United States Patent [19]

Odegaard

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[54] **AMPHIBIOUS VEHICLE**

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[52] **U.S. Cl.** ..... **9/1 T,** 114/61

[51] **Int. Cl.** **B63c 13/00**

[58] **Field of Search** ..... 9/1 R, 1 T, 2 R, 2 S, 2 F; 114/61

[56] **References Cited**

UNITED STATES PATENTS

2,992,444 7/1961 Schuler ..... 9/1 T

Primary Examiner—George E. A. Halvosa
Assistant Examiner—Edward K. Kazenske
Attorney, Agent, or Firm—Jackson & Jones Law Corporation

[57] **ABSTRACT**

An amphibious vehicle is disclosed which is capable of supporting a permanent installation, such as a cabin, in all modes of travel.

The vehicle comprises a central platform having a pair of retractable wheels mounted below to support the vehicle in a land travel mode. The platform further includes a plurality of lateral tubes intermittently spaced below for receiving a plurality of telescoping beams. These beams are adapted to telescope out of both sides of the platform in cantilevered positions to support a quantity of floor panels. The floor panels are adapted to be pivoted into a vertical stowed position when the beams are fully retracted into the tubes. In the stowed position, the floor panels are located on the sides of the platform to still provide sufficient space on the platform for supporting a permanent installation. A plurality of pontoons are securely mounted below the central platform and the floor panels to support the vehicles in water. A marine motor and propeller combination is also mounted below the platform to drive the vehicle in water.

