An apparatus and method is provided to elevate, tilt and rotate, simultaneously if desired, an item such as a motorized vehicle for display. The apparatus includes a rotatable surface operatively connected to a lift, which is connected to a moveable platform such as a trailer or a flat bed in order to transport such device, or a plurality of such similar devices, for display or presentation at various facilities.
SYSTEM FOR DISPLAYING A MOTOR VEHICLE, APPARATUS AND RELATED METHODS

PRIORITY INFORMATION

[0001] This application claims the benefit of U.S. Provisional Application No. 60/515,177 filed on Oct. 28, 2003.

FIELD OF THE INVENTION

[0002] The present invention relates generally to an display system, e.g. the display and advertisement of motorized vehicles such as automobiles, trucks, boats, motorcycles and the like and other items that may be desirable to display. Specifically, the present invention relates to displaying an item by utilizing a device for lifting, rotating and tilting an item such as a vehicle to be displayed.

BACKGROUND OF THE INVENTION

[0003] Various types of apparatus exist for presenting or displaying an item inside a showroom or outside a facility such as a car dealership. The outside facility item displays are utilized to attract attention from passing vehicles and passing pedestrian traffic and generally must be elevated in order to be seen from a distance.

[0004] There are three generally major categories of these item displays which have been normally used for items such as motorized vehicles. The first involves use of a turntable for displaying the item, for example, U.S. Pat. No. 5,626,079, by Summers, titled “Osculating Turntable For Displaying Vehicles,” describes a turntable having a lower table and an upper table, the lower table on wheels which extend and retract to engage the surface or flooring. The device also includes a hub and pair of drive motors. The first drive motor is attached to and rotates the lower table in a pre-selected first direction of rotation at a pre-selected speed of rotation. The second drive motor is attached to the upper table and drives the upper table in a pre-selected second direction at a pre-selected second speed of rotation. Turntables, similar to the above described vehicle display device, are also used as a space saving device, for example, U.S. Pat. No. 5,880,704, by Mueller, titled “Motor Vehicle Turntable,” describes a turntable positioned in the front of a garage for the purpose of rotating a vehicle so as to enable the vehicle to leave an area in the opposite direction for which it entered.

[0005] The second type of item display includes those that bolt a motorized vehicle to a tilt type display. For example, U.S. Pat. No. 5,852,978, by Daschel, titled “Device for Displaying A Motor Vehicle and Methods for Displaying a Motor Vehicle,” describes a display including a platform configured to tilt the motor vehicle. The device includes a lower support which engages a floor or ground surface, a tilting mechanism, upper platform, and means for driving the tilting mechanism.

[0006] The third type of item display or presentation mechanism includes a motorized vehicle lift-type device. This type of item display is typically a retractable lift mechanism specifically powered by a drive motor or hand crank which raise and lower an item to present the vehicle above the height of surrounding objects.

[0007] A combination of these item display or presentation devices have been implemented for automobile servicing and for placing a motorized vehicle in an elevated parking area. For example, U.S. Pat. No. 5,090,508, by Nishikawa, titled “Automobile Servicing Apparatus Having A Turntable Including a Retractable Lift,” describes an automobile servicing device having a floor mounted turntable upon which is mounted a pair of retractable lift mechanisms, and a plate mounted atop the retractable lift mechanisms which contact the underside of a vehicle. The turntable is correspondingly mounted within the flooring such that when the retractable lift is retracted, it is positioned flush with the level of the floor. Also, for example, U.S. Pat. No. 5,538,357, by Boswell, Sr., titled “Elevational Automobile Turn-Around System,” describes use of a similar device with an automobile transport structure. The apparatus is provided to elevate and rotate a vehicle as required by the particular transport structure utilized therewith. The device includes a lift having an upper segment supporting a platform for which the vehicle is raised, a central segment including a motorized drive and retractable lift mechanism, and a lower segment. The lower segment includes a turntable having a motorized pivot means for rotating the turntable up to 180° mounted in the flooring.

