

Jan. 6, 1942.

O. C. BUTZIEN

2,268,800

AUTOMOBILE PARKING APPARATUS

Filed Aug. 16, 1940

4 Sheets-Sheet 1

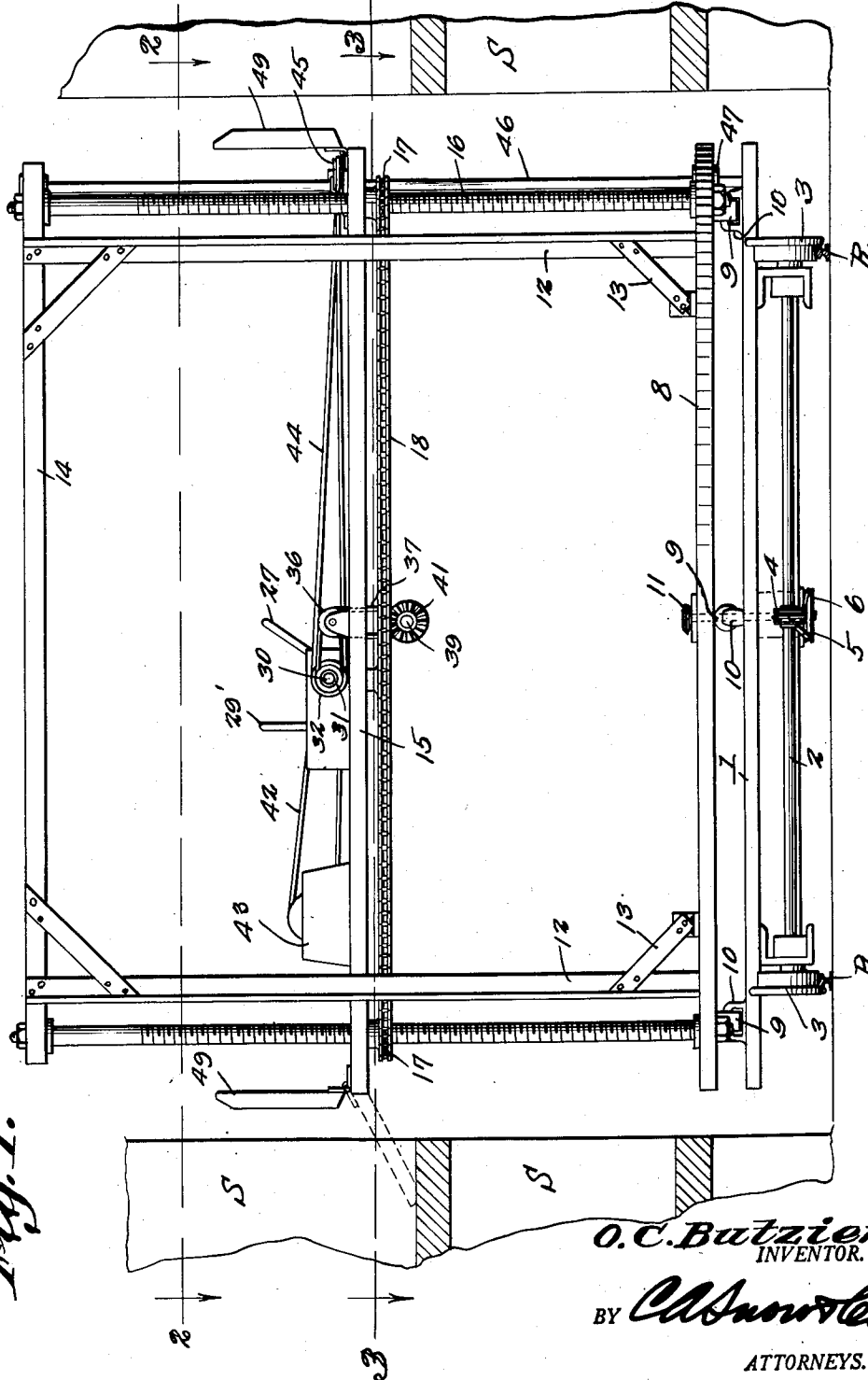


Fig. 1.