5 Claims, 3 Drawing Figures

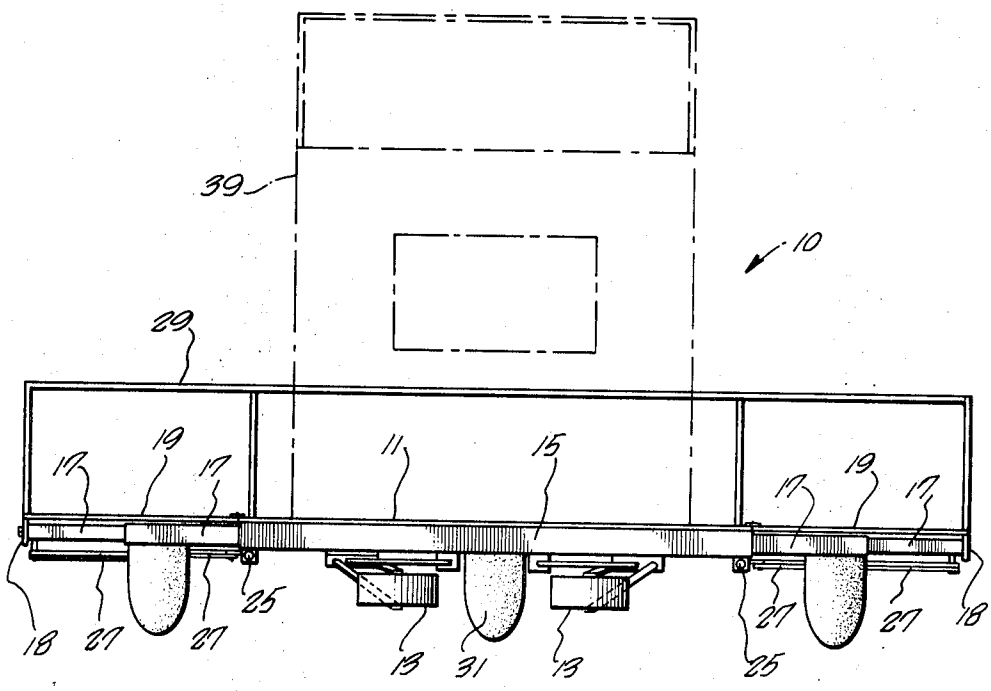


FIG 3

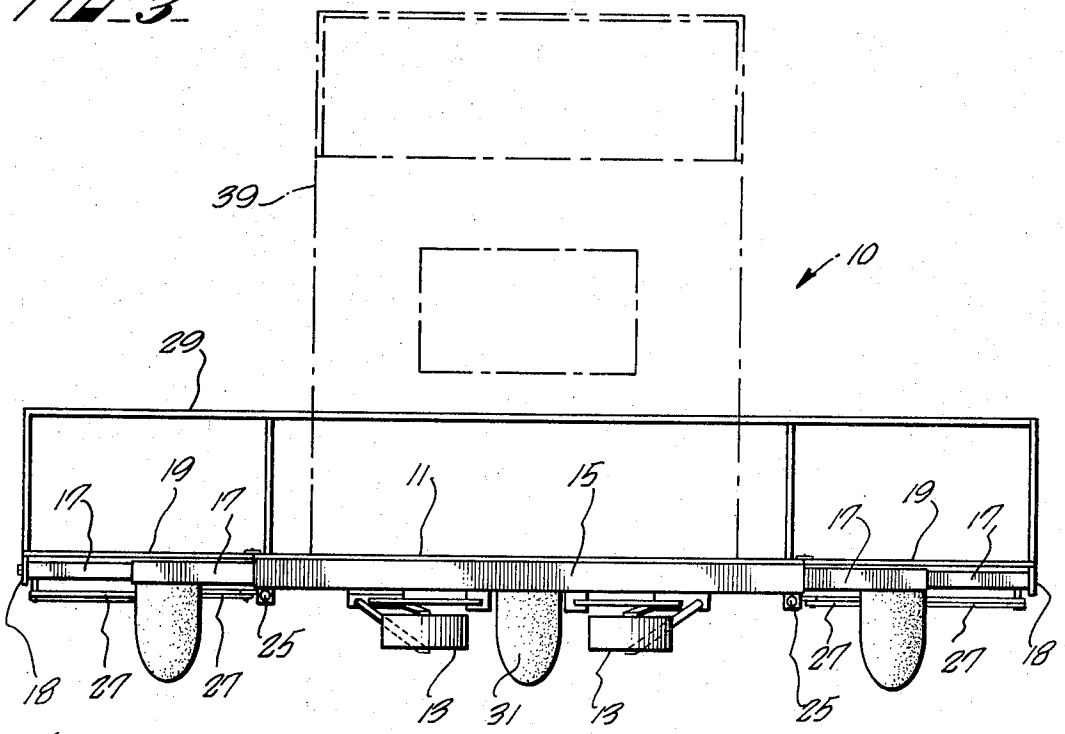
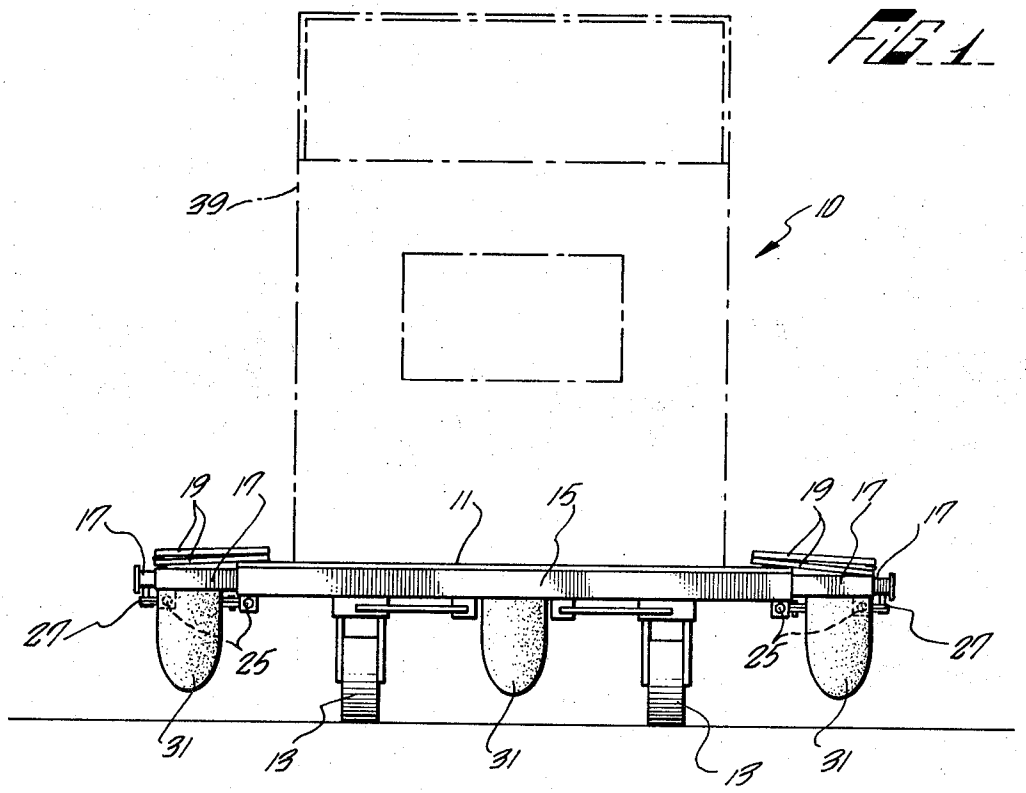

