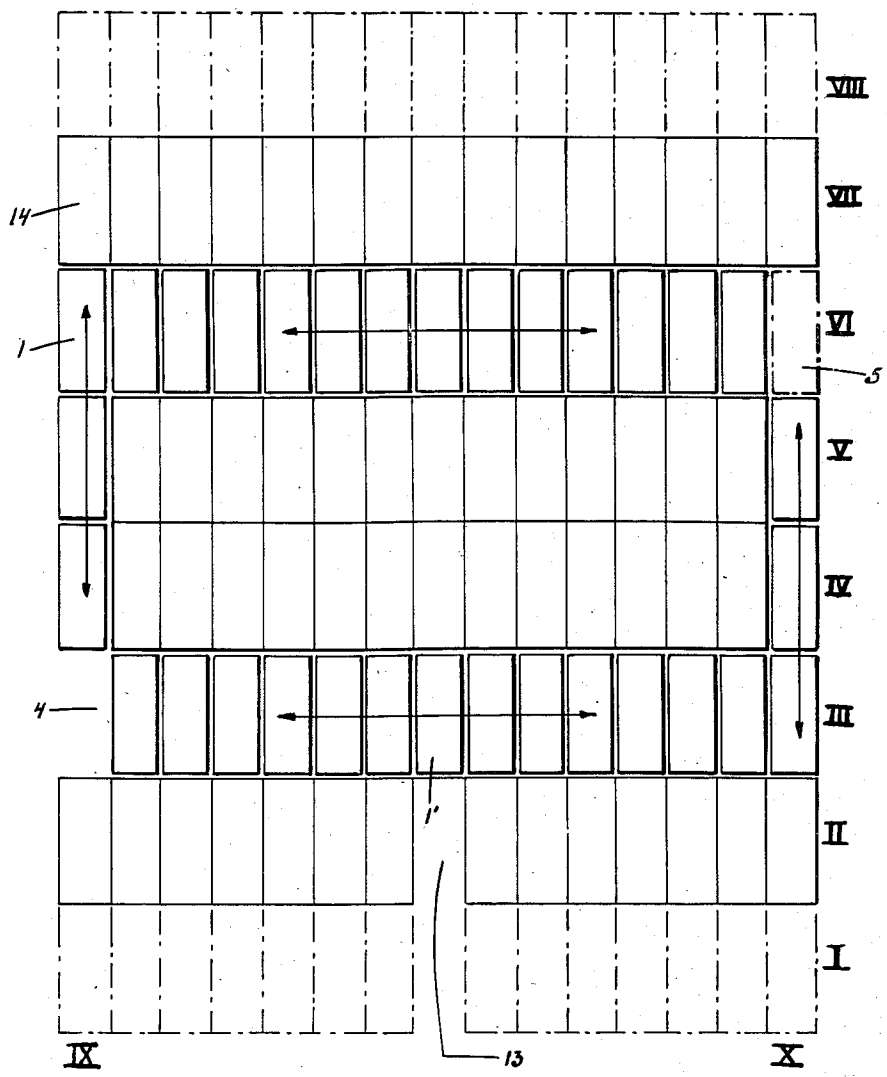
Aug. 5, 1958 G. O. NILSSON ET AL 2,846,087