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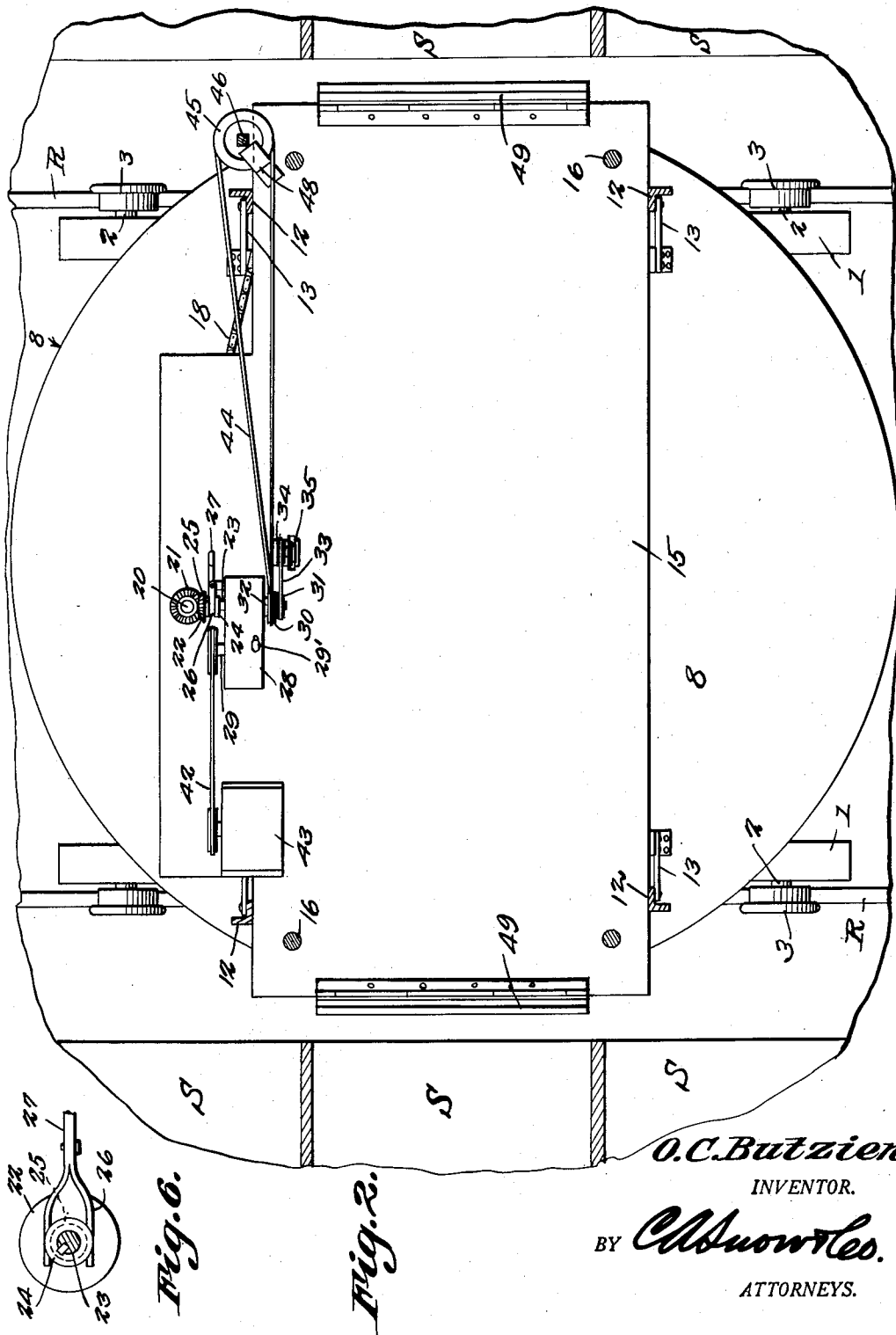
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

