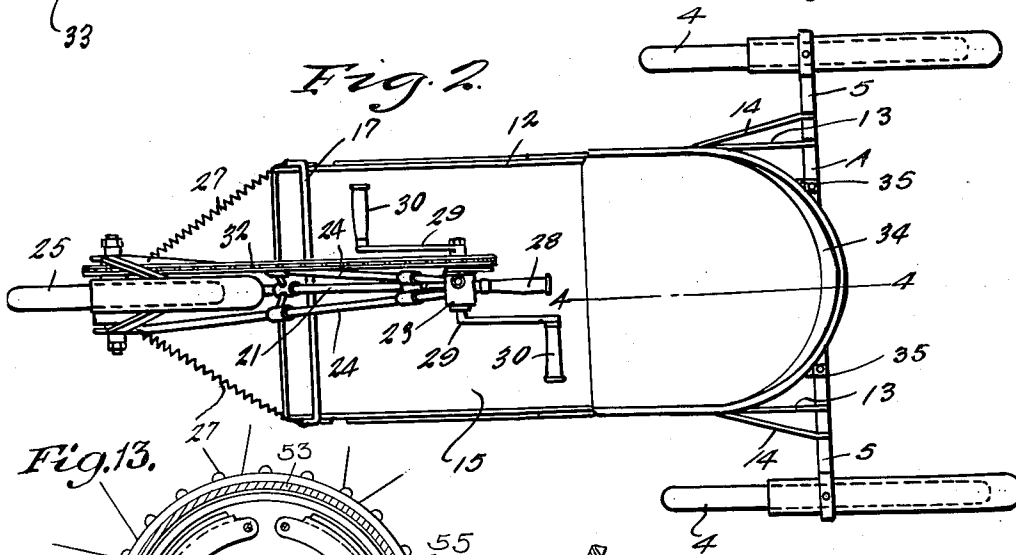
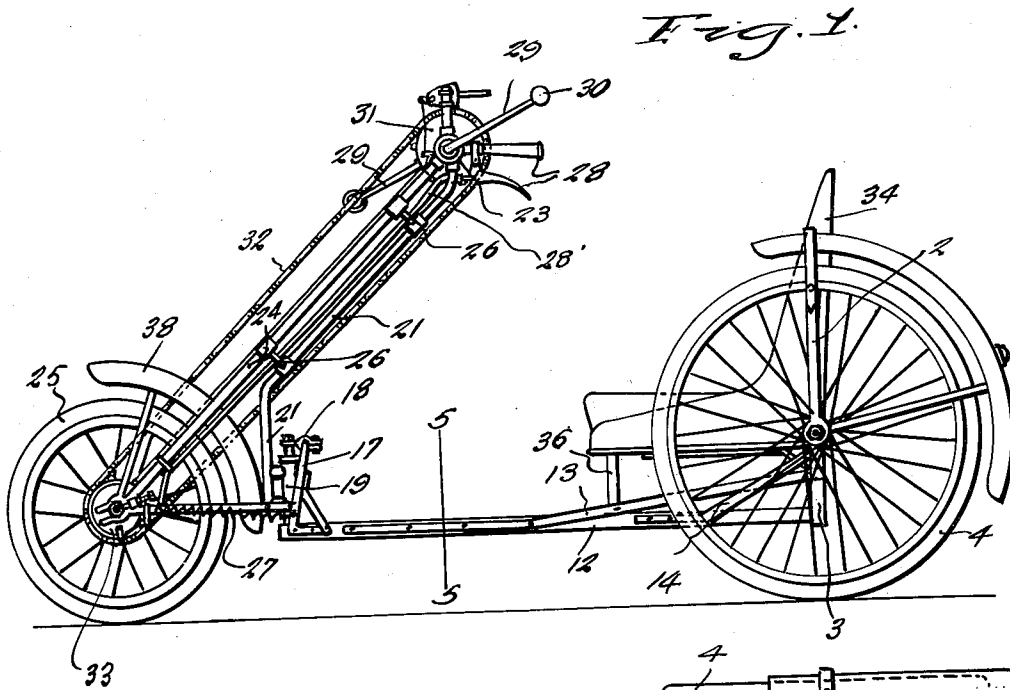
L. S. WRIGHT ET AL

2,004,683

WHEEL CHAIR

Filed March 28, 1934

4 Sheets-Sheet 1



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Fig. 3.