ARRANGEMENT FOR THE PARKING OF MOTOR-CARS

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Fig_1



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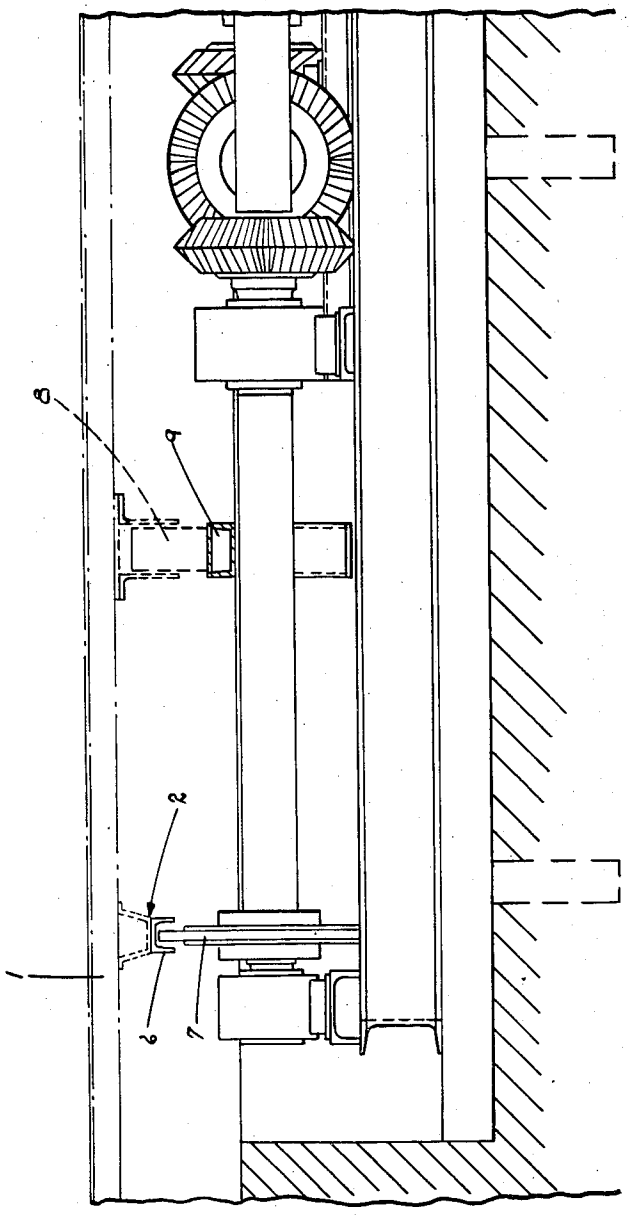
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Fig-2



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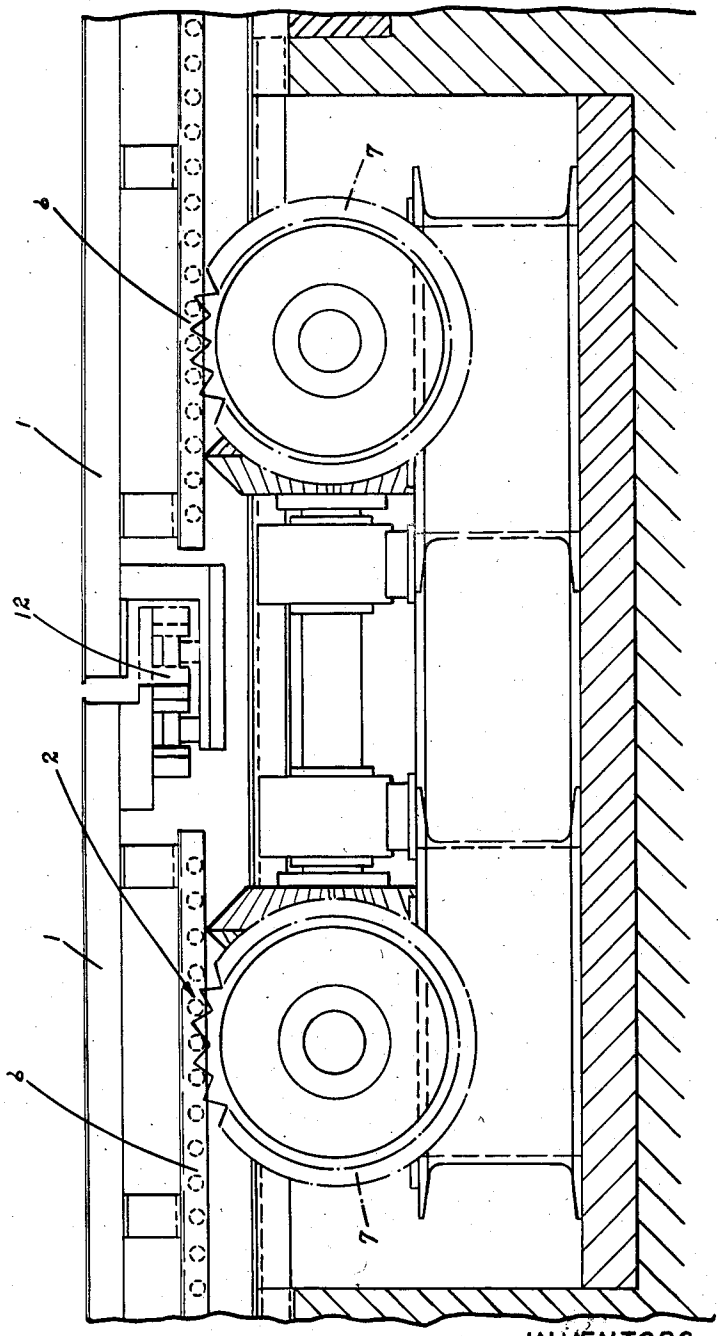
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Fig - 3