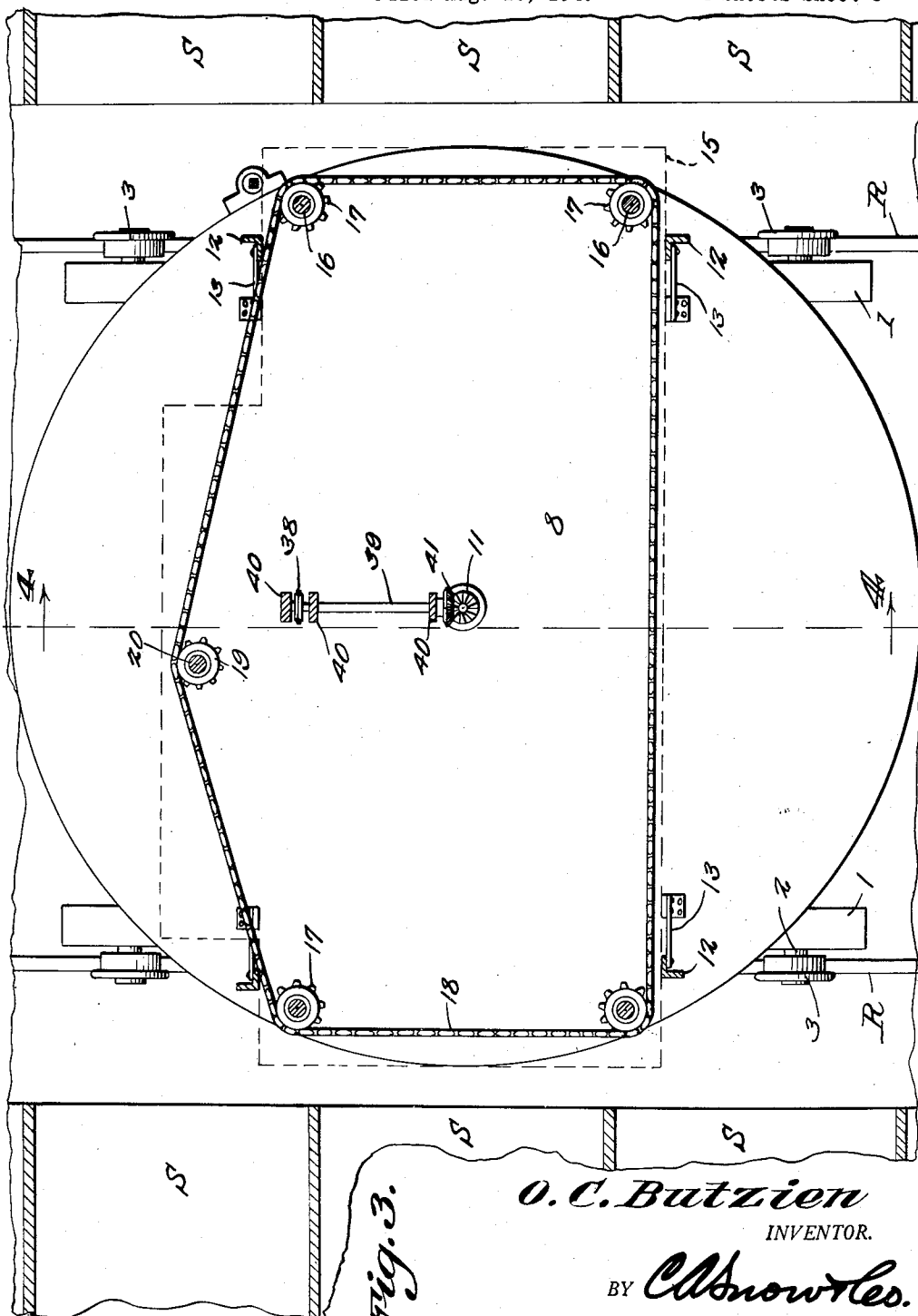


Fig. 3.

