

May 14, 1968

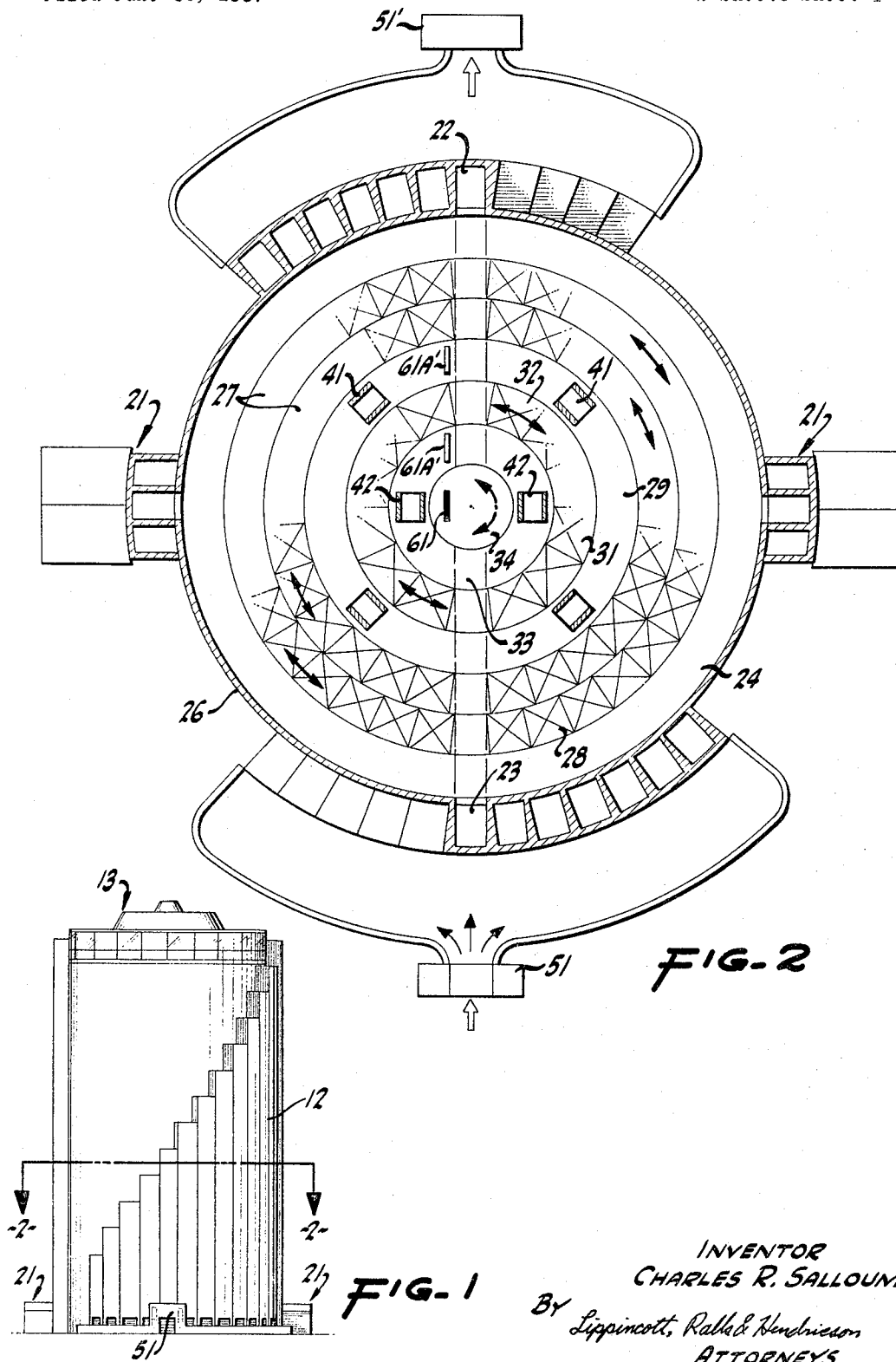
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3,382,990