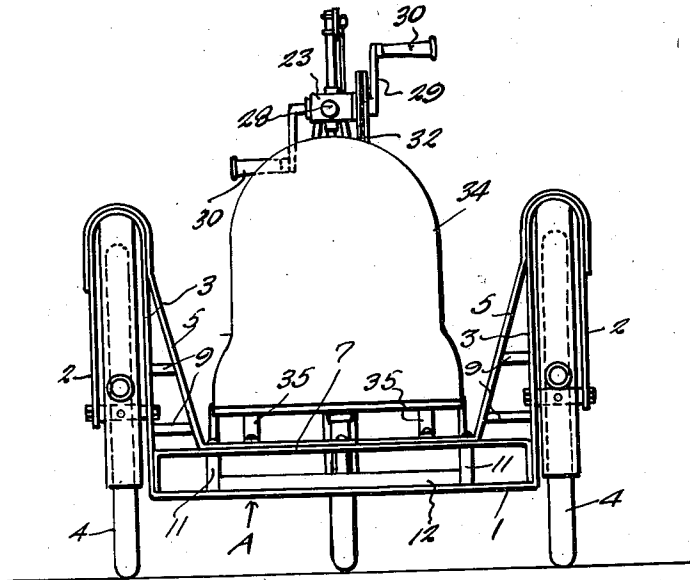


Fig. 6.

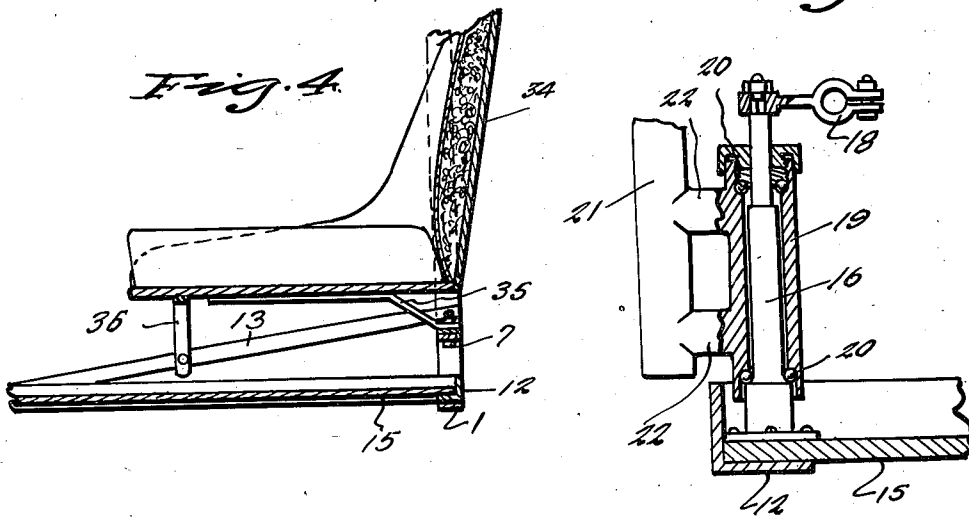


Fig. 5.



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Fig. 7.

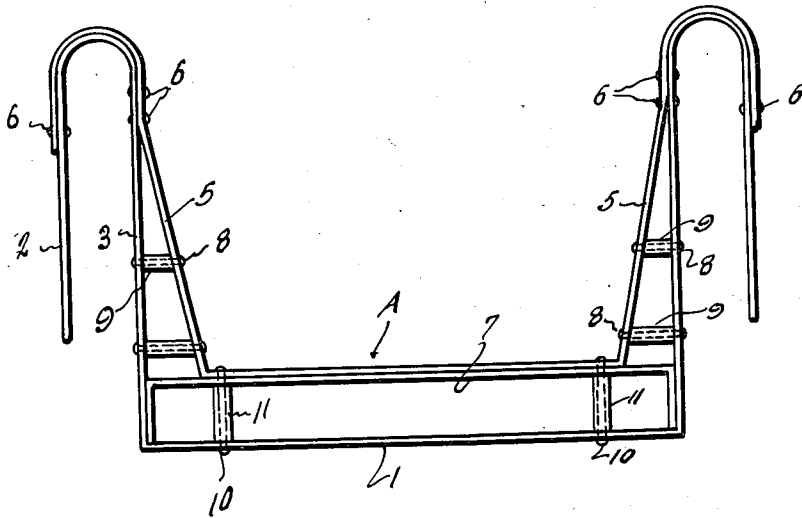


Fig. 8.