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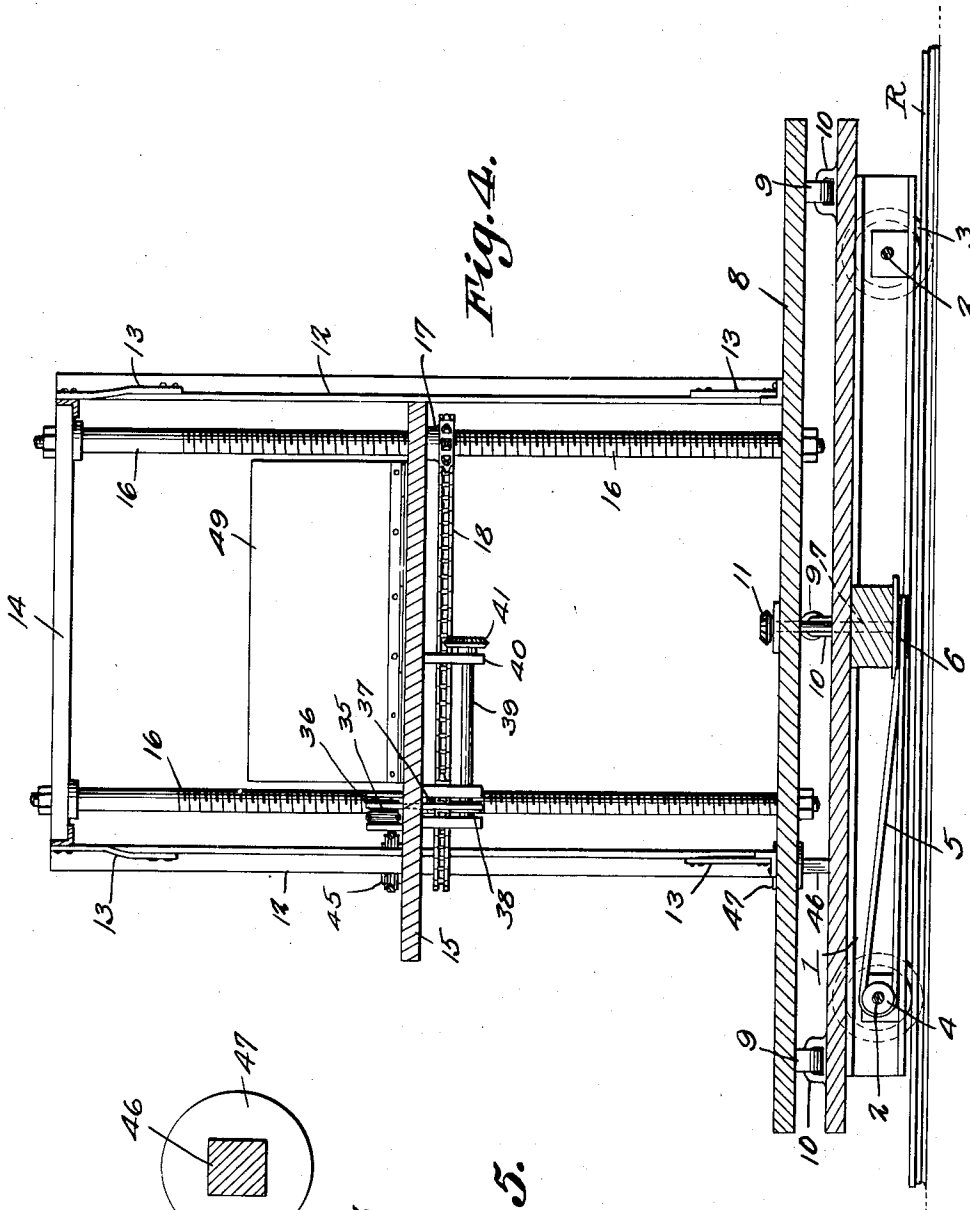
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AUTOMOBILE PARKING APPARATUS

