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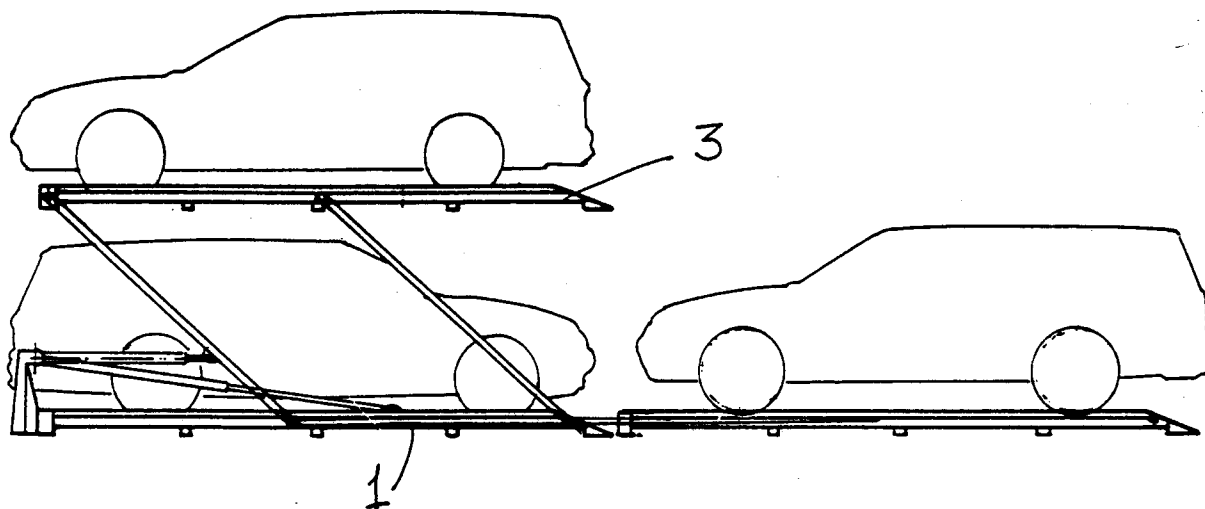
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(54) **Parking device for vehicles.**

(57) Device for parking motor vehicles in superposed position to one another comprising a first frame like structure (1) to be secured to the ground, a second frame like structure (3) designed to carry thereon a car and connected the first frame like structure (1) by means of four pivotally mounted connecting rods (2) in a way that the first frame like structure (1), the

four connecting rods (2) and the second frame like structure (3) define parallelograms, the device comprising furthermore hydraulic or pneumatic cylinder means (4) to enable the lifting of the second frame like structure (3) parallel to and onto top of the first frame like structure (1).

**Fig. 3****EP 0 480 081 A1**

The present invention relates to car parking facilities and more particularly to a device which enables to park two cars, one on top of the other, thus making better use of any given parking space.

It is well known that the concentration of population in urban areas and the ever growing popularity of automotive vehicles has given rise to serious problems in connection with vehicle movement and parking.

Providing sufficient parking places in office buildings or multistorey dwelling houses has become more and more difficult. In order to park a large number of vehicles in a small ground area, there have been constructed parking lots and parking garages, however, during most of the day (or night) these lots and garages are "packed". In view of the substantial cost of land, maximum utilisation of a parking lot or garage floor space is required.

In order to solve the ever growing problem, specially designed parking garages have been suggested, such as automatic rotary platform U.S. Patents 3,378,151; 3,382,990). Such arrangements, no doubt, improve the situation, nevertheless, such a solution requires large new investments and are not applicable to small parking lots. Furthermore, even the most advanced facilities park only one car on each parking space.

To this end it has been suggested to provide parking lots and garages with lifting platform means so as to enable to park one car on top of the other, however, such means have proved to be inconvenient to use as it requires to move the lower car when it was required to use the "upper" platform.

It is thus the primary object of the present invention to provide a device which will double the capacity of a given parking lot or garage floor space.

It is a further object of the present invention to provide a device which will enable the parking of one car on top of another car.

It is yet a further object of the present invention to provide a device which will enable the moving of either car without moving the upper or lower car.

According to the invention there is provided a first frame like structure to be secured to the ground, a second frame like structure designed to carry thereon a car is connected to said first frame like structure by means of four pivotally mounted connecting rods, hydraulic or pneumatic lifting means are provided to enable the lifting of said second frame parallel to and onto top of said first frame.

The invention will now be described with reference to the annexed drawings, in which:

Fig. 1 is a lateral, elevational view of the parking device according to the invention.

Fig. 2 is a frontal view thereof.

