# United States Patent

**Boyd et al.**

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[45] **Oct. 24, 1972**


[54] **FOLDABLE TRANSPORTATION DEVICE**


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[21] Appl. No.: **139,619**

[52] **U.S. Cl.** .....**180/1 R,** 280/34 R, 280/42

[51] **Int. Cl.** .....**B62d 63/02**

[58] **Field of Search** ..280/36 R, 38, 39, 40, 42, 34 R, 280/34 A, 1 R



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*Primary Examiner*—Robert J. Spar

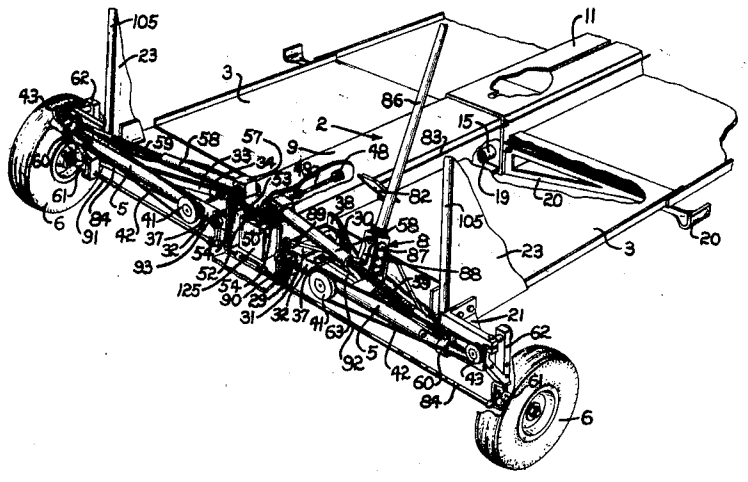
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[57] **ABSTRACT**

A foldable transportation device having the component parts thereof movable between a folded storage position and an extended in-use position for travel is disclosed and includes a center frame having a plurality of telescopeable sections and a body including floor and end and side wall members mounted thereon and movable therewith between respective folded positions and extended in-use positions and a pair of opposed arms for each end of the center frame each having one end thereof pivotally mounted on the respective side of the center frame and each having a wheel rotatably mounted on the other end thereof with each arm being movable between a folded storage position and an in-use position for movably supporting the transportation device. Drive means and steering means are operatively connected to selected wheels for controlling movement and travel of the transportation device.


**10 Claims, 14 Drawing Figures**



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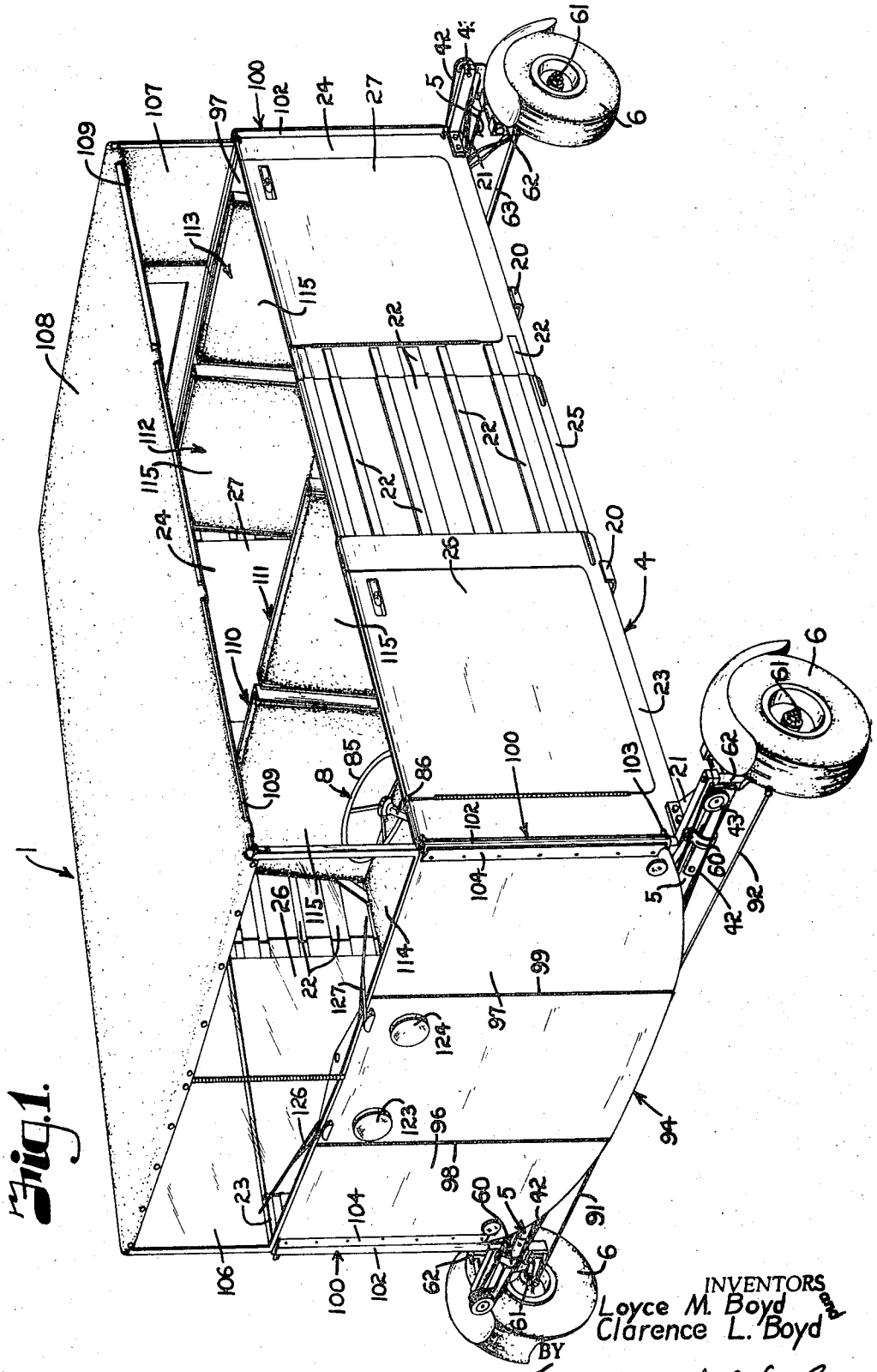


Fig. 1.

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Fig. 2.

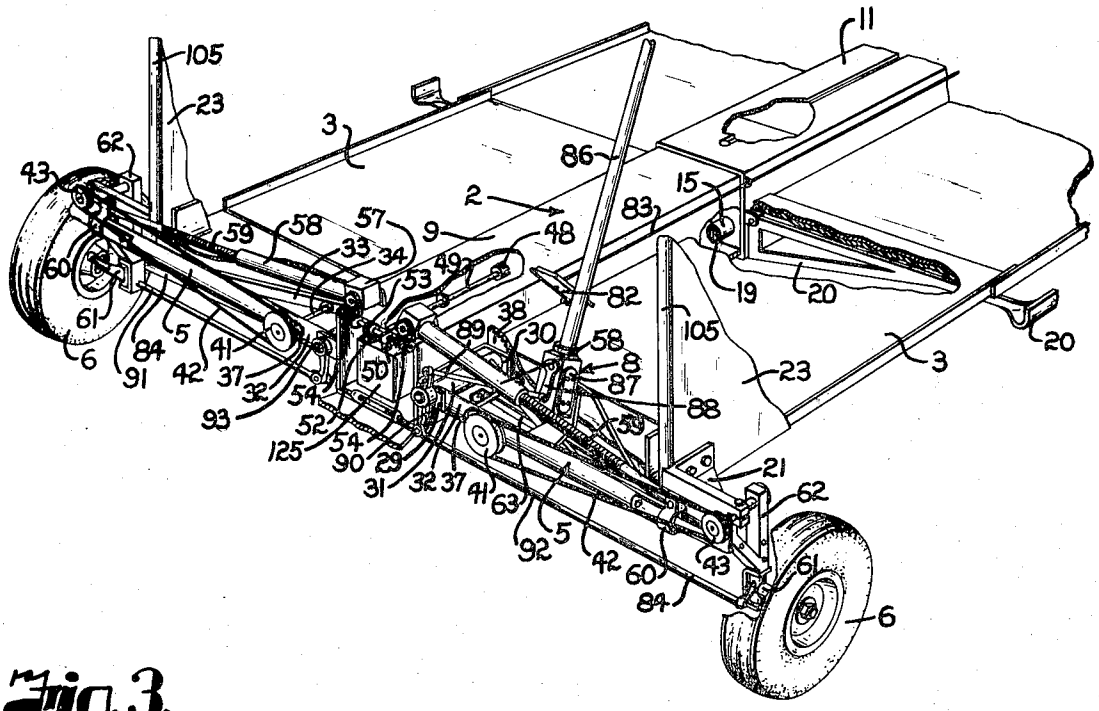



Fig. 3.