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4 Sheets-Sheet 4



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2,268,800

AUTOMOBILE PARKING APPARATUS

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Application August 16, 1940, Serial No. 352,970

6 Claims. (Cl. 214-16.1)

This invention relates to apparatus designed primarily for parking automobiles in rows of superposed tiers, one of the objects being to provide a truck for movement between the tiers of stalls, there being mounted on the truck a turntable which can be rotated to bring the supported vehicle at any desired angle for entry into a predetermined stall and which can also be raised and lowered to the proper elevation.

A further object is to provide apparatus of this character including a motor having mechanism by which the truck can be driven along a track provided therefor and by means of which the turntable can be rotated and can be raised and lowered at will.

A still further object is to provide parking apparatus which is simple and compact in construction and can be manipulated readily, it being possible, through the use thereof in connection with properly positioned tiers of stalls, to park automobiles in different rows and at different elevations without danger of injury to them.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings

Figure 1 is an end elevation of the apparatus, portions of the adjacent tiers of stalls being shown.

Figure 2 is a section on line 2-2, Figure 1.

Figure 3 is a section on line 3-3, Figure 1.

Figure 4 is a section on line 4-4, Figure 3.

Figure 5 is an enlarged plan view of a portion of the turntable and the friction wheel in engagement therewith.

Figure 6 is an enlarged section through a portion of the drive mechanism.

Referring to the figures by characters of reference, 1 designates the flat body of the truck which is provided with transverse axles 2 supported by wheels 3 and these wheels are adapted to travel along a track R located between parallel rows of stalls S located in tiers as shown. Each stall is of such size as to receive a single automobile. One of the axles 2 is fixedly connected to its wheels and has a drive wheel 4 adapted to receive motion through a belt 5 from a wheel 6

located at the lower end of a shaft 7. This shaft is journaled in the center of the body 1 and projects upwardly through the center of a circular turntable 8. This turntable is mounted on anti-friction wheels 9 or the like supported by annularly spaced holders 10 secured to the body 1 adjacent to its periphery. A gear 11 is secured to the upper end of shaft 7.

Secured to the turntable 8 and extending upwardly therefrom are parallel guide rails 12 which can be braced as shown at 13 and are connected at their upper ends by a top frame 14. A table 15 is fitted between and adapted to slide along the rails 12, this table being of such size as to readily support a motor vehicle to be parked. Extending through this table adjacent to its corners are screws 16 journaled at their lower ends in the turntable 8 and at their upper ends in the frame 14. These screws are engaged by sprockets 17 carried by the table 15 so that when the sprockets are rotated in one direction, table 15 will be moved upwardly and when they are rotated in the opposite direction the table will be moved downwardly. As shown particularly in Figure 3 all of these sprockets are connected by an endless chain 18 which, in turn, is engaged by a drive sprocket 19 journaled on and movable with the table 15. This sprocket is connected to a shaft 20 extending through table 15 and provided at its upper end with a gear 21 adapted to be engaged by a shiftable gear 22. This shiftable gear is slidable on but rotatable with a shaft 23, any suitable means being employed for moving the gear 22 into and out of mesh with gear 21. For example it may be provided with a collar 24 having an annular groove 25 engaged by the forked end 26 of a shifting lever 27.

