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MULTILEVEL TOY PARKING GARAGE

Filed Oct. 26, 1967

3 Sheets-Sheet 1

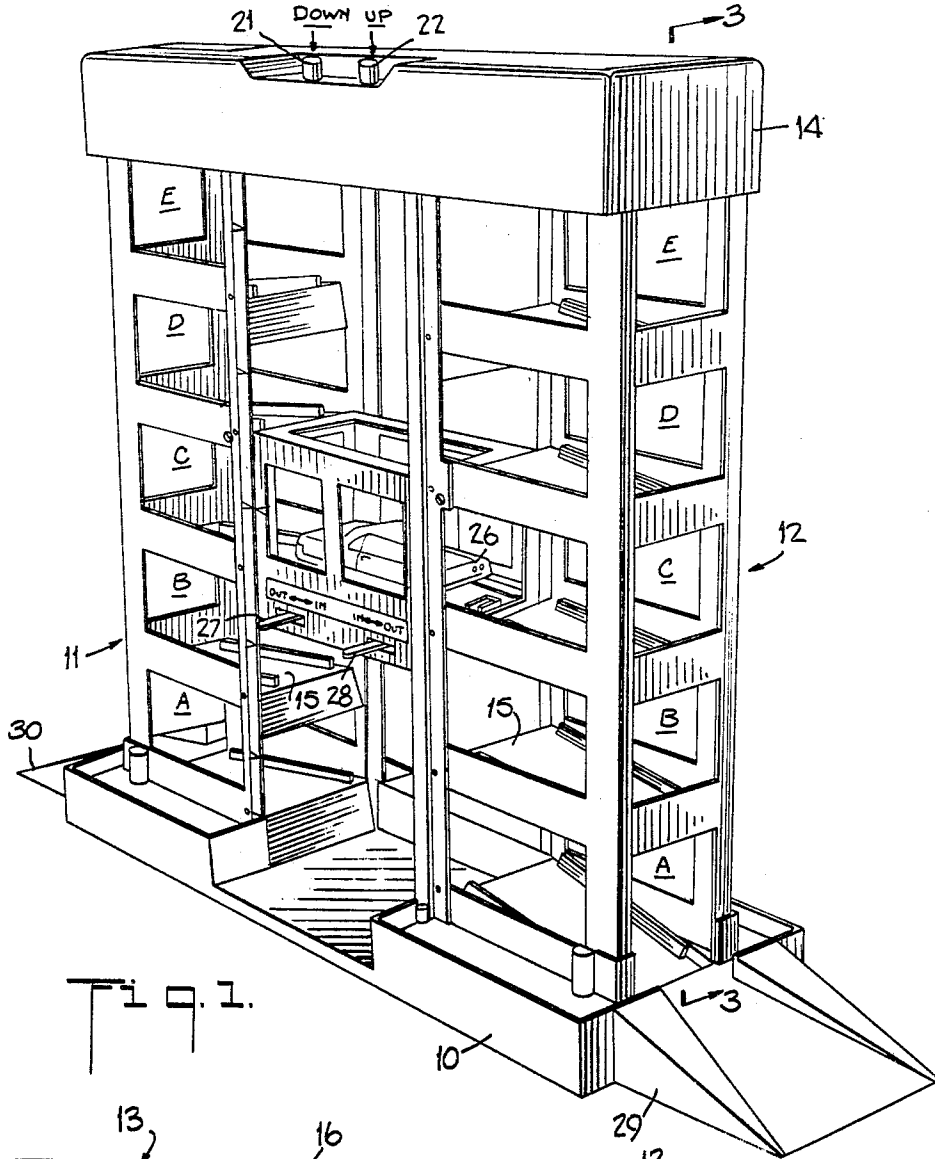


Fig. 1.

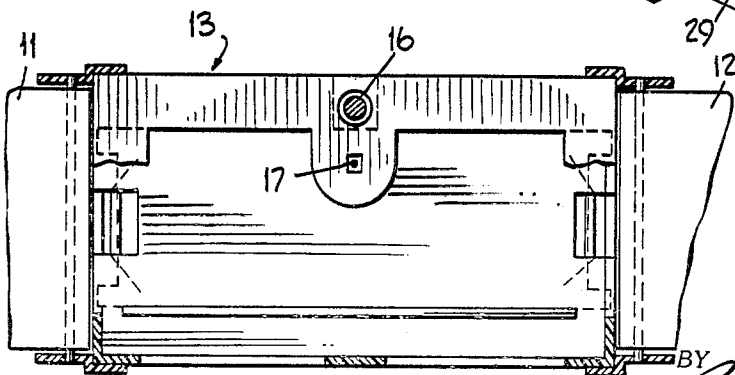


Fig. 4.