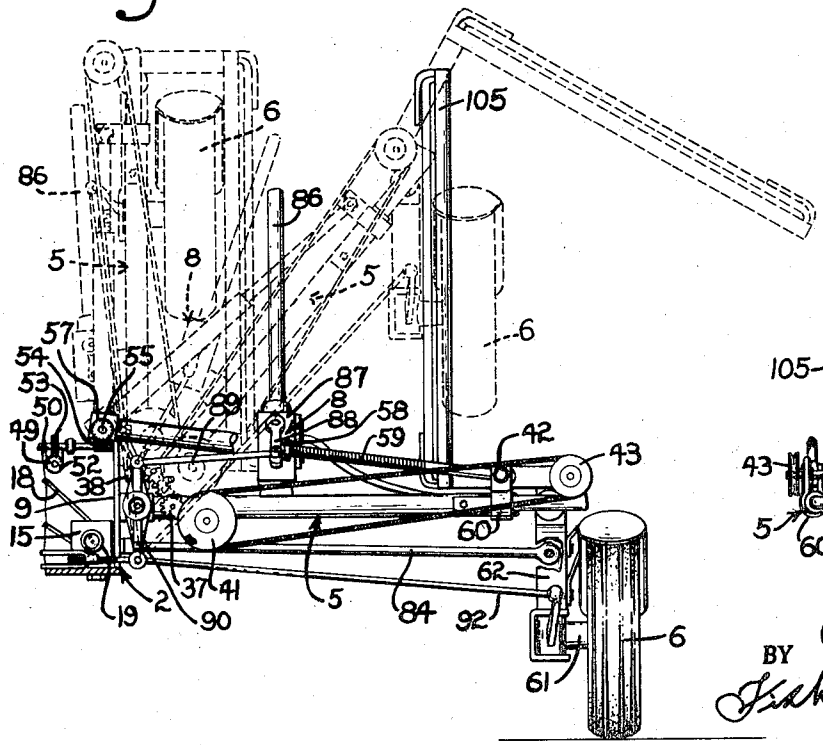
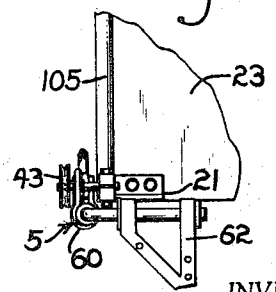



Fig. 4.




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Fig. 5.

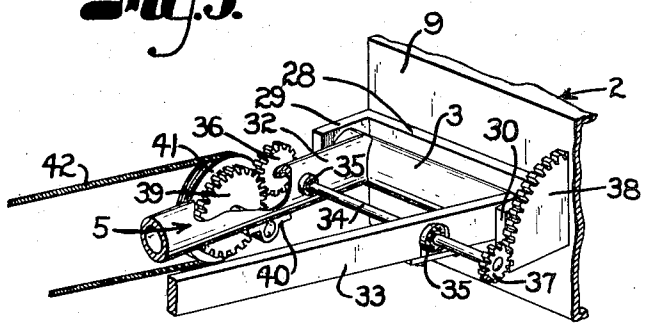



Fig. 6.

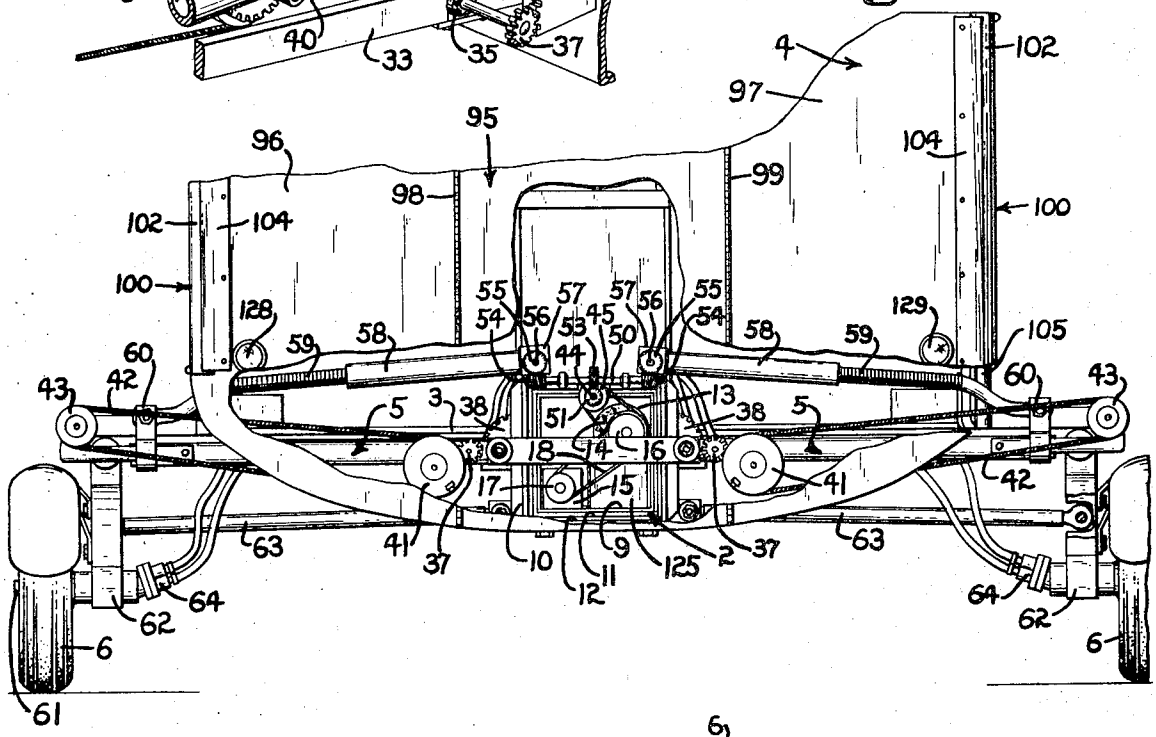
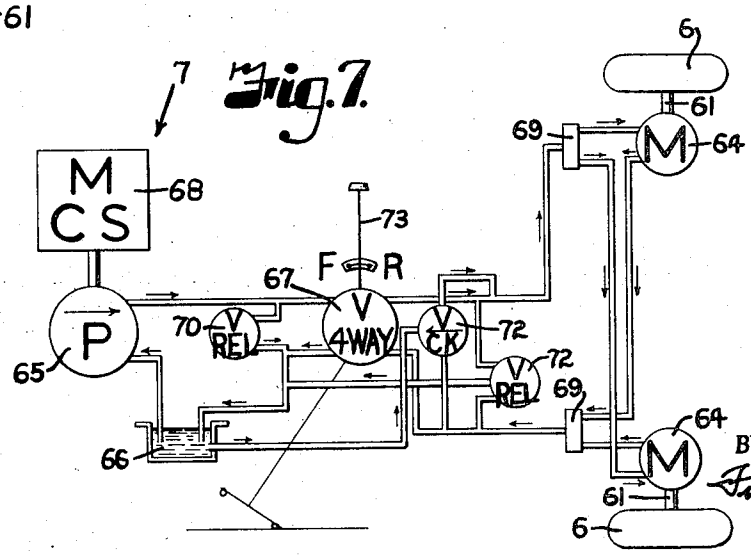



Fig. 7.




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Fig. 8.