AUTOMATIC CIRCULAR PARKING TOWER

Filed June 16, 1967

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

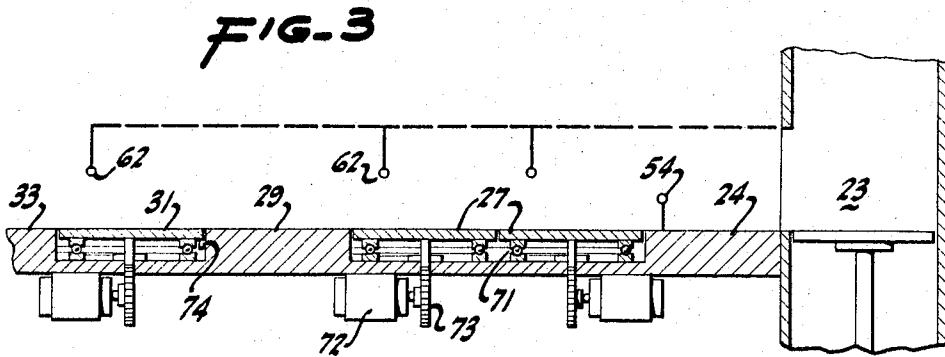
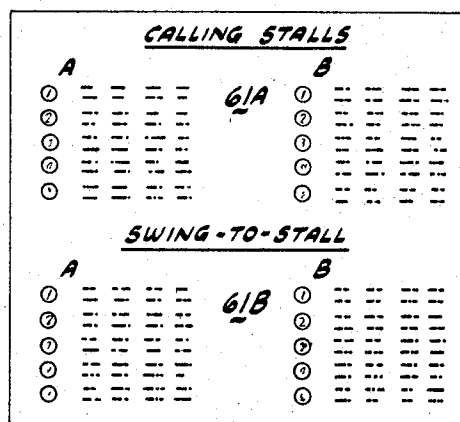
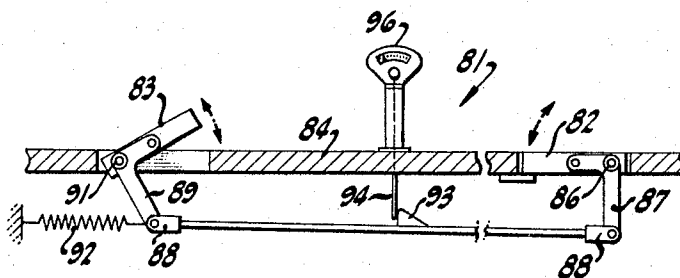


FIG-5

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AUTOMATIC CIRCULAR PARKING TOWER

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Continuation-in-part of application Ser. No. 404,622,
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No. 646,671

11 Claims. (Cl. 214—16.1)

ABSTRACT OF THE DISCLOSURE

The invention disclosed and claimed herein comprises a building construction for the parking of automobiles. The structure hereof is basically annular and comprises concentric annular platforms with alternate platforms being rotatably mounted for readily positioning individual parking stalls thereon in proper location for direct access to and from by an automobile. Automatic parking stalls are also provided.

The structure hereof is particularly directed to multiple-storey units incorporating a plurality of elevators with alternately stationary and rotatable annular platforms upon each floor, together with control and indexing means on each floor for movement of the rotatable platforms into position for use of each individual parking stall of the floor by the automobile operator.

This application is a continuation-in-part of my prior copending patent application Ser. No. 404,622, filed in the U.S. Patent Office on Oct. 19, 1964.

BACKGROUND OF INVENTION

It is well recognized that the parking of automobiles has become an acute problem in congested communities throughout the world. There has been designed and constructed a large number of different types of "off-street" parking facilities in an effort to alleviate this problem. Conventional parking facilities which have been constructed normally employ automobile ramps between a number of different floors of the facility, together with aligned parking stalls and driveways between same. On the other hand, attendant-operated parking facilities commonly employ either ramps or elevators for moving cars between floors, and commonly contain parking stalls in tightly-packed array without access drives to all of the stalls. Attendant parking commonly contemplates the moving of a number of cars by attendants in order to reach cars that are parked in inaccessible stalls. This type of parking is generally considered unsatisfactory for self-park garages, inasmuch as it is highly undesirable to have the general public moving cars other than their own. Consequently, there are normally encountered the opposite extremes of maximized space utilization requiring numerous vehicles to be moved for access to other vehicles by attendants, or the relatively space-wasting arrangements in which each parking stall lies adjacent a driveway.

There has been advanced a substantial number of parking schemes and devices in which automobiles are automatically stacked or moved about by the devices; however, this type of development has yet to achieve popular acceptance. Unfortunately, the complexity and costs of such systems are generally substantial; also, the average automobile owner may be somewhat hesitant

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to entrust his car to the machinery which moves and stacks automobiles.