Fig. 3 illustrates in a lateral, elevational view the

device according to the invention with parked cars, while

Fig. 4 is a frontal view thereof.

Turning first to Fig. 1 the device comprises a frame like structure 1 which is secured to the ground by any conventional means. Four pivotally mounted rods 2 (only two being shown in the drawing) connect said frame like structure 1 with a platform like structure 3. Hydraulic or pneumatic cylinders 4 are connected to frame structure 1 while the free end of the respective piston rods are connected to one or two rods 2. Bars of structure 1, connecting rods 2, and structure 3 define a parallelogram, as seen in Fig. 1.

As can be seen in Fig. 3 a car which is parked on the liftable platform 3 could be raised or lowered as the case may be without a car being present on the lower structure 1, due to the parallelogram construction of the device.

The two rear rods 2 may be telescopic ones so as to enable the adjustment of the parallelogram.

For safety purposes, the new device will be equipped with means which will enable manual operation mostly for lowering purpose to enable the lowering of a parked car in the event of malfunction of the hydraulic or pneumatic means.

In front of the forward wheel of the car and behind the rear wheels stoppers 8 will be provided to avoid the rolling off of the car.

The car which is parked below will activate an electric switch or a mechanical means (not seen) which will prevent the lowering of the upper platform structure if the lower car is not parked properly avoiding any damage.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Device for parking motor vehicles in superposed position to one another comprising a first frame like structure to be secured to the ground, a second frame like structure designed to carry thereon a car is connected to said first frame like structure by means of four pivotally mounted connecting rods in a way that the said first structure, the four connecting rods and the said second structure define parallelograms, hydraulic or pneumatic lifting means are provided to enable the lifting of said second frame parallel to and onto top of said first frame.

2. A device as claimed in claim 1, characterised thereby that the said parallelogram is adjustable.
3. A device as claimed in claim 1, characterised thereby that the lifting means are hydraulic. 5
4. A device as claimed in claim 1, characterised thereby that the lifting means are pneumatic. 10
5. A device as claimed in claim 1, characterised thereby that the upper platform is provided with stoppers.
6. A device as claimed in claim 1, characterised thereby that the device is provided with means which will prevent the lowering of the upper platform when the lower car is not parked properly. 15

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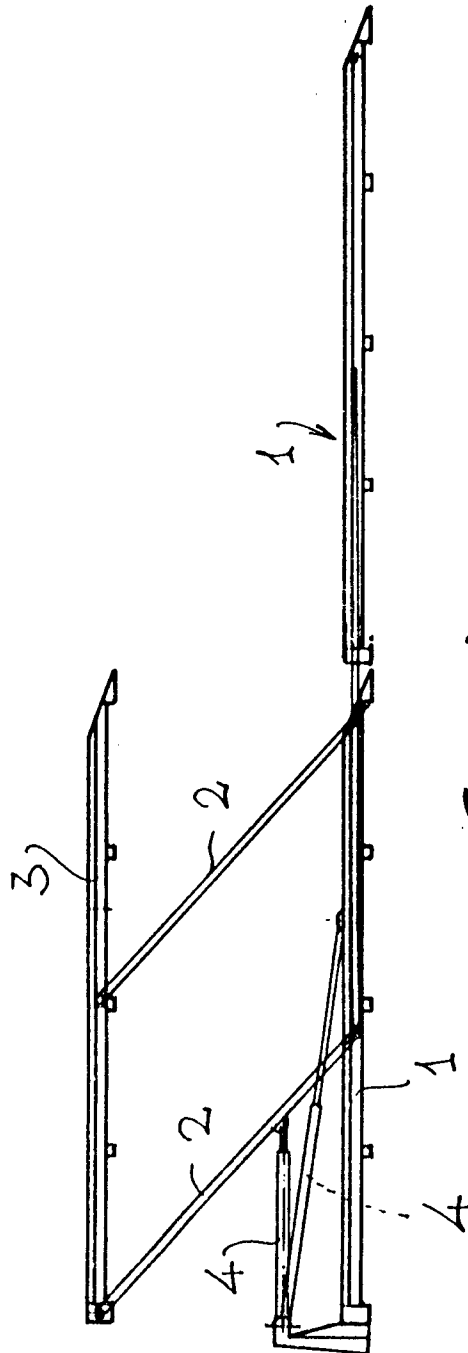