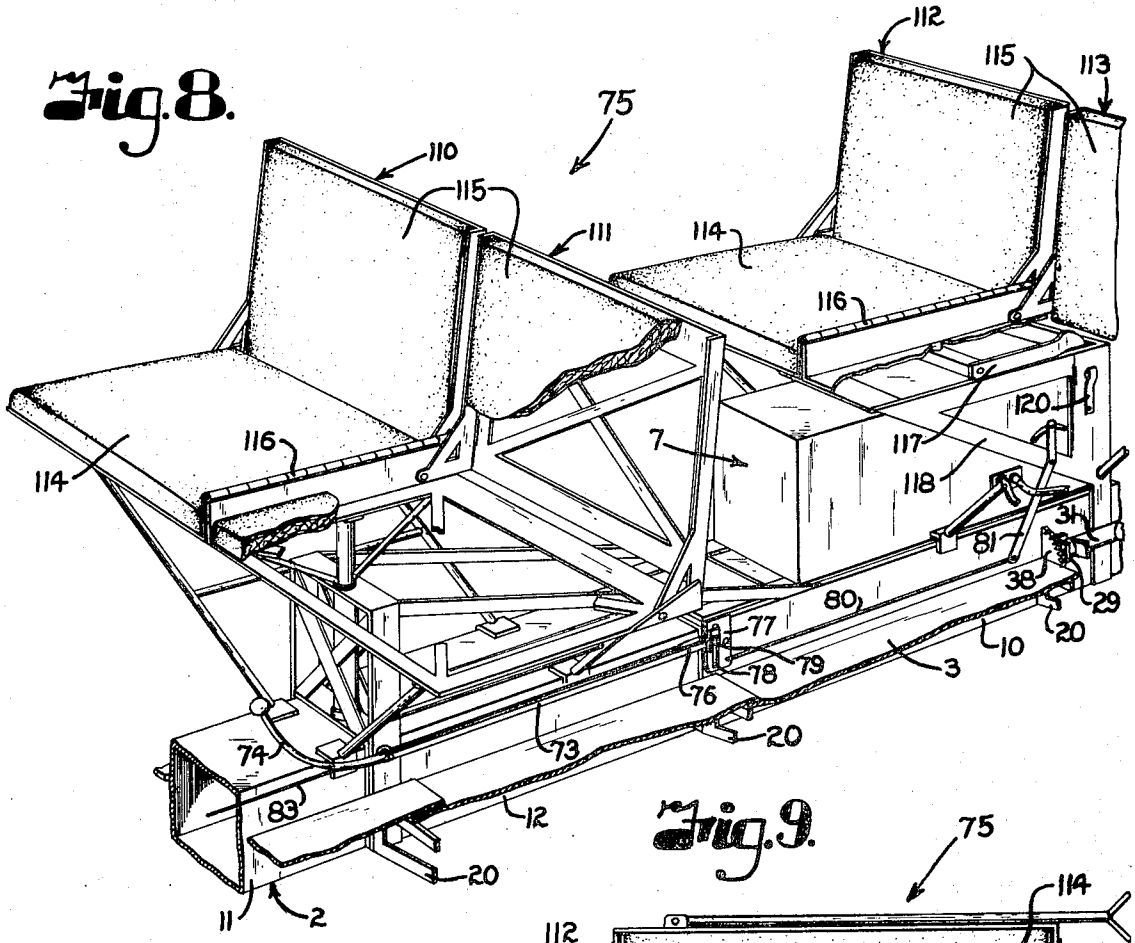



Fig. 9.

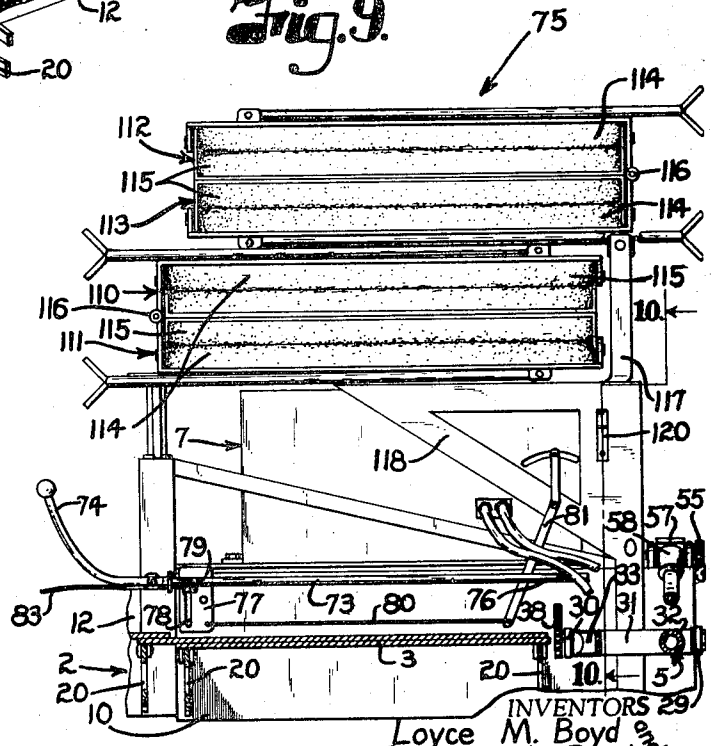
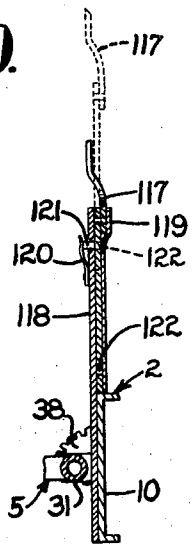



Fig. 10.




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Fig. 11.

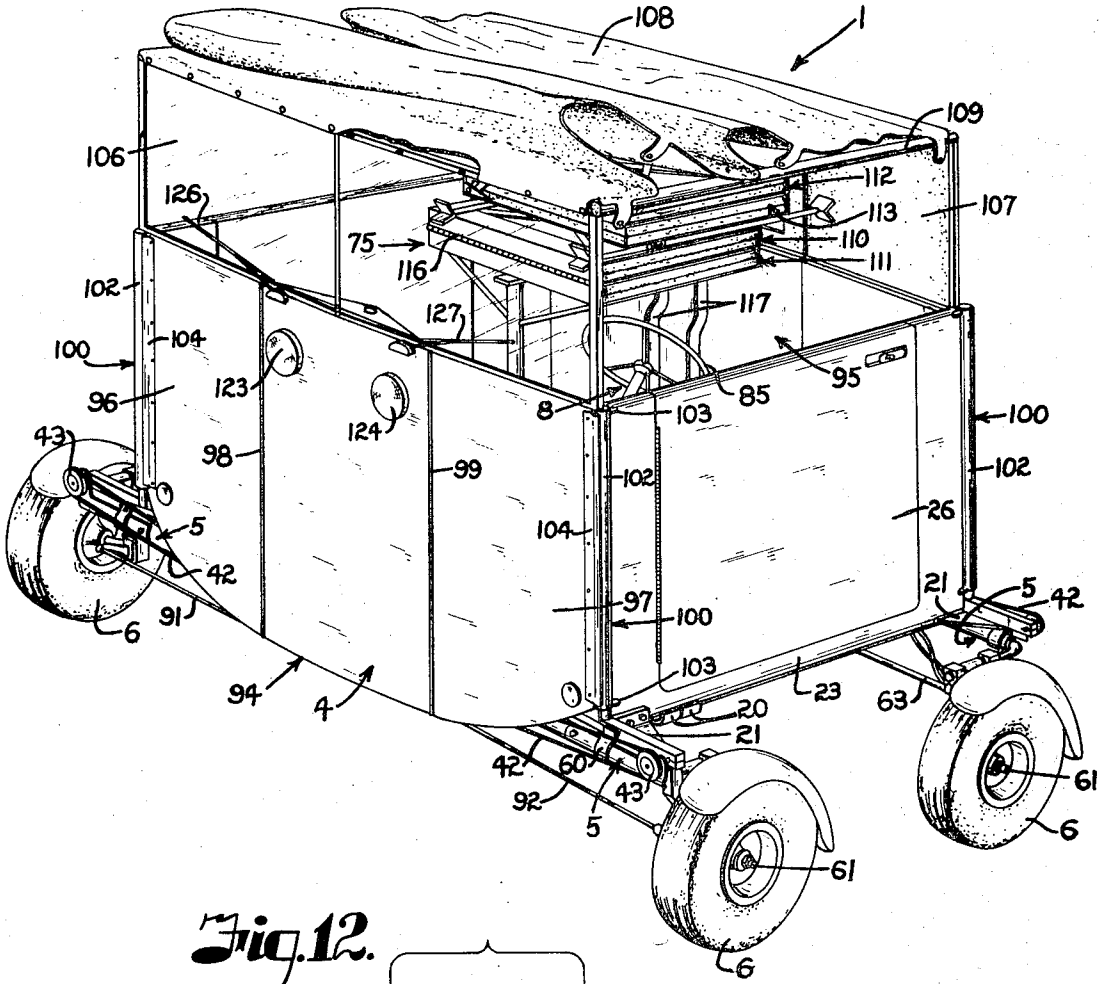
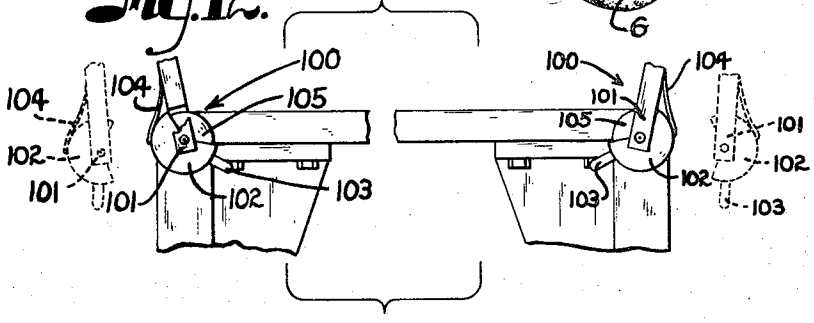



Fig. 12.