A transmission housing has been indicated at 28 and has a lever 29 projecting therefrom by which motion from a shaft 29 to a shaft 30 and to shaft 23 can be controlled. As this gearing in itself constitutes no part of the present invention it is not deemed necessary to describe or show the same. Shaft 30 is provided with wheels 31 and 32, the wheel 31 transmitting motion through a belt 33 to a wheel 34 on a counter-shaft 35. Another wheel 36 is secured to the counter-shaft and transmits motion downwardly through a belt 37 to a wheel 38 on a shaft 39 which is journaled in hangers 40 depending from the table 15. This shaft 39 has a gear 41 so located that when the table 15 is brought to its lowermost position, gear 41 will be caused to mesh with gear 11. At all other times, however, the gears 41 and 11 are out of mesh.

Motion is transmitted to the shaft 29 through wheel and belt mechanism 42 from a motor 43 which can be an electric motor and which is located on the table 15.

The wheel 32 is adapted to drive a belt 44 which, in turn, engages and operates a wheel 45 which is slidable on an angular shaft 46. This shaft is journaled at its lower end in a body 1 and at its upper end in the frame 14. It carries a friction wheel 47 near its lower end which is so located as to engage the periphery of the turntable 8 and rotates the turntable when wheel 47 is actuated. Wheel 45 is held in any suitable manner to the table 15 so that when the table is moved upwardly and downwardly the wheel 45 will move therewith. One means for obtaining this result can be an angular bracket 48 secured to the table and lapping the wheel 45.

Hingedly connected to opposed sides of the table 15 are gang-planks 49 adapted, when lowered, to bridge the space between table 15 and the adjacent stall.

Normally the table 15 is in its lowermost position with gear 41 in mesh with gear 11 and with the gang-planks 49 raised upwardly or folded back onto the table 15. When it is desired to store an automobile in one of the stalls of an upper tier, motion is transmitted from the motor 43 through belt 44 and its wheels to shaft 46 with the result that the friction wheel 47 will slowly rotate the turntable 8 and bring it to a position substantially at right angle to that shown in the drawings. One of the gang-planks is then lowered and the vehicle to be parked is moved thereover onto the table 15. The shaft 46 is again rotated so that wheel 47 will bring the turntable back to the position shown in the drawings. After shaft 46 is disconnected from the motor, motion is transmitted from the motor through the speed reduction mechanism 31 to 39 inclusive to gear 41 with the result that this gear, which is in mesh with gear 11, will rotate said gear and its shaft 7 so that the body 1 will be moved along the track rails R until the apparatus has been brought opposite the stall which is to receive the vehicle. The apparatus is then brought to a stop and motion transmitted from the motor through gears 22 and 21 to shaft 20 and sprocket 19. This will result in simultaneous actuation of all of the sprockets 17 with the result that these sprockets will move upwardly along the screws 16, immediately disengaging gear 41 from gear 11. This upward movement will continue until table 15 is brought into proper position to deliver the car therefrom whereupon the gang-plank 49 is lowered onto the floor of the stall into which the vehicle is to be moved and said vehicle then directed over the gang-plank and into the stall. Following delivery of the vehicle into its stall, the foregoing operations are reversed whereupon the apparatus is ready to receive and store another vehicle.

Obviously if the vehicles are to be stored in lower stalls it would not be necessary to raise table 15.

Obviously by providing a handling apparatus such as has been described, the opposed rows of stalls can be placed closer together and can be made narrower than would be possible should it be necessary to drive the automobiles into the respective stalls. The distance between the opposed rows need only be slightly greater than the overall length of the table on which the vehicle is mounted. Consequently storage space is greatly conserved and a greater number of

vehicles can be parked in a given space than has heretofore been possible.

What is claimed is:

1. A car parking elevator including a track, a wheel-supported truck body mounted for movement along the track, a turntable mounted for rotation on and carried by the body, a shaft extending through the turntable and body and constituting a connection therebetween, feed screws extending upwardly from the turntable, guide rails extending upwardly from the turntable, a table mounted for movement along the rails, feeding means engaging the screws and carried by the table, a motor on the table, a driving element operatively connected to the motor, means on the shaft in the truck body and turntable for engagement and actuation by said element when the table is in lowermost position, a driving connection between said shaft and one of the wheels of the truck body, means operated by the motor for driving the screw-engaging means to raise the table and break the driving connection between said motor-driven element and the shaft.