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FIG 1


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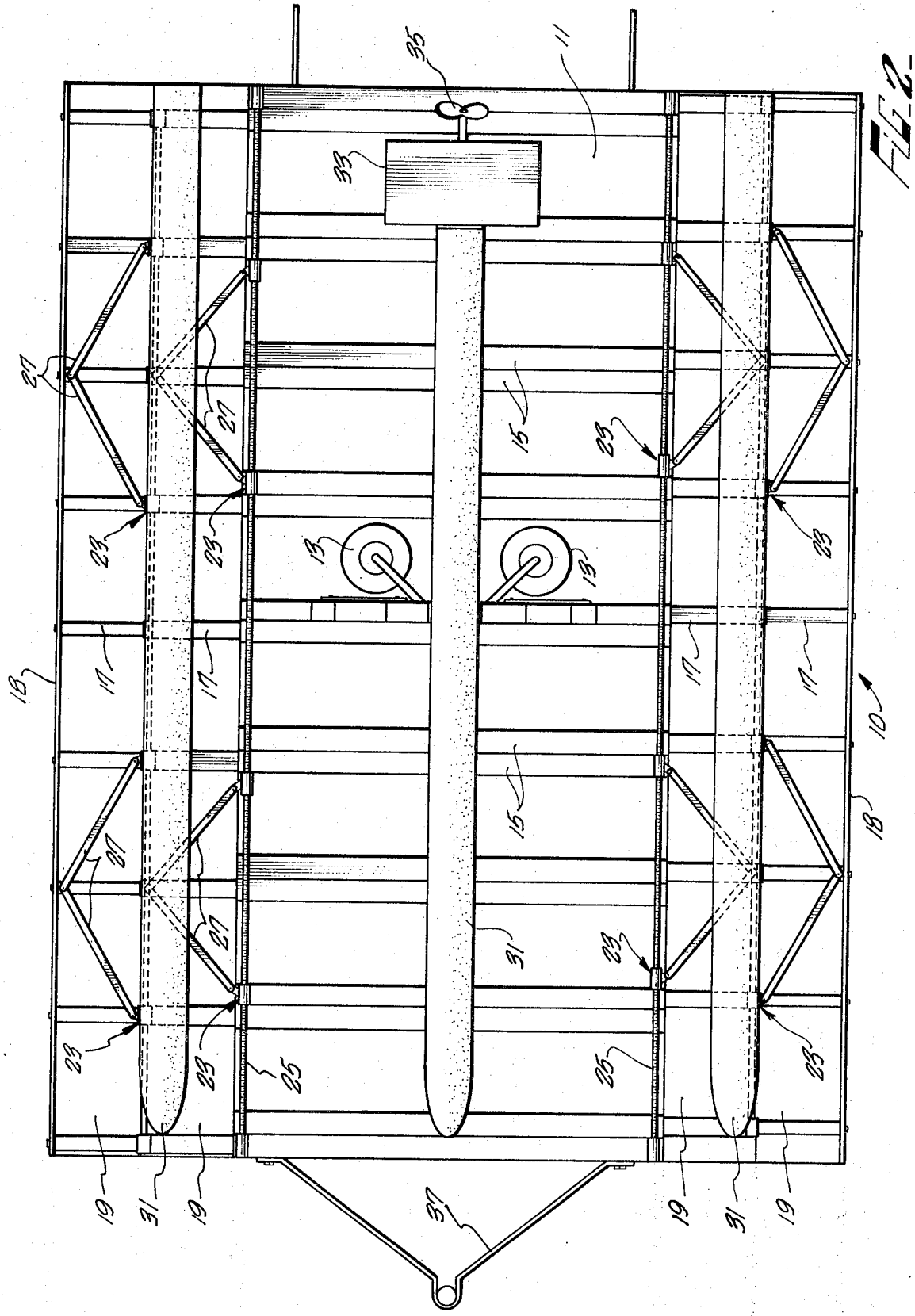