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Fig. 13.

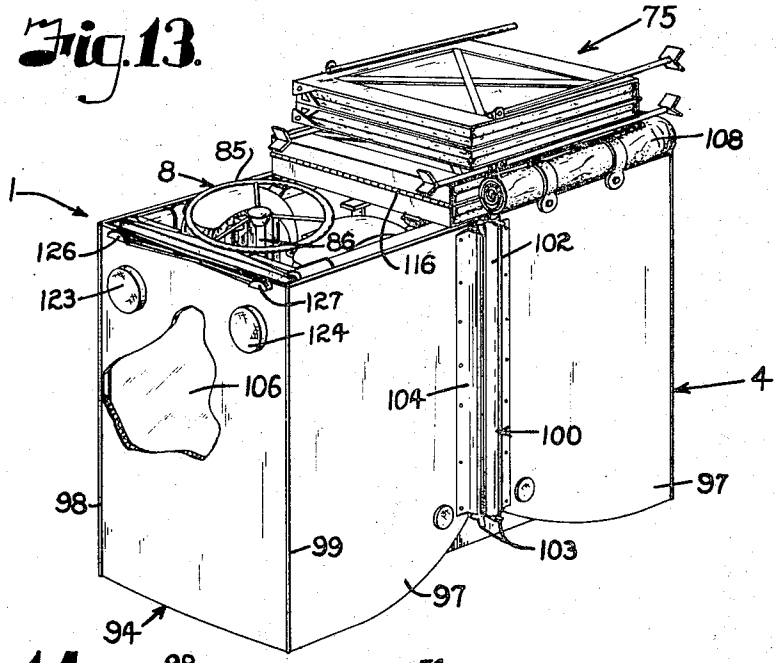
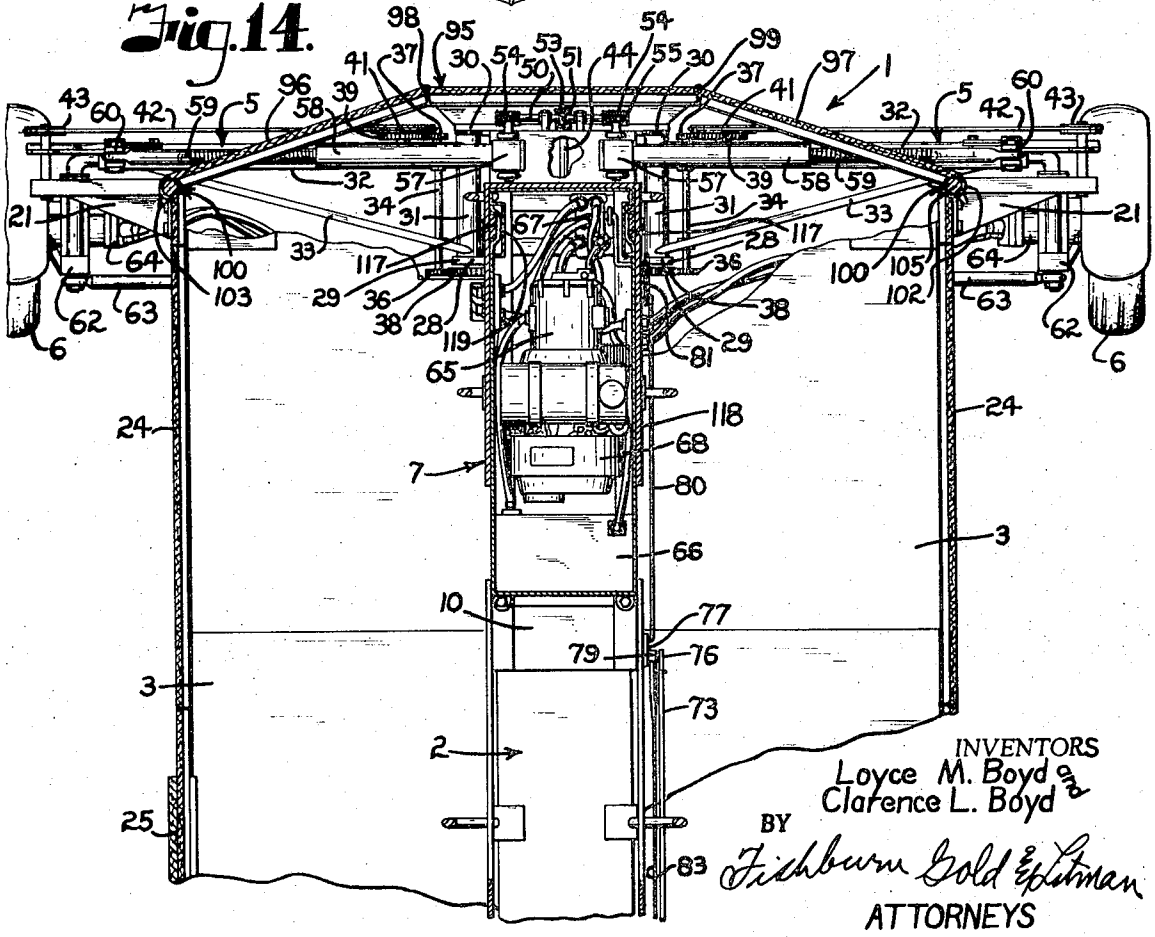



Fig. 14.




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# FOLDABLE TRANSPORTATION DEVICE

The present invention relates to foldable transportation devices of the automotive type having component parts thereof movable between an in-use position and a folded storage position.

The principal objects of the present invention are: to provide a foldable transportation device having component parts thereof longitudinally telescopeable and transversely foldable for compact storage; to provide such a foldable transportation device telescopeable and foldable to a size and of a weight suitable for placing in a trunk of an automobile or in a small plane; to provide such a foldable transportation device having power means operative to retract and extend the component parts and to fold and unfold the component parts thereof; to to provide such a foldable transportation device adapted to be easily manipulated between a retracted and folded storage position and an extended in-use position; to provide such a foldable transportation device which is particularly useful for repair and service garages and the like to use for picking up and delivering automobiles and like trips or errands; and to provide such a foldable transportation device which is economical to manufacture, easily maintained, positive in operation, stable at high speeds, and particularly well adapted for the purposes intended.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

The drawings constitute a part of this specification and include an exemplary embodiment illustrating various objects and features of the foldable transportation device of the present invention.

FIG. 1 is a perspective view of a foldable transportation device embodying features of the present invention and shown in an extended in-use position.

FIG. 2 is a fragmentary perspective view of a forward end portion of the device with portions broken away to better illustrate the operative parts.

FIG. 3 is a fragmentary front elevational view of the forward end portion of the device with portions broken away and showing folded positions of a wheel supporting arm and floor members and wall members in broken lines.

FIG. 4 is a fragmentary side elevational view showing a portion of a mounting of one wheel.

FIG. 5 is an enlarged fragmentary perspective view of a pivotally mounted end of one of the wheel supporting arms.

FIG. 6 is a rear elevational view of the foldable transportation device with portions broken away to better illustrate the operative parts.

FIG. 7 is a schematic diagram of means for driving the transportation device with essential operating parts diagrammatically shown.

FIG. 8 is a fragmentary perspective view of a center and rear portion of the device and showing mounting of seat members and means for selecting direction and speed of travel of the device.

FIG. 9 is a fragmentary side elevational view of a rear portion of the device and showing the seat members and supports therefor folded and in a storage position.