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3 Sheets-Sheet 2

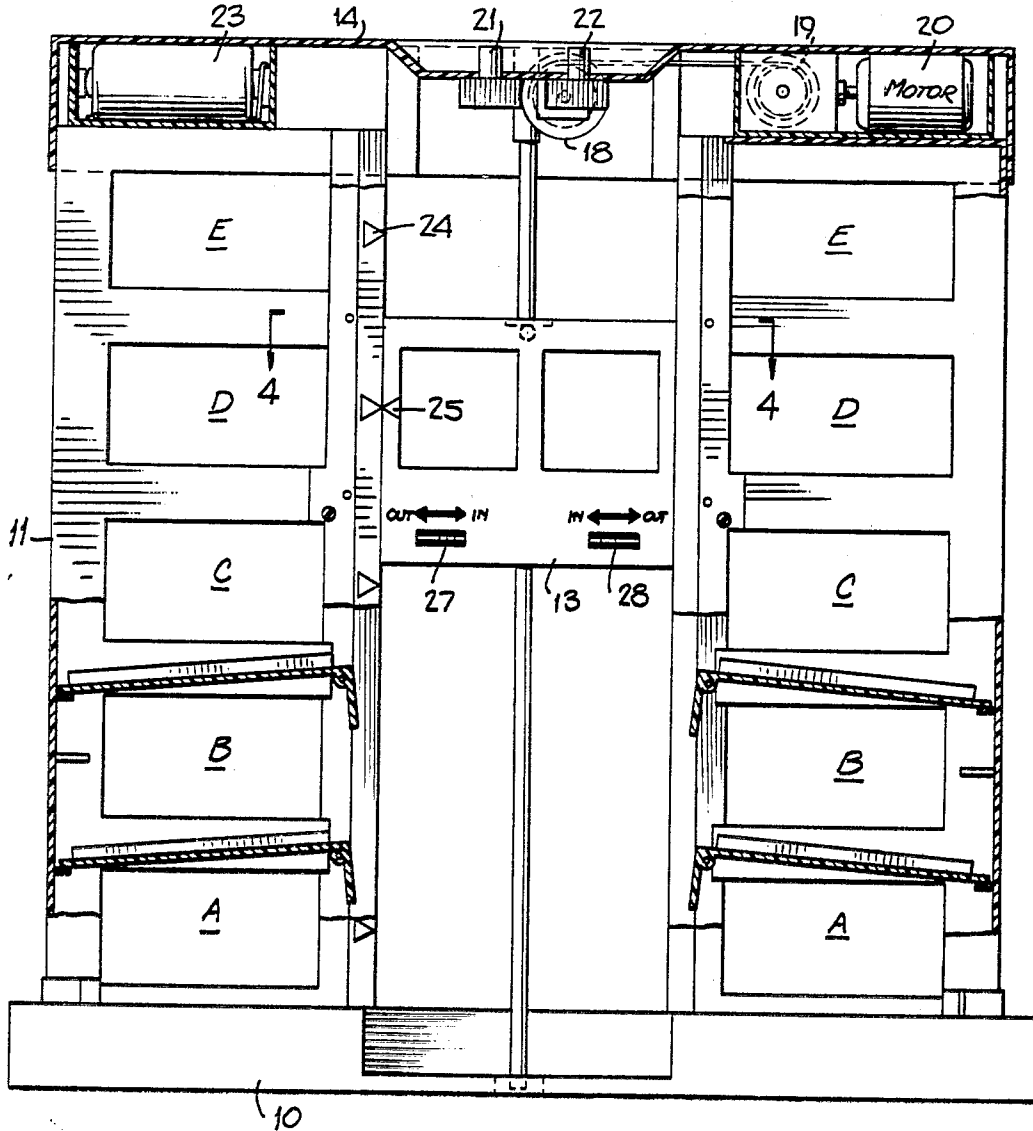


Fig. 2.