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FIG. 2

AMPHIBIOUS VEHICLE

BACKGROUND OF THE INVENTION:

1. Field of the Invention:

The present invention relates to amphibious vehicles and more particularly to vehicles which are especially adapted to be transformed from a land trailer into a sea-going vessel.

2. Description of the Prior Art:

Amphibious vehicles of the type described above have long been described in various prior United States patents. However, all of these devices previously patented suffer from various shortcomings which have prevented their commercial utilization.

A typical example is found in the U.S. Pat. No. 3,042,942. In this patent, an amphibious pontoon boat is described having a major deck portion in which a pair of deck extensions are adapted to be pivoted upwardly to extend over the main deck portion for storage. A plurality of rather large pontoons are mounted below the deck portions. In the stowed position the pontoons that are connected below the deck extensions also extend over the main deck portion. A pair of retractable wheels is mounted below the main deck of the vehicle to enable it to function as a trailer. When it is desired to convert the vehicle into a boat, the wheels are retracted and the deck extensions are pivoted downwardly to provide a relatively large deck area for any number of uses.

A very serious shortcoming with such a vehicle is that substantially the entire area of the main deck is taken up with the deck extensions and pontoons when in the trailer mode. As a result, no room is reserved on the deck for any permanent installation such as a cabin or other like enclosures. As a result, unless provisions are otherwise provided for, the pontoon boat can only be utilized as a raft-like vehicle having an enlarged flat deck for supporting chairs and equipment which can easily be transported in the automobile or truck pulling the trailer.

This same shortcoming is found in a similar vehicle disclosed in U.S. Pat. No. 3,099,977. As more particularly shown in FIG. **20**, the vehicle discloses a main deck portion having a pair of deck extensions pivotally mounted on the sides of the main deck portion with a pair of very large pontoons mounted below the extensions. As with the previously patented device described above, in the trailer mode, the deck extensions are pivoted upwardly onto the main deck portion with the large pontoons taking up most of the available space. As a result, very little space is left to support any type of permanent installation. The little space that is available on the vehicle is utilized to house some sort of frame for supporting tent material.

U.S. Pat. No. 3,067,439 shows a vehicle in which a pair of enlarged pontoons are adapted to be unfolded into a catamaran. A pair of tracks are formed on the upper surfaces of the pontoons to enable an automobile to be positioned thereon. The main shortcoming with this vehicle is the same as the ones discussed above; namely, the vehicle does not provide for a fixed enlarged deck for providing a platform for a permanent installation at all times.

A similar device is shown in U.S. Pat. No. 3,061,845. FIGS. **4** and **5** of the patent show the catamaran in its trailer configuration and in its sea-going configuration. As with the vehicles shown in the patent discussed immediately above, the enlarged pontoons do not provide for any permanent installation when they are in the stowed position.