FIG. 10 is a fragmentary sectional view taken on line 10—10, FIG. 9 and showing a slide mechanism for



elevating rear seat members after folding to permit front seat members to be moved below same for storage.

FIG. 11 is a perspective view of the transportation device shown in a telescoped or retracted position prior to folding thereof.

FIG. 12 is an enlarged fragmentary plan view showing connection means for maintaining end panels and side wall members in an in-use position.

FIG. 13 is a perspective view of the transportation device shown in a folded storage position.

FIG. 14 is a fragmentary plan view of a rear portion of the device with portions broken away to better illustrate the operative parts, particularly power means for driving the transportation device.

Referring more in detail to the drawings:

As required, detailed embodiments of the present invention are disclosed herein, however, it is to be understood that the disclosed embodiments are merely exemplary of the invention which may be embodied in various forms that are different from those illustrative embodiments presented herein. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting but merely as a basis for the claims actually defining the scope of this invention. In this regard, it is to be recognized that foldable transportation devices, in accordance herewith, may be embodied in various forms and furthermore that such foldable transportation devices may be variously driven. However, the disclosure hereof is presented only as a representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriate detailed structure.

In the disclosed embodiment of the present invention, the reference numeral **1** generally designates a foldable transportation device having the component parts thereof movable between a retracted and folded storage position and an extended in-use position for travel. The foldable transportation device includes a center frame **2** having a plurality of telescopeable sections, as later described, having floor members **3** within a body **4** which includes end and side wall members, as later described, mounted on the center frame **2** and movable therewith and between respective folded positions and extended in-use positions and a pair of opposed wheel support arms **5** for each end of the center frame **2** and on opposite sides thereof and each having one end thereof pivotally mounted on the respective side of the center frame **2** and each having a wheel **6** rotatably mounted on the other end thereof with each arm **5** being movable between a folded storage position and an in-use position for movably supporting the transportation device **1**. Drive means **7** and steering means **8**, as later described, are operatively connected to selected wheels **6** for controlling movement and travel of the transportation device **1**.

The center frame **2** has a plurality of longitudinally telescopeable sections movable between an extended in-use position and a retracted storage position. The sections of the center frame **2** may be formed in any suitable shape which will provide support for the component parts of the foldable transportation device **1**. In the illustrated structure, the sections are generally square or rectangular and have opposed side walls and top and bottom walls for supporting the floor members

3 and the body 4 including the end and side wall members, as later described.

The center frame 2 may be formed of any desired number of longitudinally telescopeable sections, however, in the illustrated structure, the center frame 2 includes a front section 9 and a rear section 10 and at least one and preferably a pair of intermediate sections 11 and 12 cooperatively engageable with the front and rear sections 9 and 10 respectively.

Movement of the sections 9, 10, 11, and 12, of the center frame 2, between the retracted position and the extended in-use position is accomplished by suitable power means including an electric motor 13 preferably reversible and mounted within the space defined by the walls of the rear section 10 of the center frame 2 and having a magnetic clutch 14 operatively connected thereto. The magnetic clutch 14 is selectively engageable with the reversible electric motor 13 and is operatively connected to a jack screw 15 which is suitably connected to the front and rear sections 9 and 10 for moving same and the sections 11 and 12 between a retracted position and an extended in-use position.

In the illustrated power means, pulleys 16 and 17 are mounted on the magnetic clutch 14 and a rear end of the jack screw 15 respectively for rotation therewith and a suitable power transmission member, such as an endless belt 18, extends therebetween to rotate the jack screw 15 upon operation of the electric motor 13 and the magnetic clutch 14. The illustrated jack screw 15 has one end rotatably supported adjacent a forward end of the rear section 10 and has the exterior surface thereof threaded to be received within an internally threaded sleeve 19 mounted adjacent a rear end of the front section 9 whereby rotation of the jack screw 15 is effective to selectively move the front section 9 toward and away from the rear section 10 thereby extending and retracting the sections 9, 10, 11, and 12 of the center frame 2.

The floor members 3 are positioned adjacent the center frame 2 and extend outwardly from opposite sides thereof and are movable with the center frame 2 during telescoping thereof and are movable between a folded and telescoped storage position and an in-use position. In the illustrated structure, the transverse side edges of each of the floor members 3 extend normal to the center frame 2 and are supported on brackets 20 having one end thereof pivotally mounted on respective opposite sides of the intermediate sections 11 and 12 and brackets 21 on each of the arms 5 at the front and rear ends of the center frame 2.

The side wall members of the body 4 are positioned adjacent an outer longitudinal edge of each of the floor members 3 and the side wall members of the body 4 on each side of the foldable transportation device 1 extend between the respective brackets 21 on the arms 5 at the front or forward end of the transportation device 1 and the respective brackets 21 on the arms 5 at the rear or back end of the transportation device 1. The side wall members of the body 4 are supported intermediate the respective front and rear arms 5 by the brackets 20. The side wall members of the body 4 on each side of the transportation device 1 are longitudinally telescopeable and have cooperating guideways 22 on facing and engaging surfaces thereof.

There may be any number of side wall members on each side of the transportation device 1, however, in the illustrated structure, each side of the device 1 has a front wall member 23 and a rear wall member 24 with one intermediate wall member 25 therebetween and each front wall member 23 has the guideways 22 on an interior surface thereof and the intermediate wall member 25 has the guideways 22 on both interior and exterior surfaces thereof and the rear wall member 24 has the guideways 22 on an exterior surface thereof to permit the wall members 23, 24, and 25 to be movable to a side-by-side position when the center frame 2 and floor members 3 are in the retracted position.

Certain of the side wall members of the body 4 have door portions therein to provide access to an interior of the foldable transportation device 1. In the illustrated structure, the front wall member 23 on each side of the transportation device 1 has a door portion 26 therein to provide access to a forward portion of the transportation device 1 and the rear wall member 24 has a door portion 27 therein to provide access to a rear portion of the transportation device 1.

One pair of the opposed arms 5 is mounted adjacent a forward end of the front section 9 and the other pair of opposed arms 5 is mounted adjacent a rear end of the rear section 10, and each of the arms 5 of the pairs of arms 5 at each end of the device has one end thereof pivotally mounted on the respective section of the center frame 2 and are movable between an extended in-use position extending substantially normal or perpendicular to the longitudinal dimension of the center frame 2 and substantially horizontal and parallel with a supporting surface and a folded position extending substantially vertically.

The illustrated pivotal mounting of each of the arms 5 includes a bracket 28 mounted on the opposite sides of the front and rear sections 9 and 10 of the center frame 2 and extending outwardly therefrom. Each bracket 28 has a pair of flanges 29 and 30 extending outwardly from the center frame 2 and having suitable bushings or bearings (not shown) mounted therein to rotatably support a shaft 31 having opposite end portions thereof supported on the flanges 29 and 30 and extending therebetween. Spaced arm portions 32 and 33 of each arm 5 have one end thereof suitably secured on the shaft 31, as by welding, and extend outwardly therefrom. The arm portions 32 and 33 and the shaft 31 are thereby movable as a unit to move between a generally horizontal in-use position and a generally vertical folded storage position.

Movement of the arms 5 between the folded storage position and the in-use position is effective to move the side wall members of the body 4 between the folded storage position and the in-use position. In the illustrated structure, a gear shaft 34 has intermediate portions thereof rotatably supported in the arm portions 32 and 33, as in suitable bearings 35. Gears 36 and 37 are mounted on respective opposite ends of the gear shaft 34 and one of the gears, for example gear 36, is in engagement with a rack gear 38 mounted on and extending outwardly from the center frame 2 and the other gear 37 engages a gear 39 rotatably mounted on one of the arm portions, for example arm portion 32, as in a suitable bracket 40 mounted thereon.

Movement of the arms 5 is effective to move the gear 36 along the rack gear 38 and thereby rotate the gear shaft 34 and the gear 39 thereon. The gear 39 has a suitable pulley 41 mounted thereon and rotatable therewith. A suitable power transmission member, such as an endless cable 42 engages the pulley 41 and a pulley 43 rotatably mounted adjacent a free end of each of the arms 5 whereby when the free end of the arms 5 are moved in an arc about the respective shaft 31, the pulley 41 is turned by the gear 39 which in turn is turned by the gears 36 and 37 in response to pivotal movement of the respective arm in the flanges 29 and 30 of the bracket 28.