2. A car parking elevator including a track, a wheel-supported truck body mounted for movement along the track, a turntable mounted for rotation on and carried by the body, a shaft extending through the turntable and body and constituting a connection therebetween, feed screws extending upwardly from the turntable, guide rails extending upwardly from the turntable, a table mounted for movement along the rails, feeding means engaging the screws and carried by the table, a motor on the table, a driving element operatively connected to the motor, means on the shaft in the truck body and turntable for engagement and actuation by said element when the table is in lowermost position, a driving connection between said shaft and one of the wheels of the truck body, means operated by the motor for driving the screw-engaging means to raise the table and break the driving connection between the motor and the shaft, and means operated by the motor for rotating the turntable and the parts thereon relative to the truck body, thereby to position the table substantially in line with any one of the stalls.

3. A car parking elevator including a track, a wheel-supported truck body movable along the track, a drive mechanism including a shaft extending through the truck body, a turntable mounted for rotation on the shaft and relative to the truck body, guide rails upstanding from the turntable, screws upstanding from the turntable, a table movable along the guide rails, means movable with said table for engaging the screws, a motor on the table, means driven by the motor for actuating the screw-engaging means to raise or lower the table along the guide rails, motor-actuated means for driving the shaft in the truck body when the table is in lowermost position, said table, when moved upwardly from its lowermost position, constituting means for breaking the driving connection between said shaft and the motor, and means operated by the motor for rotating the turntable.

4. A car parking elevator including a track, a wheel-supported truck body movable along the track, a drive mechanism including a shaft extending through the truck body, a turntable mounted for rotation on the shaft and relative to the truck body, guide rails upstanding from the turntable, screws upstanding from the turn-

table, a table movable along the guide rails, means movable with said table for engaging the screws, a motor on the table, means driven by the motor for actuating the screw-engaging means to raise or lower the table along the guide rails, motor-actuated means for driving the shaft in the truck body, said table, when lowered, constituting means for operatively connecting the shaft and said motor-actuated means and, when moved upwardly, constituting means for breaking the driving connection between said shaft and the motor, and means operated by the motor for rotating the turntable, said means including a shaft journaled in the truck body and parallel with the guide rails, a friction wheel rotatable with said shaft and in engagement with the periphery of the turntable, a wheel movable with the table and in sliding and driving engagement with the shaft, and means for transmitting motion to said wheel from the motor.

5. A car parking elevator including a track, a wheel-supported truck body movable along the track, a drive mechanism including a shaft extending through the truck body, a turntable mounted for rotation on the shaft and relative to the truck body, guide rails upstanding from the turntable, screws upstanding from the turntable, a table movable along the guide rails, means movable with said table for engaging the

screws, a motor on the table, means driven by the motor for actuating the screw-engaging means to raise or lower the table along the guide rails, motor actuated means carried by the table for driving the shaft in the truck body, said table, when moved to its lowest position constituting means for operatively connecting said motor-actuated means to the shaft and, when moved upwardly, constituting means for breaking the driving connection between said shaft and the motor, and means operated by the motor for rotating the turntable, a gang-plank movably connected to the table and proportioned to swing into engagement with the bottom of any one of the stalls.

6. The combination with a body mounted for back and forth horizontal movement, of a turntable mounted for rotation on and carried by the body, guide rails extending upwardly from the turntable, a table mounted for movement upwardly and downwardly along the rails, a motor on the table, means driven by the motor for raising and lowering the table, a shaft for propelling the body, and motor driven means movable by the table into driving connection with the shaft when the table is brought to its lowermost position, and out of driving connection with said shaft when the table is raised.

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