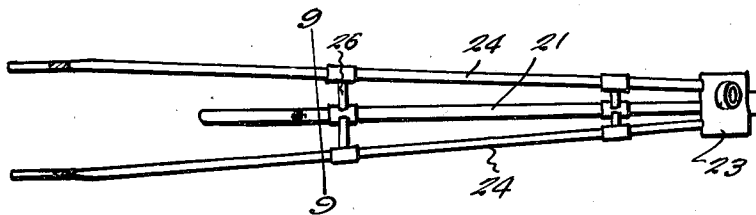
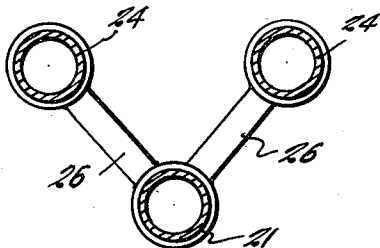


Fig. 9.



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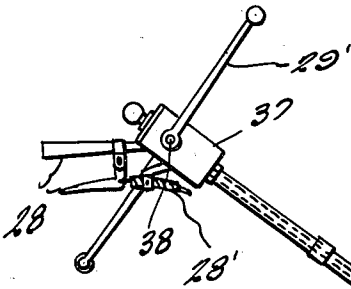


Fig. 10.

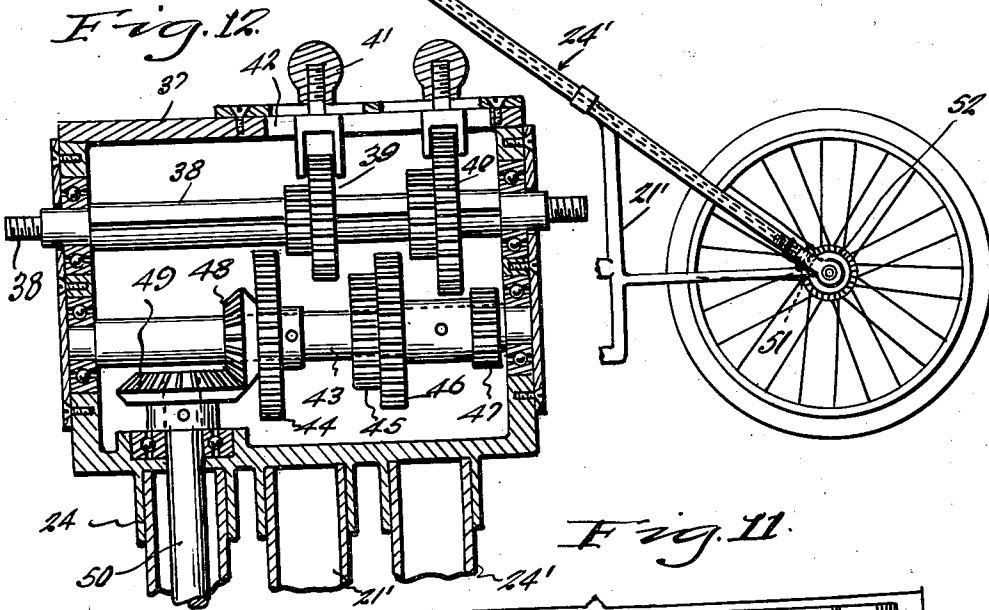
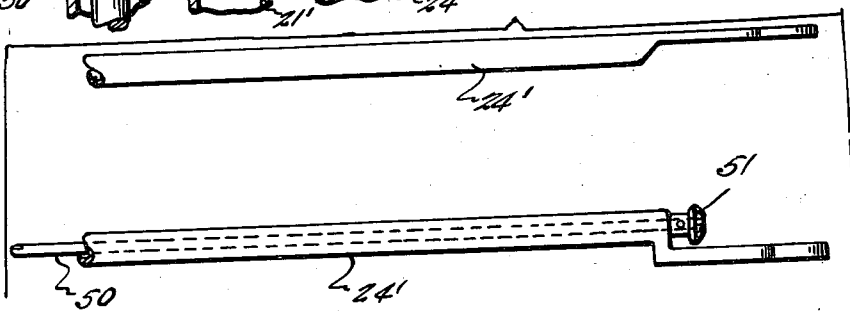


Fig. 11.



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UNITED STATES PATENT OFFICE

2,004,683

WHEEL CHAIR

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Application March 28, 1934, Serial No. 717,859

3 Claims. (Cl. 208—32)

This invention relates to a wheel chair, the general object of the invention being to provide a chair which can be propelled by the hands of the user and in such a manner that he can transport himself from place to place with little effort and very quickly.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a side view of the invention.