SUMMARY OF THE INVENTION

[0008] The disadvantage with all three previous types of item display or presentation devices are that they are difficult to relocate and require some sort of structural mounting with either the flooring or the ground. Thus, recognized is the need for an display device capable of rotating, for example a motorized vehicle 360° while lifting the motorized vehicle above visual obstacles and that also provides a ready means of relocation of such a display.

[0009] An apparatus of embodiments and method of the present invention are able to elevate, tilt and rotate simultaneously if desired an item such as a motorized vehicle for display and comprise a rotatable surface operatively connected to a lift, which is connected to a moveable platform such as a trailer or a flat bed in order to transport such device, or a plurality of similar devices, and which provides a mobile item display or presentation at various facilities. A system for displaying an item such as a motorized vehicle includes a rotatable surface which may comprise a platform connected to a turntable and adapted to support and secure an item for display. The item may be secured by a plurality of locking devices commonly known in the art to securely couple and lock the item to the rotatable surface. The rotatable surface is adapted to tilt and rotate about an axis and be able to support the weight of the item such as a motorized vehicle or multiple motorized vehicles and be selectively raised or lowered by expanding or retracting a lift, which is operatively connected to a moveable platform. The rotatable surface is operatively in communication with a rotatable surface motor which is adapted to selectively rotate the rotatable surface about its axis. The rotatable surface motor may additionally be operated remotely. The lift may raise or lower the rotatable surface by a lift motor operatively connected to the lift and that is adapted to selectively expand or retract the lift. The lift motor may additionally be operated remotely. The rotatable surface may be tilted by a tilt motor operatively in communication with the rotatable surface and adapted to effect tilting the rotatable surface at a predetermined angle. The tilt motor may additionally be operated remotely. The rotatable surface motor, lift motor and tilt motor may be electrically powered.
by a power source which can normally be found in the art such as a hydrocarbon fueled electric generator, fuel cell or the like.

[0010] The moveable platform may be adapted to travel on land or water by commonly known methods known in the art. Additionally, although the prior art utilizes such display and presentation systems almost exclusively for motorized vehicles, this invention is intended for use as a display system for all items worthy of display and presentation such as billboards, statutes and advertisements as well as motorized vehicles.

[0011] Advantageously, the moveable platform can be a vehicle flatbed or trailer. Advantageously, the display system can include a covering extending from the moveable platform, covering or attached to the lift or attached to the rotatable surface to provide protective covering or allow the display of signage.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Some of the objects and advantages of the present invention having been stated, others will become apparent as the description proceeds when taken in conjunction with the accompanying drawings, in which:

[0013] FIG. 1 is a partially exploded perspective view of a display system according to an embodiment of the present invention.

[0014] FIG. 2 is a perspective view of a display system displaying a motor vehicle according to an alternate embodiment of the present invention.

[0015] FIG. 3 is a perspective view of a display system according to an embodiment of the present invention.

[0016] FIG. 4 is a perspective view of a display system displaying a motor vehicle according to an alternate embodiment of the present invention.

[0017] FIG. 5 is a perspective view of a lift apparatus and a turntable of a display system according to an alternate embodiment of the present invention.

[0018] FIG. 6 is a perspective view of a display system displaying a motor vehicle according to an alternate embodiment of the present invention.

[0019] FIG. 7 is a partially exploded perspective view of a display system according to an embodiment of the present invention.

[0020] FIG. 8 is a partially exploded perspective view of a display system according to an embodiment of the present invention and a perspective view of a display system displaying a motor vehicle according to an alternate embodiment of the present invention.

[0021] FIG. 9 is a perspective view of a display system according to an embodiment of the present invention.

[0022] FIG. 10 is a perspective view of a display system displaying a motor vehicle according to an alternate embodiment of the present invention.