FIG. 1

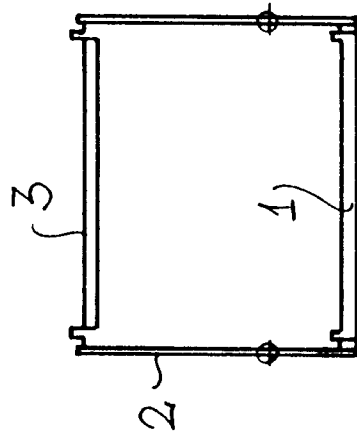


FIG. 2

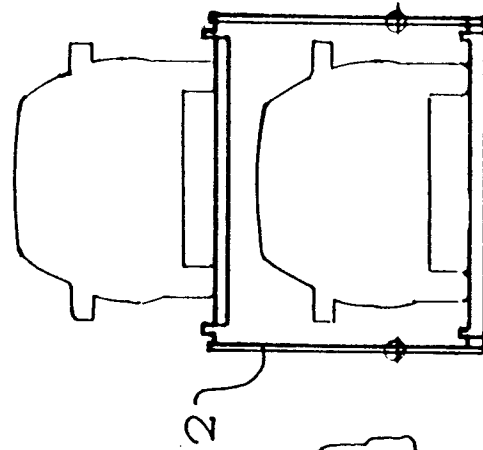


Fig. 4

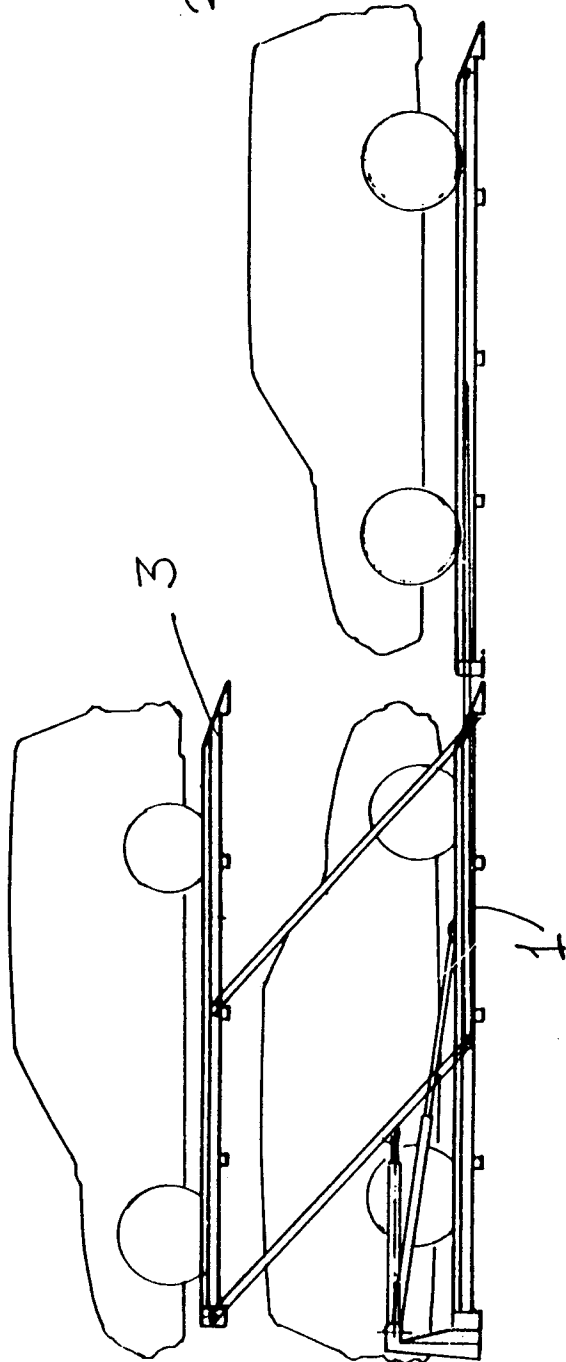


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number

EP 90 11 9331

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DE-A-1 965 142 (KLAUS) * Claims 1,6; page 7, lines 4-8; figures 1,2 *	1,3	E 04 H 6/06
Y	— — —	2,5	
Y	DE-B-2 442 283 (MAGEBA) * Column 3, lines 43-47; column 4, lines 31-74; figure *	2,5	
X	GB-A-1 149 609 (HÄGELE) * Claims 1-3; page 2, lines 4-12,70-74; figures 1,3,4 *	1,5	
X	US-A-2 660 320 (WULLSCHLEGER) * Whole document *	1	
A	— — —	3,4	
A	CH-A-422 289 (RIS) * Whole document *	1,3,4	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 04 H B 60 P
Place of search		Date of completion of search	Examiner
The Hague		04 June 91	NORDLUND J.O.
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T: theory or principle underlying the invention			