In addition to the above-noted approaches to the problem of automobile parking, there has been advanced a variety of structures employing turntables and rotatable platforms. It is within this general field that the present invention lies. That the problem of automobile storage has been long in existence is exemplified by relatively early Patent Nos. 1,452,426 to Irwin, 1,454,348 to Swinerton and 1,568,384 to Pungs—all relating to building structures for automobile parking. Each of these references employs some type of circular construction and contemplates the utilization of rotary platforms. None of these references, however, appeared to incorporate adequate provisions for "self-parking." These general types of automobile garages, or building structures, suffer from disadvantages of requiring a substantial number of parking attendants; while they do proceed in the proper direction to maximize utilization of available space, they provide only initial steps in this direction. That a problem has persisted is evidenced, for example, by U.S. Patent No. 2,779,484, issued in 1957, to Schramm et al. The parking garage shown in this latter patent, however, employs the above-noted approach of mechanical-gripping means engaging automobiles for moving them to and from parking locations. Disadvantages of this approach to the problem are noted above. An intermediate approach to the problem is exemplified by U.S. Patent No. 2,316,034 to Warren.

The general problem of automobile parking has also been attacked in various other countries: generally relevant art in this respect is to be found in British Patent Nos. 260,722 and 774,859, as well as Belgian Patent No. 535,652 and French Patent No. 1,070,286. Although each of the foregoing references, and undoubtedly many more, does relate to the general problem of automobile parking and is in part exemplified by various approaches taken to the utilization of rotary platforms, it yet remains for there to be advanced a completely satisfactory self-parking automobile storage utilizing a maximum amount of space and particularly adapted to high-rise construction.

SUMMARY OF INVENTION

The invention hereof comprises a multiple-storied building with substantially no limitation on the number of storeys, or floors, of the structure. Each of the floors of the building as serviced by at least a pair of elevators for automobile entrance and exit. Each floor is composed of an outer stationary annular platform with a plurality of contiguous annular platforms disposed within same surrounding a central station, preferably comprising a turntable. Alternate annular platforms of each floor are stationary with intermediate platforms being controllably rotatable at the command of control means located on the central station and operable by an automobile driver. Each of the platforms, and the central station, has a radial width at least equal to the overall length of the maximum-sized automobile to be handled by the facility. Additionally, there are provided interior elevators extending through stationary platforms of each floor and opening into each floor, primarily for the purpose of carrying foot traffic, but also capable in emergency of being utilized for automobile movement.

Individual parking stalls hereof may be automated by

car-lock mechanism initially actuated by car entry and released by coin-operated timing mechanism somewhat in the manner of a reverse parking meter. Also, the invention may be employed in a single plane for ground-floor parking.

DESCRIPTION OF FIGURES

The invention is illustrated as to a single preferred embodiment thereof in the accompanying drawings wherein:

FIGURE 1 is an elevational view of the parking garage of the present invention;

FIGURE 2 is a sectional plan view taken in the plane 2—2 of FIGURE 1;

FIGURE 3 is a partial vertical sectional view taken in the plane 3—3 of FIGURE 2, and illustrating one possible construction of a floor of the parking garage hereof;

FIGURE 4 is a schematic representation of the control panel adapted to be located at the central station of each floor for utilization by an automobile operator desirous of parking his car in the parking garage of this invention; and

FIGURE 5 is a broken sectional view of a parking stall having a coin-operated automobile release mechanism.

DESCRIPTION OF PREFERRED EMBODIMENT

The present invention comprises a multi-storied building structure wherein the operative parking portion is circular in plan. The structure 11, as shown in FIGURE 1, is provided with at least two elevators serving each floor, or storey, thereof. These elevators are generally indicated at 12 of FIGURE 1. In addition to the operative parking portion of the building structure, it is also possible to incorporate surrounding structure providing additional space in the building which may then be employed for other purposes such as businesses or even living accommodations. It is contemplated also that the building structure hereof may have additional storeys atop the parking portion thereof, as generally indicated at 13. Such additions might, for example, comprise apartments, and could also readily incorporate a restaurant, or the like, and, if desired, could also be employed in part as a heliport. In this latter application, it is noted that the building structure hereof provides for the substantially automatic parking of a large plurality of automobiles in a minimum acreage, together with very ready access to and from the individual automobiles, so as to be admirably suited for utilization as an auxiliary airport terminal, or the like. People desirous of traveling by plane might employ a structure such as this to park their automobiles, purchase their tickets or validate them in ticket offices provided in the upper storey, for example, and thence board a helicopter flying them directly to a plane at an airport located at some distance. This one usage of the present invention is believed to be quite apparent, as will many other applications of this invention.