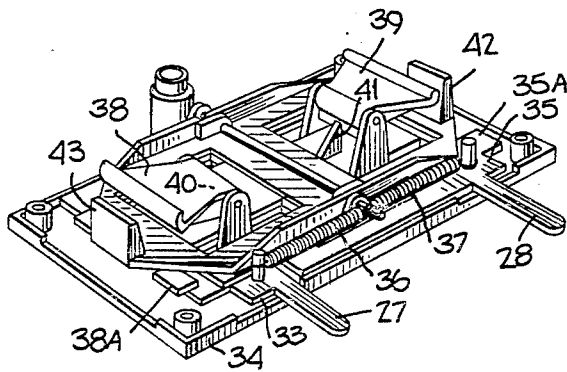


Fig. 5.

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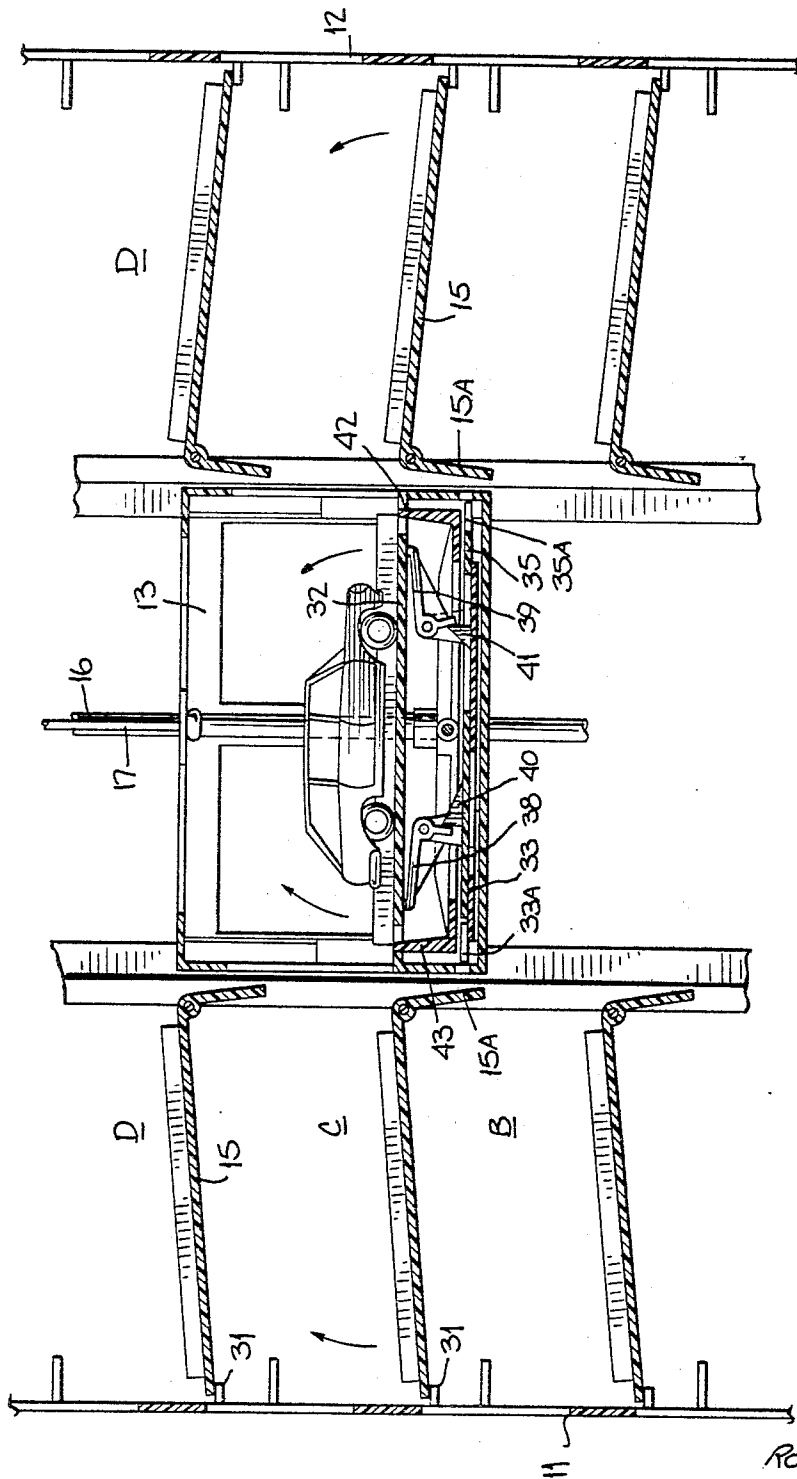


FIG. 3.