DETAILED DESCRIPTION

[0023] The present invention now will be described more fully hereinafter with reference to the accompanying drawings in which a preferred embodiment of the invention is shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein; rather, this embodiment is provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

[0024] Specifically, an embodiment of the present invention includes a system for displaying an item such as a motorized vehicle. As shown in FIG. 1, a rotatable surface may comprise a platform having an upper surface and a base connected to a turntable and adapted to support the weight of the item and secure the item. The rotatable surface is connected to a lift which may be selectively expanded or contracted. Referring generally to FIGS. 2 and 3, the lift is connected to a moveable platform which is preferably in the form of a flatbed trailer which may include at least one storage container for banners and equipment operationally positioned within the top surface of the platform. The rotatable surface may comprise a platform connected to a turntable, the upper surface of the platform may include a compartment for positioning and storing signage and may additionally have a power source storage compartment which is preferably connected to the platform base. A plurality of outriggers may also be connected to or adjacent the rotatable surface in order to provide increased stability to the display system. The outriggers may be locked in a stowed position for transport and extended when the display system is being operated. In the preferred configuration, the outriggers may be mechanically locked and hydraulic powered to provide additional stability by methods known to those skilled in the art in order. Referring generally to FIGS. 1 and 4, the moveable platform may include moveable positioned ramps which allow a large item or motorized vehicle to be positioned upon the display system.

[0025] The display system includes a rotatable surface, which may comprise a platform connected to a turntable, and an extendable and retractable lift. The rotatable surface is adapted to support the weight of the item on display and adapted to secure it from movement as well. The rotatable surface is preferably a platform, configured of aluminum, connected to a turntable. The rotatable surface may include a plurality of locking devices such as tie down strap connectors and tie down straps or other locking devices known by those skilled in the art for securing an item such as a motorized vehicle to a stationary position on the rotatable surface. The rotatable surface may include a plurality of display lights such as flood lights positioned at a plurality of locations along the perimeter of the rotatable surface and may also include neon-type lights positioned at a plurality of locations generally around portions of the perimeter of the rotatable surface or the moveable platform in order to provide visual stimulation. The lift is operatively connected to the rotatable surface and adapted to support the weight of the rotatable surface and the item. The lift is further adapted to be selectively expanded or retracted in a plane defined in part by the rotatable surface axis.

[0026] Referring generally to FIG. 1, the rotatable surface is preferably a platform attached to a turntable and includes extendable and retractable ramps for loading and unloading an item. The rotatable surface comprises a turntable motor for rotating the rotatable surface at a plurality of predeter-
minded and selected speeds and direction. Preferably, the rotatable surface can be continuously rotated in excess of 360° in either clockwise or counterclockwise direction. The rotatable motor may be adapted to be operated remotely by methods commonly known in the art.

[0027] The display system includes a lift operatively connected to the rotatable surface and adapted to support the weight of the rotatable surface and an item, the lift further adapted to be selectively expanded or retracted, which may be accomplished by a lift motor operatively connected to the lift. The moveable platform is operatively connected to and adapted to support the lift, the rotatable surface and the item. Referring generally to FIG. 2, in the preferred configuration, the lift comprises a scissors assembly commonly known in the art and which is preferably driven by hydraulic rams driven by the lift motor and that may lock the scissors assembly in place when fully raised. Locking pins similar to those shown in FIG. 5 are preferred. Note, alternatively, electric actuators are also within the scope of the present invention in lieu of hydraulic rams. The lifting motor may be adapted to be operated remotely by methods commonly known in the art.

[0028] The display system includes a rotatable surface further comprising a tilt motor operatively connected to the rotatable surface, adapted to support the weight of the rotatable surface and the item, and further adapted to effect tilting the rotatable surface at a predetermined and selected angle. In the preferred configuration, the rotatable surface is tilted by hydraulic rams which can be locked in place. Note, alternatively, electric actuators are also within the scope of the present invention in lieu of hydraulic rams. The tilt motor may be adapted to be operated remotely by methods commonly known in the art.

[0029] The display system may also comprises at least one power source advantageously positioned to supply power to the rotatable motor, lifting motor and tilt motor. In the preferred configuration, the rotatable motor, lifting motor and tilt motor are electric and drive the hydraulics by an electric motor connected to a hydraulic pump. In the preferred embodiment, the power source is a hydrocarbon fueled electric generator but may also be a fuel cell or the like. Electric and hydraulic lines may be run under the moveable platform to provide reduced hydraulic and electric line visualization.