Considering now the physical structure of the present invention in somewhat greater detail and referring more particularly to FIGURES 2 and 3, it will be seen that the basic structure of the present invention comprises a plurality of identical floors, or storeys, one above the other, and one of these is illustrated in FIGURES 2 and 3. The floor 21 is served by a pair of elevators 22 and 23 which may be disposed on diametrically opposite sides of the floors indicated. A solid annular platform 24 extends about the exterior of the floor 21 adjacent the outer wall 26 thereof. This platform 24 has a radial width slightly greater than the length of the longest automobile adapted to be parked within the structure of the present invention. In general practice, the width of this platform, radially of the floor, may thus be between 21 and 25 feet. The elevators 22 and 23 both open directly onto this fixed annular platform 24. Both of the elevators 22 and 23 have

a depth which is adequate to accommodate the longest car to be handled by the structure; thus a car arriving at the floor 21 on the elevator 23 may, following opening of the elevator doors, be driven outwardly onto the stationary platform 24, so that the elevator doors may then close and the elevator be returned to ground level. Interiorly of the fixed annular platform 24, there is provided an annular platform 27 mounted for rotation in the plane of the floor, as indicated by the arrows thereon. This rotary platform 27 has radial parking stalls 28 thereon, and may, as illustrated, be split into a pair of concentric annular platforms independently movable. The length of the stalls is appropriate for cars to be parked thereon and may be shorter for small cars. Naturally, each of the parking stalls 28 has a width in excess of the normal width of automobiles to be parked therein, so as to provide for easy entrance and exit from an automobile located within a stall. It is only necessary for the stalls to be marked upon the platform and no physical division between these stalls is required. An appropriate identification of each stall is provided, as noted below. The entire parking portion of each floor of this building is divided into concentric annular platforms, with alternate platforms being mounted for rotation in the plane of the floor. Thus, there is shown in FIGURE 2, a second stationary annular platform 29 immediately adjacent the rotary platform 28 and another rotatable platform 31 immediately inside of the stationary platform 29, and having radially-disposed parking stalls 32 thereon. Interiorly of this rotatable platform 31 is a further annular stationary platform 33 surrounding a central station, or turntable, 34 which will be seen to be circular in shape. As previously noted, each of the annular platforms, whether stationary or movable, is formed with a radial dimension slightly in excess of the maximum length of an automobile adapted to rest thereon, although certain modifications thereof are possible, as noted below.

In addition to the above-noted portions of the present invention, there are additionally provided further elevators internally of the structure. The exact number and placement of these internal elevators may be varied; however, in the preferred illustrated embodiment of the present invention, there will be seen to be provided some four elevators 41 equally spaced about the stationary platform 29, and preferably being accessible from at least one side and one end thereof. There is additionally shown to be provided a pair of elevators 42 located on opposite sides of the inner platform 33. Again, these elevators are preferably accessible from at least one side of each, and also have at least emergency openings at one or more radial ends thereof for reasons set forth below. The primary purpose of the additional elevators 41 and 42 is to provide for movement of people between floors of the structure. Thus, side doors of the elevator need only open sufficiently wide for ready access by individuals; and, the elevators are seen to be provided in convenient locations for use by people moving from any of the parking stalls disposed on the rotary platforms of the floors. Furthermore, the elevator shafts and structures defining same are appropriately located to afford additional structural support for the building itself. This is particularly important wherein a large plurality of annular platforms are incorporated into each floor and wherein some type of inner-support columns is required for structural rigidity of the overall building. The auxiliary doors provided in the elevators 41 and 42 serve the purpose of emergency automobile exits; and, it will be appreciated that with the stationary platforms having a radial width sufficient to accommodate an automobile, it is possible for each of these elevators to receive an automobile driven therein radially of the floor, and thus to be moved downwardly to ground level in the instance wherein the normal elevators 22 and 23 serving the floor may become overcrowded. It is, of course, not absolutely necessary for the auxiliary or passenger elevators 41 and 42 to have a sufficient size

to accommodate an automobile; however, added convenience and capabilities of the overall structure result from this provision.

It is contemplated that the parking tower of the present invention shall be adapted for use substantially without parking attendants. The structure is designed for self-parking, so that the only attendants required are those collecting parking fees upon the exit thereof from the building. Operation of the present invention may be best understood from consideration of an individual parking operation; furthermore, certain further elements of the present invention not previously mentioned will be described in connection with such operation.