Figure 2 is a top plan view thereof.

Figure 3 is a rear view thereof.

Figure 4 is a section on line 4—4 of Figure 2.

Figure 5 is a section on line 5—5 of Figure 1.

Figure 6 is a sectional view of the means for rotatably connecting the front wheel assembly to the front end of the platform.

Figure 7 is a view of the rear frame and the wheel supporting members for the rear wheels.

Figure 8 is a view of the upright member forming a part of the front wheel assembly.

Figure 9 is a section on line 9—9 of Figure 8.

Figure 10 is a fragmentary side view showing the gear arrangement for propelling the vehicle at different speeds.

Figure 11 is a view of the lower end of the steering wheel forked members.

Figure 12 is a sectional view showing the gearing in the gear box.

Figure 13 is a sectional view through the hub of the front wheels showing the brake mechanism.

In these drawings, the rear frame of the device is shown at A in Figure 7 and includes the substantially U-shaped member 1 having the limbs extended and bent over into inverted U-shape so as to form two pairs of inner and outer members 2 and 3, one pair at each side of the frame, and each of the rear wheels 4 is supported by these two members 2 and 3 by having its spindle suitably connected to said members 2 and 3.

The frame also includes a second substantially U-shaped member 5 which has the extremities of its limbs bent into inverted U-shape and fitting over the upper portions of the inverted U-shaped members and fastened thereto by rivets or the like, as shown at 6. An angle member 7 also forms part of the frame and is seated on the

bight part of the member 1, while the limbs of the member 5 converge downwardly to the bight part of said member so that the major portions of the limbs of the part 5 are spaced from the limbs of the part 1 and these parts are connected together by rivets 8 having spacers 9 thereon for holding the parts separated, as clearly shown in Figure 7. Rivets 10 also connect the bight parts of the members 1 and 5 and the member 7 together and spacers 11 are placed on said rivets and are located between the bight part of the member 1 and the cross piece of the member 7.

A rectangular floor frame 12, formed of angle iron, has its rear end connected to the bight part of the member 1 between the spacers 11, as shown in Figure 3, and braces 13 and 14 connect each side of the frame 12 with parts of the frame A.

The floor is shown at 15 and is located in the frame 12 and this floor is preferably covered with rubber sheeting or the like.

A spindle 16 has its lower end fastened to the front end of the floor, as shown in Figure 6, and a substantially yoke-shaped member 17 has its ends fastened to the front ends of the side members of the frame 12 with its bight passing through a clamp 18 fastened to the upper end of the spindle. A tubular member 19 is rotatably arranged on the spindle through means of the anti-friction means 20 and a tubular member 21 has its lower end fastened to the tubular member 19 by the short pieces 22. This member 21 extends upwardly and is then bent upwardly and rearwardly, with its upper end fastened to a short horizontally extending tubular part 23. A pair of tubular members 24 have their upper ends connected with the member 23 and their lower ends are forked to receive the spindle of the front wheel 25, the spindle being suitably held in the forks. The tubular members 21 and 24 are connected together by the braces 26, as shown in Figures 8 and 9 and a coiled spring 27 connects each side of the member 17 with the front wheel assembly adjacent the lower end thereof.

A shaft is rotatably supported in the member 23 and has the cranks 29 at its ends which carry the hand grips 30 and the shaft carries a sprocket 31 over which passes a chain 32 which also passes over a sprocket 33 attached to the front wheel. Thus by turning the shaft by the hands, motion is imparted to the front wheel for propelling the device.

The operator can steer the vehicle while he propels it and without the necessity of removing his hands from the crank handles, for by manip-

ulating these handles, he can turn the front wheel assembly for turning the front wheels, it being understood that this assembly turns on the spindle 16 and that the springs 27 yieldingly hold the front wheel assembly in a straight position.

The front wheel is provided with the usual or any suitable type of internal brake which is inserted in the front hub and the lower handle 28 operates this brake through the cable or other connection, shown at 28'. As shown in Figure 13, this brake includes the drum 53 which forms part of the hub of the front wheel, the shoes 54 carrying the lining 55 and each pivoted at one end to a part of the drum and having their outer ends engaging the cam 56, the arm 57 of which has the lower end of the cable 28' connected therewith. Cable 28' slides in the flexible armored tube 28''. The usual spring 58 normally holds the shoes in released position but when the arm is swung by the cable 28', the cam will press the shoes apart so that the linings 55 will engage with the drum and thus the brake will be applied.