The arms 5 may be moved manually between the folded storage position and the in-use position, however, it is desirable to provide power means to effect the movement, therefore, the electric motor 13 is operatively connected to the arms 5 to move same between the horizontal in-use position and the vertical folded storage position when the transportation device 1 has been moved to the telescoped or retracted position, shown in FIG. 11, as by telescoping or retracting the sections of the center frame 2. In the illustrated structure, a power or gear shaft portion 44 is rotatably mounted within the rear section 10 of the center frame 2 and includes a pulley 45 on one end thereof and having an endless belt or cable 46 in engagement therewith and with the pulley 16 on the magnetic clutch 14. The power or gear shaft portion 44 has a clutch portion 47 mounted on the other end thereof and which is operatively engageable with a mating clutch portion 47 on a front gear shaft portion 49 when the center frame 2 is in the retracted position to thereby form a completed power shaft to fold and unfold component parts of the device 1 in response to operation of the electric motor 13. The rear gear or power shaft portion 44 and the front gear or power shaft portion 49 are each suitably rotatably supported within the rear section 10 and the front section 9 respectively of the center frame 2.

The rear power or gear shaft portion 44 and the front power or gear shaft portion 49 are each substantially parallel with a longitudinal dimension of the center frame 2 and each engages a respective gear shaft 50 mounted adjacent a front end of the front section 9 and a rear end of the rear section 10 and extending generally transversely to the longitudinal dimension of the center frame 2.

The electric motor 13 is operative to rotate the power shaft portions 44 and 49 and in the illustrated structure, a gear 51 is mounted on the pulley 45 on the rear power shaft portion 44 and a gear 52 is mounted on the front gear or power shaft portion 49 whereby operation of the electric motor 13 is operative to rotate the power shaft portions 44 and 49 and the gears 51 and 52 are each in engagement with a suitable gear 53 mounted on the respective front and rear gear shafts 50.

Rotation of the front and rear gear shafts 50 rotates gears 54 mounted on each of the opposite ends thereof each of which is engageable with a gear 55 which is mounted on one end of a shaft 56 having the other end thereof positioned within a suitable gear box 57. The gear box 57 has suitable gears therein operative to rotate an internally threaded sleeve 58 in response to rotation of the respective front and rear shafts 50. Rotation of the threaded sleeves 58 moves an externally threaded shaft 59 received therein and which has one end thereof fixedly and pivotally mounted adjacent the free end of the respective arm 5, as by a suitable bracket 60.

Rotation of the sleeves 58 to extend the threaded shafts 59 is effective to move the arms 5 toward the in-use position and rotation of the sleeves 58 to retract the threaded shafts 59 is effective to move the arms 5 toward the folded storage position. Forward and reverse operation of the electric motor 13 is thereby effective to selectively move the arms 5 between a generally vertical folded storage position and a generally horizontal in-use position for movably supporting the center frame 2 and the transportation device 1. Raising and lowering the arms 5 is effective to move the side wall members of the body 4 between an in-use position and a folded storage position, as later described.

The wheels 6 are each rotatably mounted on the free ends of the respective arms 5 and are preferably movable between an in-use position generally normal to the respective arm 5 when the arms are in the in-use position and a folded storage position generally parallel with the respective arm 5 when the arms 5 are in the folded storage position. In the illustrated structure, each wheel 6 is rotatably mounted on an axle 61 suitably supported in a drop bracket 62 pivotally mounted on the free end of the respective arm 5.

A sway bar 63 extends between respective sides of the center frame 2 and the drop bracket 62 for the wheel 6 on each of the arms 5 at the rear end of the transportation device 1. Respective opposite ends of each sway bar 63 are pivotally connected to the center frame 2 and the drop bracket 62 and each sway bar 63 is positioned below the respective arm portions 32 and 33 and generally parallel therewith to form a part of the respective rear arms 5. Each sway bar 63 effects pivotal movement of the respective drop bracket 62 between a folded storage position and an in-use position when the respective arm 5 is moved between the folded position and the in-use position respectively.

The wheels 6 on at least one pair of the arms 5 have the drive means 7 operatively connected thereto for driving same to thereby selectively move the transportation device 1 in a forward and a reverse direction, as later described. In the illustrated structure, a suitable drive motor 64 is operatively connected to the respective wheel 6 on each of the arms 5 at the rear of the transportation device 1.

In the illustrated drive means, a suitable hydraulic pump 65 is operative to move hydraulic fluid from a suitable fluid source, such as a reservoir 66 to a four-way control valve 67 having movable parts therein operative to control volume and direction of the flow of hydraulic fluid therethrough. The pump 65 is driven by a constant speed motor 68 and the pump 65 is operative to effect a substantially constant pressure in fluid supplied to the control valve 67. Fluid from the control valve 67 communicates with suitable flow dividers 69 for communicating the fluid to each of the drive motors 64 connected to the wheels 6 on the arms 5 at the rear of the transportation device 1. The control valve 67 is effective to control forward and reverse rotation of the rear wheels 6, therefore, there are two flow dividers 69,

one for forward rotation and one for reverse rotation of the rear wheels 6 with each being operative to receive fluid from the control valve 67 and communicate same to each of the drive motors 64, as best seen in FIG. 7.

The pump 65 is operative to move a constant volume of fluid at a substantially uniform pressure to the control valve 67 which is operative to permit all or only a portion of the fluid to pass therethrough as determined by adjustment of speed controls, as later described, therefore, a pressure relief valve 70 is positioned between the pump 65 and the control valve 67 and is operative to return fluid in excess of the volume requirements to effect the desired speed to the fluid reservoir 66. A pressure relief valve 71 is positioned between the control valve 67 and the drive motors 64 operatively connected to the rear wheels 6 and preferably between the control valve 67 and the two flow dividers 69. The pressure relief valve 71 is operative to return fluid in excess of the capacity of the flow dividers 69 and the drive motors 64 to the fluid reservoir 66 through the control valve 67. A check valve 72 is also positioned between the control valve 67 and the two flow dividers 69.

Direction selection means, more particularly forward and reverse drive, are operatively connected to the control valve 67 for selectively moving the operative parts thereof to effect forward and reverse rotation of the driven wheels 6 and speed control means are also operatively connected to the control valve 67 for selectively moving the operative parts thereof to control volume of fluid flowing therethrough to thereby control speed of rotation of the driven wheels 6 in either forward or reverse rotation thereof.

The illustrated direction selection means includes an elongated shift lever 73 positioned adjacent and preferably parallel with the center frame 2 and pivotally mounted thereon intermediate the ends of the shift lever 73 and having an end portion 74 positioned within the transportation device 1 and within easy reach of an operator or driver thereof, as by being positioned adjacent one of a plurality of seat members 75, as later described. The shift lever 73 has an other end portion 76 thereof extending from the pivotal mounting thereof and generally parallel with the center frame 2 and into operative engagement with a direction selection member 77 which is pivotally mounted on the center frame 2 and extending generally normal or perpendicular to the other end portion 76 of the shift lever 73. The pivotal mounting of the direction selection member 77 is intermediate the ends thereof and spaced from the pivotal mounting of the shift lever 73.

The direction selection member 77 has an elongated way 78 therein and having opposite ends positioned adjacent respective opposite ends of the direction selection member to receive a slide 79 mounted on the other end portion 76 of the shift lever 73 for movement along the way 78 between opposite ends thereof in response to adjustment of the position of the end portion 74, as by an operator or driver of the transportation device 1. The direction selection member 77 is operatively connected to speed controls, as later described, for effecting forward movement of one end portion of the direction selection member 77 when the slide 79 is positioned at one of the opposite ends of the way 78 and for effecting rearward movement of said one end portion of the direction selection member 77 when the slide 79 is positioned at the other of the opposite ends of the way 78 in response to operation of the speed control means.

A push rod 80 operatively connects the direction selection member 77 and the control valve 67 for adjusting the operative parts thereof to control speed and direction of rotation of the driven wheels 6 at the rear end of the device 1 in response to the position of the shift lever 73 and the slide 79 in the way 78 and operation of the speed control means. In the illustrated structure, the push rod 80 is connected to one end of a lever 81 having an intermediate portion thereof suitably pivotally mounted, as on a support for one of the seat members 75, and the other end thereof in engagement with the operative parts of the control valve 67.