An automobile entering the parking tower of the present invention may take a ticket, or the like, from a time clock placed at an entrance station 51 which may be formed as a part of the general structure hereof or, alternatively, may be constituted as a separate check-in stand. The automobile operator then drives to the elevator designated on his parking slip. There is provided a separate entrance elevator for each floor, or story, of the parking tower; assuming that, in this instance, the slip indicates No. 6, the operator would drive his car to elevator No. 6 and drive into elevator 23. Upon entrance of an automobile completely within the elevator 23, which moves only between the sixth floor and ground floor, this elevator may either automatically move upward to the sixth floor or may be manually operated by the operator by means of a start button conveniently located for the operator to actuate same without leaving his car. As the elevator reaches the sixth floor, illustrated in plan view in FIGURE 2, the elevator doors automatically open, leading to a stationary annular platform 24, so that the automobile operator then drives out of the elevator onto this platform 24, and the elevator doors automatically close and the elevator immediately returns to ground floor, in position to accept the next automobile to be stored upon this sixth floor. As illustrated in FIGURE 2, the rotary platforms 27 and 31 are located in their normal positions, and it will be seen that driveways extend across the movable platforms, so that the operator may directly drive his car radially inward of the floor onto the central station, or turntable, 34. Under the circumstances wherein either of the rotary platforms may be in motion, as an individual automobile is driven from the entrance elevator 23, it is only necessary for the operator to stop his automobile on the stationary platform 24 and await relocation of the rotary platforms into their normal positions. This would ordinarily be indicated by a sign, light 54 or the like located in clear view from the elevator 23, so that an automobile operator will be advised as to when it is appropriate for him to drive forwardly to the central station, or turntable, 34. It is also possible in this respect to provide a physical barrier across the driveway, so that an incoming automobile cannot be driven onto the movable turntables 27 or 31 until they are in normal position and located against rotary motion. It will be seen that by providing the outer stationary platform 24 it is possible for an automobile to be immediately moved from the inlet elevator 23 for return of this elevator to the ground floor without delay, even though a momentarily necessary delay may occur before the automobile can actually be parked.

With the rotary platforms in normal position, as illustrated, the automobile operator then drives his car across the stationary and rotary platforms to the central station 34, and there visually identifies an empty parking stall appropriate for him to employ in parking his automobile. Each of the stalls is designated, preferably by letter and number; for example, the outer rotary platform 27 may have each of the stalls therein identified by the letter A and by a separate number for each of the stalls thereon. With the automobile located at the central station, the automobile operator then views the floor and, upon sighting an empty stall, operates a master control at the central station merely by pressing an appropriate button

thereon. This control may comprise a simple control panel 61, as illustrated in FIGURE 4. Assuming that stall A-5 is noted to be empty, the operator may then press the button designated A-5 on the upper portion of the control panel 61-A to cause the rotary platform 27 to rotate until the stall A-5 is located directly in line with the automobile at the central station. The platform will rotate either clockwise or counterclockwise to move the shortest distance. There are provided, in addition to the inlet driveways noted above, exit driveways across the rotary platforms and aligned both with the inlet driveways and the two elevators 22 and 23 of the floor. Upon pressing the appropriate stall button on the control panel 61, the chosen rotary platform rotates to position the indicated parking stall at the previous location of the outlet driveway, so as to be in line with the automobile in the central station. If desired, partial control panels may be provided at 61-A' also for ordering a stall from a fixed platform. The operator then merely drives forwardly into the chosen stall whereupon he has actually completed his parking operation. One further step is required, however, in order to reset the rotary platform for acceptance of the next automobile to be parked on the floor and, also, to appropriately locate the driveways of the rotary platform. This may be accomplished either manually or automatically. As the automobile operator drives his automobile into the chosen stall, a pressure-responsive switch in the stall may automatically initiate drive mechanism described below to return the rotary platform to original or normal position with the parked automobile thereon. Alternatively, there may be provided a control button conveniently located for operation by the automobile driver without leaving his car, so that he may press this button, after parking, to thereby cause the rotary platform to rotate back to normal position. In FIGURE 3 there is illustrated manual control means 62 which may depend from the ceiling, if desired, or, alternatively, may be mounted on a post extending upwardly adjacent each parking stall of the platform. Upon return to original position of the rotary platform containing the recently-parked automobile and cessation of motion of such platform, the automobile's occupants may then leave the automobile and step onto the adjacent stationary platform, such as 29. These people are then able to readily walk along the stationary platform, or sidewalk, between rotary platforms to the adjacent elevator 41 and enter same to travel downwardly to ground level and leave the building. There may also be provided escalators in the fixed platforms to facilitate movement of people between ground level and various floors. Preferably, the ground floor of the structure does not include rotary parking platforms, so that people may readily move about on such ground floor to enter or leave the building. The excess space on the ground floor not employed for corridors or sidewalks may conveniently be employed for stores, or the like.