[0030] Advantageously, as best shown in FIG. 3 and 6, banners or other advertising type devices can be fastened with a fastening means such as screws, bolts, or other connectors as known by those skilled in the art, preferably around the perimeter of the lower surface of the rotatable surface or lift.

[0031] Referring generally to FIGS. 1, 3 and 7, in an embodiment of the present invention, a plurality of rotatable surfaces may each be operatively connected to plurality of lifts, respectively, and operatively connected to a moveable platform and additionally having extendable and retractable lighting fixtures connected and positioned at predetermined locations on the moveable platform. Additional advertising, such as a marquis or other form of programmable advertising means may also be positioned and connected to the display system as generally depicted in FIGS. 6, 8, 9 and 10. Referring generally to FIG. 1, the lift is in a fully retracted position; ramps may be used to load the item upon the aft most portion of the device. An additional ramp extension device may be used to bridge the gap between two rotatable surface devices operatively connected to separate lifts which are connected to a moveable platform.

[0032] Referring generally to FIG. 2, after loading an item such as a motorized vehicle upon a display system, in the preferred configuration a hydraulic ram of the display system may be engaged to extend a scissors assembly lift to raise the item. The scissors assembly lift can then be locked in place when the lift is in the upward most position. Locking pins or other means as known by those skilled in the art are within the scope of the present invention. As shown in FIGS. 2 and 3, depending on the height the vehicle is to be raised, outriggers can be used to provide support to the base platform to prevent a tipping motion caused by the high center of gravity resulting from the raising of the vehicles and rotation of the vehicles. With the lift in the fully raised position, banners or signage can be fastened around the rotatable surface, the lift or the moveable platform. Electric power can be used to collectively light the various flood lights and neon lights and collectively energize the rotatable surface or tilt motor of the display system.

[0033] As shown in FIG. 4 and 5, in an alternative embodiment, only one of the rotatable surfaces supported by a separate lift and connected to a moveable platform requires lift assistance. In this embodiment, the forward most rotatable surface is connected to a lift at a fixed height without extendable or retraction lift capability. The aft most rotatable surface is connected to an extendable and retractable lift and further mounted on the rear portion of the moveable platform, preferably upon a rail and further comprising a first wench assembly or other slideable mechanism, as know by those skilled in the art which can allow the aft apparatus to be positioned adjacent the forward rotatable surface connected to the fixed height lift. The aft lift may include attachment means for attaching the first wrench assembly. The first wench is preferably positioned and fixed at the forward end of the moveable platform or trailer and comprises a cable connected to the aft lift. When the cable is attached to the aft lift is supplied sufficient tension from the first wench, the aft slide and attached rotatable may positioned adjacent the forward rotatable surface with minimum work require by the first wench assembly.

[0034] As shown in FIG. 5, a cable for a second wench assembly may be operatively attached to an intermediate location between the aft most legs of the aft lift. The aft lift may include attachment means for attaching the second wench assembly. In the preferred configuration of this embodiment, the second wench cable is then routed through an area adjacent the rotatable surface or near the top of the lift through a second wench guide located between the aft most leg of the aft lift, and then routed to the second wench. In such configuration, a plurality of stop plates can be used to prevent over extension of the lift mechanism when the second wench is energized to engage the aft lift.

[0035] Referring generally to FIG. 4, in the operation of this embodiment, a first item, here a motorized vehicle, may be loaded in the aft most rotatable surface connected to the aft lift which is in the fully retracted position. The vehicle may then be raised in the fully extended position by using the second wench assembly or, alternatively, by using a hydraulic ram or other means such as an electric or hydraulic
scissor assembly. A first wench, preferably located at the forward section of the base platform, can then draw the aft lift and connected rotatable surface toward and adjacent the forward fixed height lift, which is connected to the forward rotatable surface, in order to allow for vehicle transfer from the aft rotatable surface to the forward most rotatable surface. The aft lift and connected rotatable surface can then be repositioned, lowered, and loaded with a second vehicle.