SUMMARY OF THE INVENTION:

The present invention obviates the above-mentioned shortcomings by providing an amphibious vehicle having an enlargeable deck that is capable of supporting a permanent installation in all travel modes.

The vehicle comprises a central platform having a pair of retractable wheels mounted below to support the vehicle as a trailer. The platform is sufficiently large enough to support a permanent installation such as a cabin. At least one deck extension is adapted to be cantilevered from the platform. The deck extension comprises a plurality of telescoping beams which are adapted to slide into tubes mounted under the platform. A plurality of foldable floor panels are pivotally connected to the beams. The panels are adapted to be pivoted to a horizontal position to extend over the extended beams. The panels are also adapted to be pivoted into a vertical position in the trailer mode. In this stowed position, the panels are mounted on the sides of the platform so as not to encroach on the area utilized for the permanent installation. A set of pontoons are mounted beneath the central platform to support the vehicle in water.

As described above, a primary advantage of the present invention is that the main platform has sufficient space to support a permanent installation even while in the trailer configuration.

Another advantage of the present invention is to provide a deck area that can be easily and efficiently enlarged while still being able to be conveniently stored in a stowed position.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS:

FIG. **1** is an elevational view of an amphibious vehicle of the present invention shown in a stowed position for land travel;

FIG. **2** is a bottom view of the vehicle taken along lines **2—2** of FIG. **1**; and

FIG. **3** is an elevational view of the vehicle of the present invention shown in its expanded position for water travel.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

Referring now to the drawings, FIG. **1** illustrates an amphibious vehicle, generally indicated by arrow **10**, which is capable of traveling over land as a trailer or on water as a boat. The vehicle **10** comprises a central platform **11** having a pair of retractable wheels **13** mounted below to support the vehicle in its land travel mode. The particular type of struts and linkages for supporting the wheels can be of any conventional construction.

The platform **11** also includes a plurality of laterally extending elongated storage containers such as tubes

15 intermittently spaced and secured to the bottom surface thereof. As shown in FIG. 2, these tubes 15 are arranged in pairs to receive a plurality of telescoping beams 17 which are adapted to extend out of both sides of the platform 11. As shown in the drawings, the extremities of the outer beams 17 are integrally connected by a pair of cross bars 18 to enable the beams 17 to retract and extend as a unit to form a support for a plurality of floor panels 19 which are pivotally mounted on the sides of the platform 11.

The movement of the beams 17 is caused by a plurality of scissor jacks 23. These jacks 23 are comprised of two pairs of lead screws 25 journaled on both sides of the platform 11 and at the ends of the first interior sets of beams located on both sides of the platform. One end of each lead screw 25 is adapted to receive any conventional type of lever to be rotatably driven thereby. Each of the lead screws 25 includes intermittent sections of right and left hand threads with each section threadedly supporting one end of a jack member 27. Each pair of jack members 27 is pivotally connected at their outer extremities at a single point to the outer extremity of a corresponding beam 17.

Each floor panel 19 is pivotally connected to the ends of the first interior sets of beams 17 located on both sides of the platform 11. Each floor panel 19 is adapted to be stored in a vertical position along the sides of the platform 11 when the beams 17 are retracted beneath the platform 11. (See FIG. 1). When the beams 17 are extended to the cantilevered position, each panel 19 is adapted to be moved to a horizontal position to be supported on beams 17 to form the floor of an expanded deck area.

A plurality of side rails 29 are mounted on the extremity of the panels 17 and can either be permanently attached thereto or, as shown, removably attached thereto with a bayonet joint or the like.

In the preferred embodiment, three pontoons 31 are mounted beneath the vehicle 10 to provide a bouyant support for the vehicle when in water. In the preferred embodiment, one pontoon 31 is attached beneath the center platform while the other two are attached beneath the outer extremities of the beams 17.