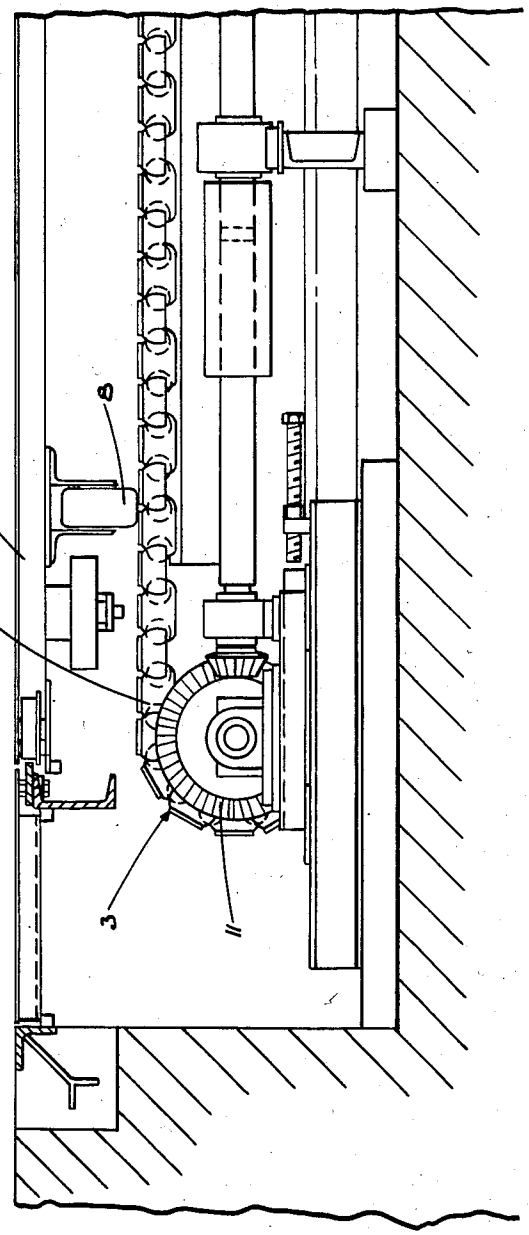
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ARRANGEMENT FOR THE PARKING OF MOTOR-CARS

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Fig- 4



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ARRANGEMENT FOR THE PARKING OF MOTOR-CARS

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Application July 16, 1954, Serial No. 443,868

1 Claim. (Cl. 214—16.1)

This invention relates to an arrangement for the parking of motor-cars or the like in at least three rows, and is essentially characterised in that at least two of these rows are provided with or consist of conveying devices by means of which the cars are laterally displaceable in the direction of said rows, and that the rows are provided with conveying devices at their ends by means of which the cars at these ends are longitudinally displaceable between said rows of conveying devices.

The invention will be described more in detail in the following, reference being had to the accompanying drawings illustrating a preferred embodiment of the parking arrangement according to the invention. In the drawings:

Fig. 1 is a schematic plan view of the arrangement,

Fig. 2 is a side view of part of one of the conveying devices for the lateral displacement of the cars,

Fig. 3 is a front view of part of the conveying devices according to Fig. 2, and

Fig. 4 is a side view of part of one of the conveying devices for the longitudinal displacement of the cars.