[0036] Referring generally to FIGS. 1 and 2, in another embodiment, the lift, which is operatively connected to the rotatable surface, may be detachably and removably connected to the moveable platform so that the lift and operatively connected rotatable surface may be removed from the moveable platform. The lift and operatively connected rotatable surface may be attached and detached from the moveable platform by conventional methods known in the art such as by commercially known fasteners and the like. Once the lift and operatively connected rotatable surface is detached from the moveable platform, conventional hydraulic rigging, which is also used to stabilize the display system, may be used to remove and suspend the lift and operatively connected rotatable surface by methods commonly known in the art. Subsequently, the moveable platform may be removed from beneath the suspended lift and operatively connected rotatable surface.

[0037] In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for the purpose of limitation, the scope of the invention being set forth in the following claims.

What is claimed is:

1. A display system comprising:

a. a rotatable surface adapted to support and secure an item for display, the rotatable surface further adapted to rotate about a rotatable surface axis;

b. a lift, operatively connected to the rotatable surface and adapted to support the weight of the rotatable surface and the item, the lift further adapted to be selectively expanded or retracted in a plane defined in part by the rotatable surface axis; and

c. a moveable platform, operatively connected to and adapted to support the lift, the rotatable surface and the item.

2. The rotatable surface of claim 1, further comprising a rotatable motor operatively connected to a rotate about a rotatable surface axis.

3. The rotatable surface motor of claim 2, wherein the rotatable surface motor is at least one of (i) an electric motor, (ii) a mechanical motor or (iii) a hydraulic motor.

4. The rotatable surface of claim 3, wherein the rotatable surface motor is adapted to be operated remotely to rotate the rotatable surface at a predetermined and selected speed and direction.

5. The lift of claim 1, further comprising a lift motor operatively connected to the lift and adapted to selectively expand or retract the lift.

6. The lift motor of claim 5, wherein the lift motor is at least one of (i) an electric motor, (ii) a mechanical motor or (iii) a hydraulic motor.

7. The lift of claim 6, wherein the lift motor is adapted to be operated remotely to expand or contract the lift.

8. The rotatable surface of claim 2, further comprising a tilt motor operatively in communication with the rotatable surface and adapted to effect tilting the rotatable surface at a predetermined angle relative to an axis that intersects the rotatable surface axis.

9. The tilt motor of claim 8, wherein the tilt motor is at least one of (i) an electric motor, (ii) a mechanical motor, or (iii) a hydraulic motor.

10. The rotatable surface of claim 9, wherein the tilt motor is adapted to be operated remotely to tilt the rotatable surface at a predetermined angle relative to an axis that intersects the rotatable surface axis.

11. The display system of claim 1, wherein the moveable platform is adapted to connect to a transport vehicle.

12. The display system of claim 11, wherein the moveable platform is adapted to at least one of (i) move on land or (ii) move on water.

13. The display system of claim 1, wherein the item is at least one of (i) a motorized vehicle, (ii) a statue (iii) a billboard or (iv) advertisement.

14. The display system of claim 1, wherein the rotatable surface is operatively connected to the rotatable surface is detachable and removable from the moveable platform.

15. A method of displaying an item, comprising:

a. securing an expandable lift onto a moveable vehicle;

b. rotatably securing a rotatable surface to the lift; and

c. securing an item to be displayed to the rotatable surface.

16. The method of claim 15, further comprising selectively expanding or retracting the expandable lift.

17. The method of claim 16, further comprising remotely selectively expanding or retracting the expandable lift.

18. The method of claim 17, further comprising rotating the rotatable surface about a predefined axis after the item has been secured onto the rotatable surface.

19. The method of claim 18, further comprising remotely rotating the rotatable surface about a predefined axis after the item has been secured onto the rotatable surface.

20. The method of claim 19, further comprising tilting the rotatable surface at a predetermined angle relative to an axis that intersects the predefined axis.

21. The method of claim 20, further comprising remotely tilting the rotatable surface at a predetermined angle relative to an axis that intersects the predefined axis.

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