The illustrated speed control means includes an accelerator pedal 82 pivotally mounted on the center frame 2 and positioned within easy reach of a foot of an operator or driver of the transportation device 1. A cable 83 extends between the accelerator pedal 82 and the slide 79 mounted on the other end portion 76 of the shift lever 73 whereby movement of the accelerator pedal 82 is effective to pivot the direction selection member 77 forward when the slide member 79 is at one end of the way 78 thereby pushing the push rod 80 and lever 81 in one direction to adjust the control valve 67 and when the slide 79 is at the other end of the way 78, movement of the accelerator pedal 82 is effective to pull the push rod 80 and lever in the opposite direction thereby moving the operative parts of the control valve 67 to selectively effect forward and reverse drive and control the speed thereof by the amount of movement of the accelerator pedal and cable 83.

The steering means 8 is preferably operatively connected to the wheels 6 on one pair of the arms 5 for steering same and in the illustrated structure, the steering means 8 is operatively connected to the wheels 6 on the arms 5 at the front of the transportation device 1.

A radius rod 84 extends between the respective sides of the center frame 2 and the drop bracket 62 for each wheel 6 of the arms 5 at the front end of the transportation device 1. Respective opposite ends of each of the radius rods 84 are suitably connected to the center frame 2 and the drop bracket 62 to permit turning of the respective wheels and each of the radius rods 84 are positioned below the respective arm portions 32 and 33 and generally parallel therewith to form a part of the respective front arms 5. Each of the radius rods 84 effect movement of the respective drop bracket 62 between a folded storage position and an in-use position when the respective arm 5 is moved between the folded position and the in-use position respectively.

A suitable steering wheel 85 is positioned within easy reach of an operator or driver of the transportation device 1 and is mounted on an upper end of a suitable steering column 86 which has a lower end thereof pivotally mounted on one of the arms 5 at the front end of the transportation device 1. The lower end of the steering column 86 has a housing 87 thereon having suitable means therein for pivoting an arm 88 mounted on the housing 87. One end of the arm 88 is connected to a suitable linkage for turning the wheels 6 on the arms 5 at the front end of the transportation device 1 in response to turning of the steering wheel 85.

In the illustrated structure, the steering linkage includes a link 89 having one end pivotally connected to the arm 88 and the other end thereof pivotally connected to one end of a rocker arm 90 pivotally supported on the center frame 2 intermediate the ends of the rocker arm 90. Opposed push rods 91 and 92 each have one end thereof pivotally mounted on the other end of the rocker arm 90 and the respective other ends of the push rods 91 and 92 are suitably connected to the drop brackets 62 supporting the respective wheels 6 at the front end of the transportation device 1 for turning same in response to movement of the arm 88. In the illustrated structure, the rocker arm 90 is mounted on the same side of the transportation device 1 as the steering column 86 and housing 87 and the push rod mounted on the other side of the center frame 2 of the transportation device 1 is suitably supported as by a pivotally mounted hanger 93, as best seen in FIG. 2, on the other side of the center frame 2.

The end walls of the body 4 are mounted on opposite ends of the center frame 2 and have foldable portions movable between an in-use position, as best illustrated in FIG. 1, and a folded position, as best illustrated in FIG. 13. In the illustrated embodiment, front and rear end members 94 and 95 are mounted on front and rear ends respectively of the center frame 2 and are upstanding therefrom and the end members 94 and 95 are positioned substantially normal or perpendicular to a longitudinal dimension of the center frame 2.

Side panels 96 and 97 are hingedly mounted on opposite upright side edges 98 and 99 respectively of each of the front and rear members 94 and 95. Each side panel 96 and 97 is movable between a folded position substantially parallel with the longitudinal dimension of the center frame 2 and an in-use position extending generally outwardly from the respective end members 94 and 95.

Connection means 100 for selectively maintaining the side panels 96 and 97 in the folded position and in the in-use position are mounted on free upright edges of the side panels 96 and 97 on the front and rear end members 94 and 95. The connection means 100 includes cooperating portions on respective end edges of the side wall members of the body 4 for maintaining the side panels 96 and 97 and the side wall members in the in-use position.

The illustrated connection means 100 includes suitable upper and lower arms 101 extending outwardly from opposite ends of the upright free edge of each of the side panels 96 and 97 at the front and rear ends of the transportation device 1. An elongated tubular member 102 having closed ends extends between the upper and lower arms 101 and is rotatably supported thereon and has an ear 103 extending outwardly therefrom and preferably positioned adjacent a lower end thereof. An elongated resilient member 104 is mounted on the side panels 96 and 97 and is positioned to have a portion thereof in engagement with the respective tubular member 102 for sufficiently restricting rotational movement thereof to thereby form a substantially tight connection between the respective side wall member or side panel.

The tubular member 102 is illustrated as a generally elongated cylindrical member having a segment or portion thereof removed for the length thereof whereby a cooperating portion 105 on the respective side wall member or side panel is shaped to pass through to the removed portion of the tubular member 102 and engagement of the cooperating portion 105 within the tubular member 102 is effective to form a substantially tight connection therebetween when the tubular member 102 is rotated, as by moving the ear 103, to surround the cooperating portion 105 with the remaining portion of the tubular member 102.

It is desirable to provide a windshield in front of an operator or driver of the transportation device 1 and for passengers therein, therefore, sets 106 and 107 of frames are positioned adjacent the front and rear end members 94 and 95 respectively and the frames of the sets 106 and 107 are movable between a folded position adjacent and substantially parallel with the respective end members 94 and 95 and an in-use position above and generally parallel with an upper edge of the respective end walls, as defined by the front and rear end members 94 and 95 and the respective side panels 96 and 97 mounted thereon. Each of the sets 106 and 107 may have any number of of frames therein, however, it is preferable that at least one of the frames of each of the sets 106 and 107 of frames have suitable transparent material mounted therein, such as glass, plastic or the like.

In the illustrated structure, there are two frames in the front set 106 adjacent the front end member 94 and there are three frames in the rear set 107 adjacent the rear end member 95 and both of the frames in the front set 106 have transparent material therein and a center frame of the rear set 107 has transparent material therein.

Suitable means are provided which engage the frames in each of the sets 106 and 107 and the respective end members 94 and 95 and the side panels 96 and 97 mounted thereon to permit moving the respective sets 106 and 107 of frames between the folded position and the in-use position above the respective end members and side panels mounted thereon.

The frames of the sets 106 and 107 have suitable fastening members on an upper edge thereof, when in the in-use position, to receive and support respective opposite ends of a suitable collapsible top member 108 removably mounted on and extendible between respective upper edges of the frames of the sets 106 and 107. The collapsible top member 108 is preferably formed of a durable substantially weatherproof material, such as plastic, canvas, and the like. The collapsible top member 108 includes a plurality of spaced stiffening portions 109 mounted on opposite side edges thereof for supporting said respective side edges when the top member 108 is in the extended in-use position. The stiffening portions 109 are spaced apart when in the in-use position and are telescopeable together when in the retracted position, as best shown in FIG. 11.

It is desirable to provide at least one seat member 75 mounted on the center frame 2 and having foldable portions movable between a folded storage position and an in-use position for supporting the driver or operator of the transportation device 1. In the illustrated structure, the seat members 75 include a pair of front seat members 110 and 111 positioned adjacent and rearwardly of a forward end of the center frame 2 and having the end portion 74 of the shift lever 73, the

accelerator pedal 82, and steering wheel 85 positioned within easy reach of an operator or driver of the transportation device 1 and adjacent one of the front seat members, for example, front seat member 110. A pair of rear seat members 112 and 113 are positioned behind the front seat members 110 and 111 and adjacent a rear end of the center frame 2.

Each of the seat members 110, 111, 112 and 113 has a seat portion 114 and a back portion 115 foldable over the respective seat portion 114. One of the seat members of each pair of front and rear seat members is foldable over the other seat member of the respective pair of seat members, as by having both seat members mounted on a suitable hinge 116.

One pair of the seat members is mounted on a mechanism operative to raise the respective pair of seat members to permit the other pair of seat members to be moved below the one pair of seat members during telescoping or retracting of the center frame 2. In the illustrated structure, the rear seat members 112 and 113 are mounted on a pair of spaced arms 117 movable between a lower in-use position, as illustrated in FIG. 8, and a raised storage position as illustrated in FIGS. 9, 11 and 13. The arms 117 each move vertically between one side of a seat support member 118 and a guide member 119 mounted on the seat support member 118. A resilient clip 120 is mounted on the other side of the seat support member 118 and has a pin 121 extending through an aperture in the respective seat support member 118 and into an aperture 122 in a lower end of the respective arm 117 to support same in the raised position.