Instead of using a chain and sprocket drive, as shown, gearing may be used for driving the device, such gearing means being shown in Figures 10, 11 and 12. In these figures, the gear box 37 takes the place of the casing or member 23 and has the shaft 38 passing therethrough and rotatably supported therein and this shaft has slidably but non-rotatably mounted thereon double gears 39 and 40, each of which is shifted manually by its corresponding handle member shown generally at 41, and which pass through the slots 42. A countershaft 43 is located in the housing and has attached thereto the gears 44, 45, 46 and 47. This shaft also has a beveled gear 48 attached to the gear 44 and this gear 48 meshes with a gear 49 fastened to the shaft 50 which passes through the tubular member 24' and has a beveled gear 51 at its lower end which meshes with a beveled gear 52 attached to the wheel hub. This tubular member 24' and the other tubular member 24' are similar to the parts 24 shown in the first form of the invention, and the tubular member 21' is similar to the member 21 shown in Figure 8.

Thus it will be seen that by shifting the handles 41, the double gears 39 and 40 can be shifted to mesh with the different gears on the shaft 43 so that the vehicle can be propelled at four different speeds.

By this arrangement, the occupant of the vehicle can drive the vehicle at the desired speed so that the vehicle can ascend any grade with the same amount of exertion as used on a level. It will, of course, be understood that the handles 29' are connected with the shaft 38.

A seat for the occupant is shown at 34 and said seat is supported by the straps 35 connected to its bottom and having their rear ends extending downwardly and connected with the top part of the horizontal portion of the frame A and a front member 36 is fastened to the bottom of the seat and is connected with the braces 13. If desired, the parts can be provided with slots and bolts passing through the slots so that the seat can be adjusted forwardly or rearwardly, as desired.

It will be seen that the occupant of the seat can rotate the crank shaft 29 by his hands and that he can also steer the device through means of the crank handles. The device can be made

of light weight so that it can be easily transported from place to place and the occupant simply uses his hands to propel the device so that a person who has lost the use of his legs can travel from place to place with this device.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What is claimed is:—

1. A wheel chair comprising a frame, a pair of rear wheels for supporting the rear part of the frame, a seat on the rear part of the frame, a front wheel assembly including a wheel and a rearwardly and upwardly extending frame, an upright spindle at the front end of the first frame, an inverted U-shaped brace member having its ends connected with the front part of the first mentioned frame, means for connecting a portion of the bight of the brace member to the top of the spindle, a tubular part rotatably arranged on the spindle and to which a part of the front wheel assembly frame is connected, spring means connecting the front wheel assembly to the front end of the first mentioned frame for holding the front wheel assembly in a straight position, a crank shaft rotatably arranged in the upper end of the frame of the front wheel assembly, means for transmitting the motion of the crank shaft to the front wheel, and handles connected to the cranks for turning the shaft and the front wheel assembly.

2. A wheel chair comprising a frame, a pair of rear wheels for supporting the rear part of the frame, a seat on the rear part of the frame, a front wheel assembly including a wheel and a rearwardly and upwardly extending frame, an upright spindle at the front end of the first frame, a tubular part rotatably arranged on the spindle and to which a part of the front wheel assembly frame is connected, spring means connecting the front wheel assembly to the front end of the first mentioned frame for holding the front wheel assembly in a straight position, a crank shaft rotatably arranged in the upper end of the frame of the front wheel assembly, means for transmitting the motion of the crank shaft to the front wheel, handles connected to the cranks for rotating the shaft and for turning the front wheel assembly, said first mentioned frame including a rear frame having inverted U-shaped parts at its sides between the limbs of which the rear wheels extend, and means for rotatably supporting said wheels from the limbs of said inverted U-shaped parts.

3. A wheel chair comprising a frame, including upright inverted U-shaped parts at its side edges, a pair of rear wheels, means for rotatably supporting said wheels from the limbs of said inverted U-shaped parts, a front wheel assembly connected with the front end of the frame for movement about a vertical axis, a seat on the frame, a crank shaft at the upper end of the front wheel assembly, means for transmitting the movement of said crank shaft to the front wheel, such means including gearing, a shaft for connecting the gearing with the front wheel, and manually operated means for shifting the gearing to drive the vehicle at different speeds.

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