Immediately upon return of the rotary parking platforms to original or normal position, the floors are then available for the parking of an additional automobile, and the indicator, or barrier, 54 allows the next automobile to be driven to the central station 34 for parking in the manner described above. Further to the parking of an individual automobile, it is noted that the central station 34 is above-stated to comprise a turntable, so as to be rotatable itself. It is, thus, possible for an automobile operator, upon stopping his car at the central station and locating an empty parking stall, to operate the control panel 61 for swinging the central station, so as to direct his automobile toward an empty parking stall that he may directly drive to. Such operation may be accomplished by employing the lower portion 61-B of the control panel having the heading "Swing to Stall." This operation is particularly applicable for parking of an automobile in the innermost rotary parking platform. An operator need only press the appropriately-designated button in the por-

tion of the control panel denominated 61-B to swing the turntable so that his automobile is directed toward an empty parking stall. He may then drive directly onto this stall without causing the rotary platform to turn. Here again, there may be employed automatic means for returning the turntable to original or normal position, as illustrated in FIGURE 2.

Further to operation of the present invention and prior to discussion of drive means and control thereof, it is to be noted that the preferred embodiment described above is susceptible to numerous variations and modifications. It is highly preferable that there be provided immediately adjacent the inlet elevator 23 a sufficiently large stationary space, or platform, for an automobile to be driven from the elevator and to rest thereat while the elevator returns to ground level and before the automobile is finally parked. This is important in speeding up operations of parking, so that the elevators for each floor normally remain in position for immediate use. The inlet elevator 23 is automatically controlled to normally remain at ground level, and to move only to the particular floor which is designed to carry automobiles. Upon egress of an automobile from the entrance elevator at the appropriate floor, the elevator then automatically closes the doors thereof and returns to ground floor, whereat the door is opened for immediate use by the next automobile to be parked on such floor. Alternatively, the outlet elevator 22 normally remains at the parking floor with the doors open. An automobile driven into this outlet elevator 22 from the parking floor will then be returned to ground floor immediately and the doors opened, so that the operator may quickly drive from the outlet elevator and thence to an outlet station 51' which may be formed as a portion of the building itself or, alternatively, as a separate structure. Conveniently, an automobile operator may pay for the parking before retrieving his automobile and receive a token, or the like, which he then employs to open a gate when he drives away from the parking tower. The outlet elevator, upon discharging an automobile, immediately closes the doors, returns to the parking floor that it serves and opens the doors thereof to be ready to receive the next automobile leaving such floor. Intermediate stationary platforms, such as platform 29, are stated above to have a radial width equal to or greater than the length of automobiles to be parked on the floor. It is, however, not necessary for such stationary platform to have this minimum width under the circumstances wherein the platform is intended only as a sidewalk. It is not normally contemplated that an automobile will rest or remain on this intermediate stationary platform, but, instead, will only be driven thereacross. The platform is, however, required for the movement of foot traffic from parking stalls on rotary platforms to elevators 41 designed to remove people from the floors and return them thereto. Likewise, the personnel elevators 41 need not have sufficient dimensions to accommodate an automobile; instead, they may be much smaller. The purpose of providing the above-stated radial width of the stationary platforms is to accommodate elevators 41 of appropriate size to receive an automobile under those extreme circumstances wherein the normal pair of elevators serving each floor is inadequate to remove automobiles rapidly enough. While this added feature of the additional elevators 41 may often-times prove convenient or desirable for particular applications of the present invention, it is not intended to indicate that such is necessary in practicing the present invention. Likewise, additional elevators 42 that may be provided upon another stationary platform need only have a minimum size suitable for carrying passengers, and, in fact, in many instances may entirely be eliminated. It is, however, desirable from the viewpoint of maximum safety that each rotary parking platform shall have a stationary sidewalk adjacent same, so that people leaving a parked automobile or returning to same may walk about the floor on stationary sidewalks without fear of endangerment by moving vehicles or platforms. In this respect, it is noted

to be possible for any rotary platform to actually comprise a pair of independently movable platforms, as shown. This particular arrangement materially increases the available amount of parking space provided in any one floor of the building.