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**MULTILEVEL TOY PARKING GARAGE**

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4 Claims

**ABSTRACT OF THE DISCLOSURE**

A top parking garage in which vehicles to be parked are carried by an open-ended elevator cab to any compartment in a pair of a multilevel towers disposed on either side of the cab to define an elevator shaft, the cab being movable in the shaft to effect elignment thereof with corresponding compartments in the pair of towers, the cab being provided with a dual-section discharge mechanism, each section functioning with respect to one of the towers and having a first operative position effecting transfer of a vehicle from the cab to the selected compartment in the related tower and a second operative position effecting transfer of a vehicle from the compartment to the cab.

This invention relates generally to mechanical toys, and more particularly to a toy parking garage in which vehicles to be parked are lifted by an elevator cab to a selected compartment in a pair of multilevel towers disposed on either side of the cab.

Children are usually fascinated by automobiles and other vehicles, for while the private car is the most widely used form of transportation, it is invariably under the control of parents or adults. Because the child's role is necessarily passive, he often seeks to perform in play that which is denied him in practice. To a great extent this fact accounts for the popularity of toy vehicles. A child also realizes the importance of parking, for in accompanying his parents to the city, he is likely to share their frustration in finding a parking space. Here too the child can only act out in play, experiences encountered when seeking a parking facility.

Thus most children are aware of the acute shortage of parking facilities in crowded cities. They know also about some of the solutions which have been developed to maximize the number of vehicles which can be garaged in a limited area. Obviously the use of a lot for parking is wasteful of space, for in a lot, cars are parked at ground level only, no use being made of vertical space. Children known about multi-level garages in which access to the various levels is had by way of ramps. One difficulty with this arrangement is that the driver cannot simply leave his car at the entrance, but must ride up the ramp until he finds a level with a vacancy. Thus the design of multilevel garages must allow for passageways to permit drivers to enter and leave the parking areas. Under these circumstances, a large portion of the garage space must be given over to access routes.

In recent years, automatic parking garages have been developed in which the car is lifted by an elevator to an available space, thereby avoiding the need for ramps. Such garages are of particular interest to the child, who is intrigued by the movement of the elevator in its search for an available parking space.

Accordingly, it is the main object of this invention to provide a multilevel toy parking garage of unusual design whose operation is entirely under the control of the player, the controls permitting the player to move a car into or out of the garage and mechanically to transfer the car from or into a parking space at a selected level.

More specifically, it is an object of the invention to provide a toy parking garage in which an open-ended

elevator cab is adapted to transport a car to and from a vertical array of cells or compartments formed in a pair of towers disposed on either side of the cab to define an elevator shaft, the vertical movement of the cab in the shaft being under the control of the player who is able to align the cab with corresponding cells at a selected level in the pair of towers.

Still another object of the invention is to provide a toy of the above-described type wherein the cab includes a dual-section discharge mechanism, each section serving in conjunction with a respective tower and adapted in one operating position to discharge a car from the open-ended cab into a cell in registration therewith and in another operating position to discharge a car from said cell into the cab.

Briefly stated these objects are attained in a multilevel parking garage constituted by a pair of towers which are spaced apart to define an elevator shaft within which is disposed an open-ended elevator cab, each tower including a vertical array of cells, reversible motor means being provided to raise the cab from a ground level to an elevated position in registration with corresponding cells in the pair of towers at a selected level and to thereafter return the cab to ground level, the cab being provided with a dual-section discharge mechanism each section of which serves in conjunction with a respective tower and is adapted in one operating position to transfer a toy car from the open-ended cab to the cell in registration therewith in the related tower and in another operating position to transfer a car from that cell into the cab.

For a better understanding of the invention, as well as other objects and further features thereof, reference is made to the following detailed description to be read in conjunction with the accompanying drawings, wherein:

FIG. 1 is a front perspective view of a toy parking garage in accordance with the invention;

FIG. 2 is a front elevation of the garage, partly in section;

FIG. 3 is a longitudinal section taken through the cab and the tower structure of the parking garage as seen in the plane indicated by lines 3—3 in FIG. 1;

FIG. 4 is a transverse section, as seen in the plane indicated by lines 4—4 in FIG. 2, and

FIG. 5 is a perspective view of the dual-section discharge mechanism of the cab.