The parking-place illustrated in Fig. 1 accommodates eight rows of cars, which rows have been designated I, II, III, IV, V, VI, VII and VIII. This presupposes that the parking-place is accessible from both directions so that the cars can be driven from outside directly to their places in rows I and VIII. If, however, the parking-place for instance is a garage which can be left in but one direction, the arrangement according to its preferred embodiment can comprise only rows II, III, IV, V, VI and VII, rows III and VI consisting of platforms 1 which correspond to the size of the cars and which are laterally displaceable by means of rack conveyors 2. At the ends of rows III, IV, V and VI there are arranged chain conveyors 3 by means of which the platforms 1 located at these ends are longitudinally displaceable along rows IX and X.

According to an embodiment of this arrangement which is to be preferred when the rows I to VIII are long, one platform has been removed from the opposite ends 4 and 5 of rows III and VI so that the platforms 1 in rows III and VI may be displaced simultaneously by one platform width in opposite directions, whereupon the platforms 1 at the end rows IX and X may also be displaced simultaneously longitudinally in opposite directions etc. According to another embodiment, only one of the platforms, e. g. at the end 4, may be removed, and the displacement of the platforms is then effected by displacing one row at a time. Thus, for instance the platforms of row III may be displaced to the left, the platforms in the end row X downwards, the platforms of row VI to the right and the platforms in end row IX upwards. The opposite direction of movement is also possible. On effecting the movements according to the two embodiments, the driving means for conveyors 2 and 3 should be interconnected in such a manner that the desired movements succeed each other automatically.

The rack conveyors 2 for the lateral movement of the platforms 1 consist of two or more racks 6 arranged in spaced relationship transversely of the platforms 1 and adapted to engage driven gear wheels 7. According to the shown embodiment, the rack conveyors 2 comprise two synchronously driven gear wheels 7 for each row of racks, for which reason the racks 6 at the different platforms 1 need not extend all the way to the longitudinal sides of the platforms 1.

To facilitate displacement of the platforms 1 by means of the rack conveyors 2, the platforms 1 are provided with wheels 8 having their axles in parallel with the longitudinal sides of the platforms 1. The wheels 8 which are arranged in two or more, preferably four rows, run upon beams 9 or the like arranged transversely of said platforms 1.

The chain conveyors 3 for the longitudinal displacement of the platforms 1 consist of endless chains 10 arranged at the ends of the rows III, IV, V and VI and passed around chain wheels 11 or the like, at least one of which in each conveyor 3 being coupled to a drive. During the conveying operation by means of the chains 10, the wheels 8 of the platforms 1 rest upon the chains. To avoid separation of the platforms 1 owing to slippage or the like during the conveying operation by means of the chains 10, the platforms are interconnected by means of couplings (not shown) which are arranged at the ends of the platforms 1. Also at their longitudinal sides, the platforms 1 are provided with couplings 12 holding them together during the lateral displacement.

When a platform 1 is displaced e. g. to the end row IX, by means of the rack conveyor 2 this conveyor stops and the chain 10 is actuated so that the platform 1 is displaced longitudinally forwardly by one platform length, whereupon the chain 10 stops and the gear wheels 7 are again actuated etc. until the platform 1 has been moved to the desired position.

The platforms 1 are arranged on the same level as the rest of the parking-place and therefore the cars can easily be driven over the platforms 1. When the parking-place is used, the cars can therefore be driven primarily under their own power to a suitable place. The arrangement according to the invention is not put into operation until several cars have been parked on the parking-place. The car to be parked is driven through the entrance 13 and placed upon the platform 1'. Then the conveyor machinery is put into operation so that the car or possibly some other car on the platforms 1 arrives opposite a fixed, unoccupied parking-space 14 whereupon the machinery is stopped and the car is driven into this space. An empty platform 1 is then moved opposite the entrance 13 so that a new car can be parked. When the car leaves the parking-place an empty platform 1 automatically moves into position opposite the entrance 13.