Considering now the movement of rotary parking platforms of the present invention, it is noted that each of the rotary platforms must be mounted for movement and control over the positioning thereof. Mounting of these rotary platforms may be accomplished in a variety of ways; however, a preferred embodiment of the present invention, as illustrated in FIGURE 3, employs ball bearing mountings for the platforms. This is generally indicated at 71. An extremely smooth easy motion of the rotary platforms may be accomplished in this manner at a minimum of cost and complexity. In actuality, it has been found that relatively small ball bearings in appropriate races may be employed to support the weight of the rotary platform and a complete loading thereof with automobiles. Insofar as rotary drive of the individual platforms is concerned, it will be appreciated that various means may be utilized for this purpose. There is shown in FIGURE 3 drive motors 72 connected by appropriate gearing 73 to each of the rotary platforms. These motors may, for example, be physically mounted on the undersurface of each floor, as shown. Preferably, the drive means for the rotary platforms are electrical, or at least electrically controlled, to facilitate appropriate indexing and positioning thereof. Thus, the drive motors 72 may comprise conventional electric motors operated from power outlets provided within the building at each floor and controlled from control panel 61 and control means 62. It is to be appreciated that electrical circuitry for movement and indexing of the rotary parking platforms may take a wide variety of forms, all within the knowledge of those skilled in the art. Consequently, no attempt is made herein to incorporate extensive wiring diagrams. It is only necessary that there be provided appropriate counters, such as schematically illustrated at 74 of FIGURE 3, which may, for example, be connected to operate stepping relays or the like, so as to maintain an indication of the present physical location of each platform insofar as rotary position is concerned. Actuation of an individual drive motor, as from the control panel 61, may then set appropriate switches to cause the chosen platform to rotate a predetermined number of positions from original, or zero, position, so as to align the desired parking stall for utilization by an automobile; such may operate means, as a stepping switch, so that upon subsequent energization of the system by control means 62, a stepping switch will return, or rotate, the movable platform back the same number of positions to its original position.

The physical structure of the parking stalls, drive means and controls described above require only a minimum of operating or supervisory personnel for a maximum number of automobiles parked. It is, however, possible, in accordance with the present invention, to further automate the parking structure hereof. In this respect, reference is made to FIGURE 5 illustrating an automated parking stall which may be employed for any or all of the radial stalls identified above. Physically, the stall 81 is seen to include first and second pivotally-mounted plates 82 and 83 in or on the floor 84 of the stall. The first plate 82 is pivotally mounted at 86 to swing upwardly from the floor and to be depressed, i.e., swung down, flat with the floor when a car passes thereover entering the stall. A link 87 depends from the plate 82 and is pivotally connected to linkage 88 extending beneath the stall and pivotally mounted to a link 89 depending from the second plate 83. This second plate 83 is pivotally mounted at 91 to be swung upwardly by the linkage 88 upon downward movement of the first plate 82. A spring 92 acts on the linkage to normally hold the first plate up and the second plate down. Passage of car wheels over the first plate 82 pivots it down

and thus swings the second plate 83 up to block the car from driving off the stall forwardly. A tapered projection 93 on the linkage is engaged by a depending stop 94 on a coin-operated timing mechanism 96 to hold the second plate up in the position shown.

With a car driven onto the stall, the plates are positioned, as illustrated in FIGURE 5. The timing mechanism is started by the stop 94 thereof being raised by movement of the linkage projection 93 to the right as the plates pivot into illustrated position. The car is prevented from being driven from the platform by the raised second plate. In order to remove the car, the operator inserts an appropriate amount of coins in the mechanism 96 and turns a handle thereon to return the timing pointer to zero. This lifts the depending stop 94 so that the linkage 88 is moved to the left by the spring 92. The second plate is thus pivoted down flat with the floor so that the automobile may be driven from the stall. The first plate is noted to have been pivoted upwardly, so that the stall is in condition to receive another automobile. A pressure-sensitive switch may be located beneath the first plate 82 for energizing a circuit that operates light on the control panel 61, indicating whether the particular stall is empty or not. This, then, obviates the need of searching for a vacant stall.

The improved circular-parking apparatus of the present invention will be seen to have a large number of advantages which commend it to widespread use. The multi-storied structure not only solves existing problems of traffic congestion insofar as parking is concerned, but is also particularly adapted to a wide variety of multipurpose buildings such as apartments, office buildings, shopping centers and the like. Quite simple and rapid parking is provided wherein the automobile operator may readily park his own car, and never need back the car into or out of a stall. Lighted buttons and stall indicators, both at the individual floors and at an entrance, relieve the operator of the necessity of searching for an empty stall. The annular stall arrangement, and control thereof, maximizes utilization, and is particularly adapted for stacking in multi-storied units. For further maximizing space utilization, separate parking platforms may be designed for automobiles of different lengths, so that the radial width of each platform is no greater than necessary.