**GENERAL STRUCTURE**

Referring now to the drawing and more particularly to FIGS. 1 and 2, the multilevel toy parking garage, in accordance with the invention, is constituted by a base 10, upon which is mounted a pair of towers 11 and 12. The towers are spaced apart to define a vertical shaftway for an elevator cab 13. Bridging the tops of towers 11 and 12 is a roof 14 which houses the electrical hoist equipment for the elevator.

Each tower is in the form of a rectangular frame divided by partitions 15 into a vertical array of identical cells A, B, C, D and E, cell A being at ground level and cell E just below the roof. The elevator cab 13 rides along a guide pole 16 extending between the base and the roof, the pole passing through suitable bushings in the horizontal beams at the rear of the cab. Up and down movement of the elevator is effected by a cable 17, one end of which is tied to the cab, the other end passing over a pulley 18 and being wound about a sheave 19, rotatably supported within roof 14 and driven through suitable reduction gears by a reversible electric motor 20.

The rotary direction of motor 20 is controlled by two electrical switches 21 and 22, of the push-button type which connect the motor to a battery 23, such that when switch 21 is pressed, the cable is played out and the cab is lowered, and when switch 22 is pressed the cable is re-

wound and the cab is raised. Thus, by pressing and releasing the switches, the player is able to control the rise and fall of the elevator cab and bring it into alignment with any pair of cells, such as cells C in the towers 11 and 12.

As best seen in FIG. 3, a series of spaced arrows 24 are placed on the vertical beam of tower 11, one for each cell, and an arrow 25 is placed on the adjacent vertical beam of cab 13. The arrow positions are such that when cab arrow 25 is in exact alignment with one of cell arrows 24, the cab, which is open-ended, is in exact registration with the corresponding cells in towers 11 and 12. It now becomes possible to transfer a toy vehicle, such as car 26 in FIG. 1, from cab 13 into cells C in the towers or from the cells into the cab, should the vehicle be in one of these cells.

Transfer is effected by a dual-section discharge mechanism housed below the floor in cab 13, the mechanism including two shift levers 27 and 28. The arrangement is such that when lever 27 is shifted by the player to the right, this will cause a car 26 to transfer from the aligned cell in tower 11 to cab 13 and when this lever is shifted to the left, the car 26 will be transferred from the cab to the cell. Thus lever 27 provides an "in" or "out" action with respect to the cells in tower 11. Lever 28, which is similarly shiftable, provides an "in" or "out" action with respect to the cells in tower 12.

When however the cab is at the floor level in alignment with the ground level cells A in the towers, the operation is different, for here the cells, which are open at both ends, are joined to inclined ramps 29 and 30 respectively, such that when a car in the cab is transferred to either cell, the car is not stored in the cell but rolls down the ramp for discharge into the street. These ramps also serve as garage entrances to introduce a car into the cab to be carried to a selected cell above ground level.

#### DUAL-SECTION DISCHARGE MECHANISM

The means by which transfer is effected will now be considered in greater detail in connection with FIGS. 3 and 5. Partitions 15, which divide the towers, are pivoted on the vertical beams of the tower at the shaft end, the other end of the partitions each resting on a small ledge 31 secured to the other set of vertical beams. Partitions 15 form the floor of the cells and are provided at their front edges with a downwardly extending leg 15A, the partitions being inclined toward ledges 31, so that when a car is transferred thereto, the car runs down to occupy the cell. When however leg 15A of a partition is pressed inwardly, this causes the partition to swing upwardly to cause a car lying thereon to run out of the cell into the cab.

The dual section discharge mechanism is adapted either to engage the leg of the partition in the cell aligned with the cab to transfer a car from the cell to the cab or to tip the floor of the cab to transfer a car from the cab to the cell. As best seen in FIG. 3, cab 13 is provided with a floor 32 which is freely supported and is capable of being tipped in either direction. Floor 32 lies above the double-acting discharge mechanism wherein shift lever 27 extends laterally from a lower actuator plate 33, slidable on a base 34, and shift lever 28 extends laterally from an upper actuator plate 34 slidable on the lower plate 33. The two actuator plates are normally maintained at their retracted positions by helical springs 36 and 37, respectively. Actuator plates 33 and 35 are provided with tongues 33A and 35A which, when extended outwardly from the cab, engage the legs 15A of the associated cell floors to tip same.