The vehicle also includes a marine motor 33 mounted below the one end of the platform 11 for driving a propeller 35. The motor 33 can be an outboard motor or can be mounted inboard and does not form a part of the invention.

Finally, a trailer hitch 37 is mounted on the floor of the platform to form a coupling to an automobile or a truck.

As can be seen, the platform 11 includes a space large enough to support a permanent installation such as a cabin 39 (shown in broken lines). An important advantage of the present invention is that this space is not encroached upon by the stowed floor panels 19 or any other structure. As a result, any installation can be mounted on the platform 11 and can permanently remain thereon at all times in either mode of travel.

OPERATION:

The stowed position of the vehicle is shown in FIG. 1. In this position, the wheels are extended to enable the vehicle to function as a trailer to be drawn by any automobile or truck. To convert the vehicle into a sea going vessel, a suitable hand lever is connected to each lead screw 25 and rotated to draw the threadedly supported ends of the jack members 27 together. This opposite movement is caused by the opposed threaded sections. As this occurs, the pivotally joined ends of the jack members 27 are moved radially outward from the lead screw 25. This causes the extremity of the beam 17 adjoined thereto to also move outwardly to cause the telescoping beams 17 to extend out of the tubes 15 in a cantilevered position. Once in the fully extended position, the floor boards 19 are pivoted downward from the vertical position to lie flat over the frame formed by the beams 17. This procedure is repeated on the other side of the platform 11 to extend the deck on that side also. The side rails 29 are then mounted on the extremities of the beam 17 through their conventional coupling means. This extended position is shown in FIG. 3 in which the vehicle is now in position to be placed on the water. This procedure is, of course, reversed in order to place the vehicle in a stowed position.

An important advantage of the present invention is that the entire operation is quite simple and convenient for the operator. The number of parts involved is held to a minimum. Another very important advantage is that the movable deck portions can be easily stowed in a stored position while still leaving sufficient space on the platform to use a permanent installation.

It should be noted that various modifications can be made to the apparatus while still remaining within the purview of the following claims.

What is claimed is:

1. An amphibious vehicle which is convertible into a vehicle-drawn trailer or a sea-going vessel, said vehicle comprising:

a central platform having a pair of retractable wheels mounted thereon for supporting the vehicle as a trailer and a plurality of elongated storage containers intermittently spaced and mounted to the central platform, said platform further having at least one central floatable pontoon mounted below for supporting the vehicle as a sea-going vessel;

a plurality of elongated support members telescopically supported in said elongated storage containers, said support members being movable to retract within said storage containers in a stowed position, and to extend out from said storage containers in a cantilevered position;

a pair of side floatable pontoons, one mounted respectively on each side of the central pontoon, each side pontoon connected to and movable with respective support members, said respective support members of one side are staggered with respect to said support members of said other side;

a plurality of floor panels pivotally connected to said elongated support members, said floor panels adapted to lie on said support members in a horizontal position when said support members are extended to form a floor, said floor panels also adapted to be stowed in a vertical position adjacent the side of said central portion to enable the central platform to have sufficient space to support a permanent installation at all times, and

jack means on each side of the central platform for moving the elongated support members including a pair of relatively movable jack members connected to at least one of said elongated support members for moving the same.

2. The invention of claim 1 where said jack means further includes:

a lead screw journaled beneath said platform, said lead screw having a left handed threaded section and a right hand threaded section;

one end of each jack member being threadedly connected to a respective threaded section of said lead screw, the other ends of said jack members being pivotally connected together with one of said support members, whereby rotation of said lead screw either moves the one ends of the jack members together or apart to cause the connected ends to be either drawn toward or away from said platform.

3. The invention of claim 1 wherein said support members are integrally interconnected to be movable as a unit.

4. The invention of claim 1 wherein each support member further includes a first and second group of elongated beams, the second group of beams telescoped within the first group of elongated beams.

5. The invention of claim 1 wherein each of said jack means further includes:

at least one lead screw connected to said support member, said lead screw having a left handed section and a right handed section.

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