The fully automated stall described above may be employed herein to entirely eliminate attendants, for the automobile operator may choose his own floor and stall from lighted displays, drive thereto and pay for his parking time without assistance. Yet the timing mechanism and auto-locking plates insure that all parking is paid for.

It will thus be appreciated that the present invention provides a marked advancement in parking facilities, fulfilling a great present need. It is not, however, intended to limit the invention to the details of the illustrated and described preferred embodiments; instead, reference is made to the following claims for a precise delineation of the true scope of the invention.

That which is claimed is:

1. A multiple-storied automobile parking structure comprising a plurality of vertically spaced and aligned floors; a plurality of automobile elevators with two separate elevators extending from ground level to each floor for entrance and exit of automobiles from each floor; each of said floors including a plurality of annular stationary concentric platforms and a plurality of annular concentric rotatable platforms divided into radial parking stalls with each of said rotatable platforms being disposed adjacent a stationary platform; independent drive means for each rotatable platform; control means for said drive means selectively operable directly by an operator in the automobile while the automobile is located on one of said rotatable platforms to cause rotation of another rotatable platform from a first normal position to a second position to align a parking stall on said other rotatable

ble platform with the automobile, whereby said automobile is driven into said stall on said other rotatable platform; or to rotate the platform on which the automobile is located from a first normal position to a second position to align the automobile with a parking stall on another platform whereby said automobile can be driven into said stall; and further control means to rotate said rotated platform from said second position to said first normal position.

2. The structure of claim 1 further defined by the outer stationary platform being disposed adjacent the elevators and having a radial width at least equal to the length of automobiles to be parked on the floor.

3. The structure of claim 1 further defined by a second group of elevators disposed interiorly of the structure in extension between floors and disposed to open a door at each stationary platform of each floor for passenger ingress and egress.

4. The structure of claim 1 further defined by the central platform of each floor being rotatable, said control means comprising a control panel at said central platform and having one portion for controllably moving any rotatable platform to a position aligning a chosen stall with an automobile on the central platform and a second portion for controllably swinging the central platform into alignment with any parking stall.

5. The structure of claim 1 further defined by the two elevators for each floor being disposed diametrically opposite each other at such floor and a driveway marked across the rotary platforms in normal position between the two elevators, one of said elevators normally remaining at ground level for raising autos to the floor served by such elevator, and the other elevator normally remaining at the floor served thereby for lowering cars to ground level.

6. The structure of claim 1 further defined by said elevators being disposed substantially entirely about the circumference of the structure with two diametrically opposite elevators serving each floor and extending only to the floor served without stops between the bottom floor and the floor served thereby, said rotatable platforms being mounted upon ball bearings for smooth, quiet movement, and at least one rotatable platform being circumferentially divided into two annular platforms with each having a radial width at least equal to the length of automobiles to be parked thereon.

7. The structure of claim 6 further defined by each of said rotatable platforms and divisions thereof being rotatable in clockwise and counterclockwise direction, and said control means including means for rotating the chosen platform in a direction to move the shortest distance for alignment of a chosen stall with an automobile for parking.

8. The structure of claim 6 further defined by said further means being located at each stall.

9. The structure of claim 8 further defined by warning means adjacent a first elevator of each floor adapted for automobile ingress and operable from platform position and drive control for indicating when an automobile can be driven across rotatable platforms without danger of platform movement.

10. The structure of claim 1 further defined by the annular rotatable platforms having at the parking stalls thereof first and second interconnected pivot means on the floor thereof, the first of said means being pivoted into retracted position by passage of a car thereover, spring-loaded linkage between said pivot means pivoting the second means upwardly upon retraction of the first means, and coin-operated timing mechanism at each parking stall having actuating means engaging said linkage for holding said second means upwardly for blocking car egress and releasing said linkage upon coin operation to retract the second means and pivot the first means upwardly.

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11. The structure of claim 1 further defined by a timing mechanism mounted on each movable platform at each stall thereon, actuating means starting said timing mechanism upon automobile entry of the associated stall and operating an egress barrier preventing automobile departure, and release mechanism operated by said timing mechanism upon reset to zero of the latter for disabling said egress barrier whereby an automobile is freed to leave the parking stall.

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