Cooperating with floor 32 of the cab are a pair of rockers 38 and 39, the arrangement being such that when rocker 38 is made to swing, floor 32 is tipped at one end to cause a car thereon to run off into the cell in registration therewith in tower 12, and when rocker 39 is made to swing, floor 32 is tipped at the other end and the car in the cab is caused to run off into the cell in tower 11. Swinging of rocker 38 is effected by a triangular tab 40

mounted on actuator plate 35, while that of rocker 39 is effected by a similar tab 41 on an actuator plate 33. Tabs 40 and 41 also act to raise pivoted stop members 42 and 43 when the actuator plates are moved in the reverse direction.

The operation of the mechanism can best be understood by reference to FIG. 3. When actuator plate 33 is shifted to the left, tongue 33A is extended outwardly from the cab to press against leg 15A of floor 15 in cell C of tower 11; the floor 15 is thereby tipped upwardly; and a car on the floor in the cell is caused to roll into the cab 13. When actuator plate 33 is shifted to the left, this action also raises stop 42, providing a barrier for the car which has been caused to roll from cell C in tower 11 into the cab, to prevent the car from over-shooting the cab.

Similarly, when actuator plate 35 is shifted to the right, the extended tongue 35A engages leg 15A in cell C in tower 11 to tip this floor and cause a car from this cell to transfer into the cab, the stop 43 being now raised to prevent overshooting.

When actuator plate 33 is shifted to the right, tab 41 swings rocker 39 to lift floor 32 of the cab at the right end thereof, causing a car in the cab to roll into the cell C in tower 11. When actuator plate 35 is shifted to the left, tab 40 swings rocker 38 to lift floor 32 of the cab at the left end thereof, causing a car in the cab to roll into cell C in tower 12.

#### OPERATION

Thus in operation, the player starts with cab 13 at ground level and he admits a car into the cab by pushing it up ramp 29 or 30. By pressing switch button 22, the cab then proceeds to rise, the player deciding which of the levels he wishes to start the car. Assuming that he chooses level D, the cab is elevated until the arrows 24 and 25, at level D, are aligned. At this point, the player shifts either lever 27 and 28, depending on whether he wishes to store the car in tower 11 or 12.

The player proceeds to store other cars in cells of his choice, but when a particular car is to be recovered, he operates the cab to align it with the stored car, and at this time he shifts the appropriate lever to transfer the car from the cell to the cab, after which he brings the cab to ground level where he discharges it down the ramp into the street.

It will be evident that the player has available a range of variations and that he has full control of all garage operations, so that the player has the illusion of operating a commercial multilevel garage and of solving the problems which arise when incoming cars are to be stored while outgoing cars are waiting to be discharged.

While there has been shown and described, preferred embodiments of multilevel toy parking garage in accordance with the invention, it will be appreciated that many changes and modifications may be made therein without, however, departing from the essential spirit of the invention as defined in the annexed claims.

What I claim is:

1. A toy parking garage for toy vehicles, said garage comprising:

(A) a pair of towers which are spaced apart to define an elevator shaft, each tower including a vertical array of cells,

(B) an open-ended cam movable in said shaft, said cab having a floor therein which is tiltable in either direction to discharge a vehicle thereon from the cab into a cell aligned therewith,

(C) motor means operatively coupled to said cab to effect alignment with corresponding cells in said towers, each cell having a floor therein which is tiltable to discharge a vehicle therein into the cab, and

(D) a dual-section discharge mechanism disposed in said cab, each section having a manually-actuated element functioning in conjunction with a respective tower to effect at a first operating position a tilt in

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the cab floor causing a transfer of a vehicle from said cab to the aligned cell in the related tower, and in a second operating position to effect a tilt in the floor of the aligned cell to cause a transfer from said aligned cell to said cab.

2. A garage as set forth in claim 1, wherein said tilt-able cell floor is pivoted at the front end thereof and is provided with a front leg which when depressed by said discharge mechanism at said first operating position causes the floor to tilt upwardly to transfer a vehicle from said cell to said cab.

3. A garage as set forth in claim 2, wherein said mechanism includes an actuator plate provided with a tongue which engages said leg when said plate is shifted to extend said tongue beyond said cab in said second operating position.

4. A garage as set forth in claim 3, wherein said mechanism includes a stop member which is raised in

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said second operating position to provide a barrier to prevent the vehicle transferred to said cab from overshooting same.

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U.S. Cl. X.R.

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