It is necessary that the transportation device 1 have suitable headlights, such as a pair of spaced lights 123 and 124, mounted on the front end member 94 and powered by a suitable battery 125 which may be mounted in the front section 9 and preferably adjacent a forward end thereof. Windshield wipers 126 and 127 may also be powered by the battery 125 and are positioned on the front end member 94 adjacent an upper edge thereof and engageable with the transparent material in the frames of the front set 106. Tail lights 128 and 129 are also provided on the side panels 96 and 97 respectively at the rear end of the transportation device 1 and are preferably powered by the battery 125.

It is to be understood that while We have illustrated and described one form of our invention, it is not to be limited to the specific form or arrangement of parts herein shown and described.

What we claim and desire to secure by Letters Patent is:

1. A foldable transportation device, having an in-use position and a folded position, comprising:
   a. a longitudinally telescopeable center frame;
   b. a pair of opposed arms for each end of said center frame, each of said arms of each pair having one end thereof pivotally mounted on said center frame and extending outwardly therefrom and having a wheel rotatably mounted on the other end thereof;
   c. means engaging each of said arms to permit moving same between a folded storage position and an in-use position for movably supporting said center frame;
   d. means carried on said center frame and operatively connected to the wheels on at least one pair of said arms for driving same;
   e. means operatively connected to the wheels on at least one pair of said arms for steering same;
   f. at least one seat member mounted on said center frame and having foldable portions movable between an in-use position and a folded storage position; and
   g. floor members positioned adjacent said center frame and extending outwardly from opposite sides of said center frame, said floor members being movable with said center frame during telescoping thereof and movable between a folded and telescoped storage position and an in-use position.

2. A foldable transportation device as set forth in claim 1 including:
   a. an end member mounted on each end of said center frame and upstanding therefrom and having opposite upright side edges, said end members each being substantially normal to a longitudinal dimension of said center frame;
   b. a side panel for each of the opposite upright side edges of each of said end members and hingedly mounted thereon, each side panel being movable between a folded position substantially parallel with the longitudinal dimension of said center frame and an in-use position extending generally outwardly from said respective end members; and
   c. means engageable with each of said side panels for selectively maintaining same in said folded position and in said in-use position.

3. A foldable transportation device as set forth in claim 2 including:
   a. a wall member positioned adjacent an outer edge of each of said floor members;
   b. means engaging said wall members to permit moving said wall members between a folded position and an in-use position extending generally upwardly from the outer edge of the respective floor member;
   c. cooperating means on a free edge of each of said side panels and on respective end edges of said wall members for maintaining same in said in-use position; and
   d. a door portion in certain of said wall members for access to a space defined by said end members and respective side panels and said wall members.

4. A foldable transportation device as set forth in claim 2 including:
   a. a set of frames adjacent each of said end members and movable between a folded position and an in-use position;
   b. transparent material mounted in at least one of said frames of each of said sets of frames;
   c. means engaging the frames in each of said sets of frames and said respective end members and the side panels mounted thereon to permit moving said sets of frames between a folded position and an in-use position above said respective end members and the side panels mounted thereon; and
   d. a collapsible top member removably mounted on and extending between respective upper edges of the frames in each of said sets of frames when in said in-use positions.

5. A foldable transportation device as set forth in claim 1 including:

a. an end member fixedly mounted on each end of said center frame and upstanding therefrom and having opposite upright side edges, said end members each being substantially normal to a longitudinal dimension of said center frame;

b. a side panel for each of the opposite upright side edges of each of said end members and hingedly mounted thereon, each side panel being movable between a folded position substantially parallel with the longitudinal dimension of said center frame and an in-use position extending outwardly from said respective end members;

c. a wall member positioned adjacent an outer edge of each of said floor members, said wall members each being movable between an in-use position extending generally upwardly from the respective floor member and a folded position, said wall members being movable to a side-by-side position when said floor members are in said storage position; and

d. cooperating means on said side panels and on said respective wall members for maintaining same in said respective in-use positions.

6. A foldable transportation device as set forth in claim 1 wherein said wheel driving means comprises:

a. a supply of hydraulic fluid;

b. valve means having movable parts operative to control volume and direction of flow of hydraulic fluid;

c. means communicating with said hydraulic fluid supply and said valve means for effecting pressure in fluid supplied to said valve means;

d. a hydraulic motor for each wheel to be driven and operatively connected to said respective wheel and to said valve means;

e. means on said center frame and operatively connected to said valve means for moving operative parts thereof to selectively effect forward and reverse rotation of said driven wheels; and

f. means on said center frame and operatively connected to said valve means for moving operative parts thereof to selectively control volume of fluid therethrough to thereby control speed of rotation of said driven wheels.

7. A foldable transportation device as set forth in claim 6 wherein said direction selection means comprises:

a. an elongated shift lever adjacent said center frame and pivotally mounted thereon, said pivotal mounting being intermediate the ends of said shift lever, said shift lever having one end portion adjacent said seat member and an other end portion extending from said pivotal mounting thereof;

b. a direction selection member pivotally mounted on said center frame, said pivotal mounting of said direction selection member being intermediate the ends of said direction selection member and spaced from said pivotal mounting of said shift lever;

c. means slidably engaging said other end portion of said shift lever and movable along said direction selection member between opposite ends thereof and operatively connected to said speed control means for effecting forward movement of one end portion of said direction selection member when positioned at one of said opposite ends thereof and effecting rearward movement of the one end portion of said direction selection member when positioned at the other of said opposite ends in response to operation of said speed control means; and

d. means operatively connecting said one end portion of said direction selection member and said valve means for adjusting the operative parts of said valve means to control speed and direction of rotation of said driven wheels in response to the position of said shift lever and operation of said speed control means.

8. A foldable transportation device as set forth in claim 1 wherein:

a. a pair of seat members are positioned adjacent a forward end of said center frame;

b. a pair of seat members are positioned adjacent a rear end of said center frame;

c. each of said seat members has a seat portion and a back portion foldable over said respective seat portion;

d. one seat member of each pair of seat members is foldable over the other seat member of the respective pair of seat members; and

e. one pair of said seat members is mounted on a mechanism operative to raise said one pair of seat members to permit the other pair of seat members to be moved below said one pair of seat members during telescoping of said center frame.

9. A foldable transportation device as set forth in claim 1 including:

a. power driven means operatively connected to portions of said center frame for selectively moving the portions of said center frame between an extended in-use position and a retracted storage position;

b. means operatively engageable with said power driven means and operatively connected to each of said arms for selectively moving said arms between said folded position and said in-use position; and

c. means engaging each of said arms and the wheel mounted thereon to permit said respective wheel to move between an in-use position generally normal to said arm and a folded position generally parallel with said arm.

10. A foldable transportation device comprising:

a. a center frame having a plurality of longitudinally telescopeable sections movable between an extended in-use position and a retracted storage position;

b. a pair of opposed arms for each end of said center frame; each of said arms of each pair having one end thereof pivotally mounted on a respective end section of said center frame and extending outwardly therefrom and having a wheel rotatably mounted on the other end thereof;

c. means engaging each of said arms to permit moving same between a folded storage position and an in-use position for movably supporting said center frame;

d. power means carried on said center frame and operatively connected to the wheels on at least one pair of said arms for selectively driving same for forward and rearward travel;

e. means operatively connected to the wheels on at least one pair of said arms for steering same;

f. at least one seat mounted on said center frame and having foldable portions movable between an in-use position and a folded storage position;

g. a floor member positioned adjacent opposite sides of each section of said center frame and extending outwardly from said opposite sides of said respective sections of said center frame, said floor members being movable with said respective sections of said center frame during movement thereof between the extended in-use position and the retracted storage position;

h. an end member mounted on each end section of said center frame and upstanding therefrom and having upright side edges, said end members each being substantially normal to a longitudinal dimension of said center frame;

i. a side panel for each of the opposite upright side edges of each of said end members and hingedly mounted thereon, each side panel being movable between a folded position substantially parallel with the longitudinal dimension of said center frame and an in-use position extending generally outwardly from said respective end members;

j. a wall member positioned adjacent an outer edge of each of said floor members, said wall members each being movable between an in-use position extending generally upwardly from the respective floor member and a folded position, said wall members being movable to a side-by-side position when the sections of said center frame are positioned in the retracted storage position;

k. a door portion in certain of said wall members for access to a space defined by said end members and respective side panels and said wall members; and

l. cooperating means on said side panels and on said respective wall members for maintaining same in said respective in-use positions.

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