The above-described parking-place consists of six rows, unless it is accessible from but one direction. If a parking-place with more than six rows is desired, one or more additional rows must be provided with laterally displaceable platforms 1. If the parking-place thus consists of e. g. nine rows, it should be provided with three rows of platforms 1 which between themselves should have two rows of fixed parking-spaces. The end rows IX and X should then be provided with longitudinally displaceable platforms from the first to the last row of laterally movable platforms 1. The machinery should then suitably be such that only the platforms 1 of two rows and the platforms 1 lying between said first-mentioned platforms in the end rows are successively put into motion during each parking operation. Also in this case one, two or possibly more platforms 1 must be removed so as not to hinder the desired movements of displacement.

To effect the movement of the cars on the parking-place, other devices than the movable platforms 1 may be employed. Thus, the lateral displacement of the cars may e. g. be effected by means of belt conveyors while their longitudinal displacement may be effected by means of grippers pushing the cars on their wheels. Also the longitudinal displacement of the cars can be effected by means of belt conveyors. The movement of the platforms 1 may besides be brought about by means of devices other than chain conveyors and rack conveyors, for instance belt conveyors.

The invention is not limited to that described above and shown in the drawings, but may be varied in several ways within the scope of the accompanying claims. Thus, two rows may be laterally displaceable when the number of rows is three, four, five or six. If, however, the number of rows amounts to seven, eight or nine, at least three of these rows must be laterally displaceable. For each additional three rows, at least one further row must be laterally displaceable. In this case, the row or the two rows which may be added when the parking-place can be left in one or both directions, have not been taken into consideration.

If the arrangement is also intended for long-time parking of cars, it may be provided with more than two, e. g. three or four rows with fixed parking-spaces between the rows of laterally displaceable platforms. For this purpose, the middle row or rows with the fixed parking-spaces are used for the long-time parking.

It is obvious that the arrangement according to the invention may be employed for other purposes than the parking of motor-cars. Thus, it can be used to advantage as a storing place, and in that case the articles to be stored should suitably be placed on carriages or the like which permit displacement in the same manner as motor-cars.

What we claim and desire to secure by Letters Patent is:

In combination, a plane parking surface for parking vehicles, especially motor-cars, having a plurality of full length parking rows two of which are spaced from each other a distance equal to the width of four of said full length parking rows and each having a plurality of side by side parking spaces, said plane surface having at least one rectangular channel therein between said spaced full length parking rows and constituted by two parallel portions extending lengthwise of the rectangle and two parallel portions extending transversely of the rectangle, the lengthwise portions of said rectangular channel being of a length equal to that of said full length rows and being spaced from each other a distance equal to the width of two of said rows, the transversely extending portions of said rectangular channel each being of a length equal to the width of two rows, the parking surface between said lengthwise portions having two shortened parking rows thereon each being of a length two parking spaces less than said full length rows, one transversely extending portion of said channel being on each end of said shortened parking rows, a plurality of plane platforms each of substantially the same size as a parking space movable in said channel with the surfaces of the platforms level with said parking surface, the number of platforms in at least one of said lengthwise extending portions of said rectangular channel being one less than the number of spaces in said full length rows, and two platforms in each transversely extending portion of said rectangular channel, means for moving said platforms along one pair of parallel portions of said rectangular channel comprising chain conveyors in said one pair of parallel portions and wheels on said platform fixed against swivel movement and rotatable transverse to the direction of movement of said chain conveyors, and means for moving the platforms along the other pair of parallel portions of said rectangular channel comprising racks secured to the platforms and driven gear wheels engaging said racks in said channel and rails in said other pair of parallel portions on which said wheels roll.

References Cited in the file of this patent

UNITED STATES PATENTS

1,585,471	D'Humy	May 18, 1926
1,598,507	Robbins	Aug. 31, 1926
1,738,039	Cope et al.	Dec. 3, 1929
1,782,671	Allred	Nov. 25, 1930
1,851,262	Riblet	Mar. 29, 1932
1,861,659	Fox	June 7, 1932
2,009,579	Ewend	July 30, 1935
2,028,476	Rome et al.	Jan. 21, 1936
2,258,530	Auger et al.	Oct. 7, 1941
2,598,750	Bargehr	June 3, 1952
2,652,162	Auger	Sept. 15, 1953
2,691,450	Rosenbaum	Oct. 12, 1954

FOREIGN PATENTS

426,954	Great Britain	Apr. 10, 1935