(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 589 120 A1**

# (12) EUROPEAN PATENT APPLICATION

(21) Application number: **92600006.8**

(51) Int. Cl.5: **E04H 6/06**

(22) Date of filing: **22.09.92**

(43) Date of publication of application:
**30.03.94 Bulletin 94/13**

(84) Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE**

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## (54) Vehicles mechanical parking systems with hydraulic folding fan-like elevation.

(57) The semi underground vehicles parking system with hydraulic folding fan-like elevation consists of two platforms (2,3) kept parallel one to another during motion. The mechanism (4) moves the platforms (2,3) so that they can alternatevily brine their back edge to ground level (23) and be accessed by vehicles for entrance and exit. For a vehicle's entrance or exit from or to a platform there is no need to move the other platform's vehicle.

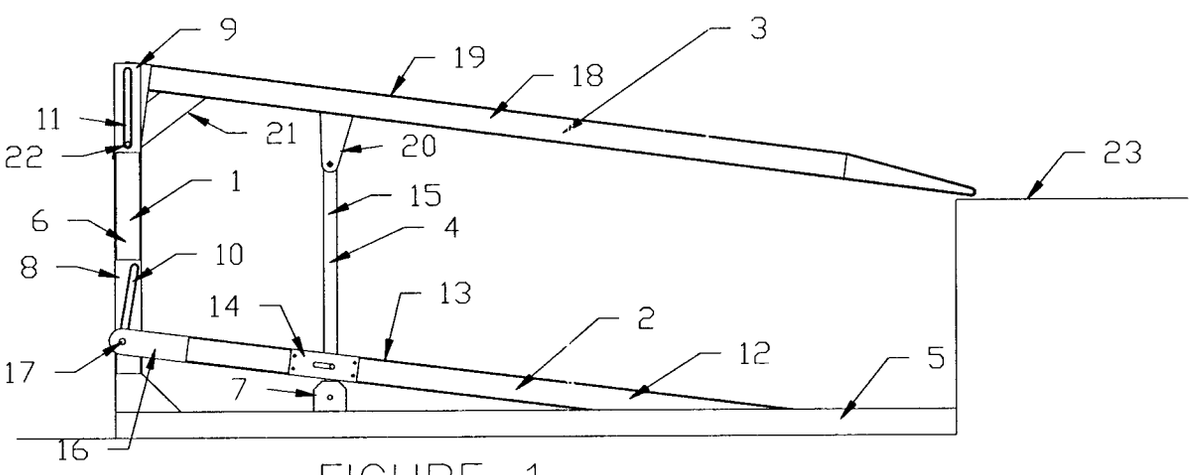


FIGURE 1

EP 0 589 120 A1

The invention relates to a parking mechanism for doubling the vehicle accomodation capacity of already existing flat surfaces, composed of a base, two platforms and an hydraulic mechanism for platforms' moving, positioned semi underground.

Parking mechanisms of this type, which double the vehicle accomodation capacity, are known. These mechanisms can only be used when there is no vehicle at the lower platform. Other parking mechanisms require much bigger excavation than vehicle's height.

The major advantage of this invention is the ability to park or withdraw vehicles from or to anyone of the platforms without moving at all the other platform's vehicle. Another advantage is that the excavation volume has to be smaller than the required from already known mechanisms.

It's an object of the present invention to provide a parking mechanism consisted of two platforms, joined with axles to a vertical steel profile. The vertical profile has two slides in which are sliding the axles joining the platforms to the vertical profile. These axles are not kept steady, but they slide in a linear course in order to minimize the excavation depth and provide small inclination angles to the platforms.

The system is composed of a base **(1)**, the lower platform **(2)**, the upper platform **(3)** and the hydraulic folding fan-like elevation mechanism **(4)**.

The base **(1)** is composed of the horizontal part **(5)** and the vertical part **(6)**. At the horizontal part, there is a construction **(7)**, on which the piston's upper point is articulated. At the vertical part, there are two laps, **(8)** and **(9)**, welded at the vertical steel profile. There are also two penetrating slides, **(10)** and **(11)**, formed along the system vertical steel profile-lap.

The lower platform **(2)**, consisted of two profiles **(12)**, where, is an steel plate **(13)** positioned. There is also a construction **(14)** at the profile **(12)**, on which is connected the piston's **(15)** base upper point. At the profiles' front edge are fastened two holed laps **(16)**. Two axles **(17)** are penetrating the first lap's hole, the slider **(10)** and the second lap's hole, for everyone of the two profiles, joining the lower platform **(2)** to the base **(1)**.

The upper platform **(3)** consisted of two profiles **(18)**, where is an steel plate **(19)** positioned. There is also a construction **(20)** at the profile **(18)**, on which is connected the piston's **(15)** base lower point. At the profile's front edge are fastened two holed laps **(21)**. Finally, the axles **(22)** join the upper platform to the base **(1)**.

The hydraulic folding fan-like mechanism is composed of the piston **(15)** and the supporting constructions **(7)**, **(14)** and **(20)**.

The construction is partly positioned in a pit in side ground. When the mechanism is inactive, the upper platform's back edge **(23)** is leaned to the ground. In this stage the upper platform can be approached to park or withdraw vehicles. When there is a need to approach the lower platform, the hydraulic folding fan-like mechanism turns on. As the elevation starts, the platforms' **(2)** and **(3)** front edges, start moving, till axles **(17)** and **(22)** come to the slides' **(10)** and **(11)** end. Then the platforms' **(2)** and **(3)** back edges start raising, till lower platform's **(2)** back edge reaches ground level **(23)**. Then the lower platform **(2)** can be approached to vehicles for entrance - exit.

Figure 1 shows the first mechanism's stage, when the mechanism is inactive and upper platform can be approached.

Figure 2 shows the second mechanism's stage, when it's at the upper position and lower platform can be approached.

Figure 3 shows an intermediate stage, when the platforms' front edge comes to the slide's upper point and the back edge is ready to start moving.

## Claims

1. Semi underground mechanism with hydraulic foldind fan-like elevation composed of two platforms joined to the base through axles and one another through pistons therefore they kept parallel one another during motion.

   The platforms can be accessed by vehicles when the mechanism is at its lower point (from and to upper platform access) or at its upper point (from and to upper platform access).

2. Mechanism, as claimed in claim 1, allowing access to and from either of the platforms without moving at all the vehicle parked to the other platform.

3. Mechanism, as claimed in claims 1 and 2, dividing the loads so, that the platforms' front edge is always raised first (either there are vehicles parked on the platforms or not) and after the front edge finishing his movment then the platforms' back edge is raising and vice versa first lowering the back edge and then the front.

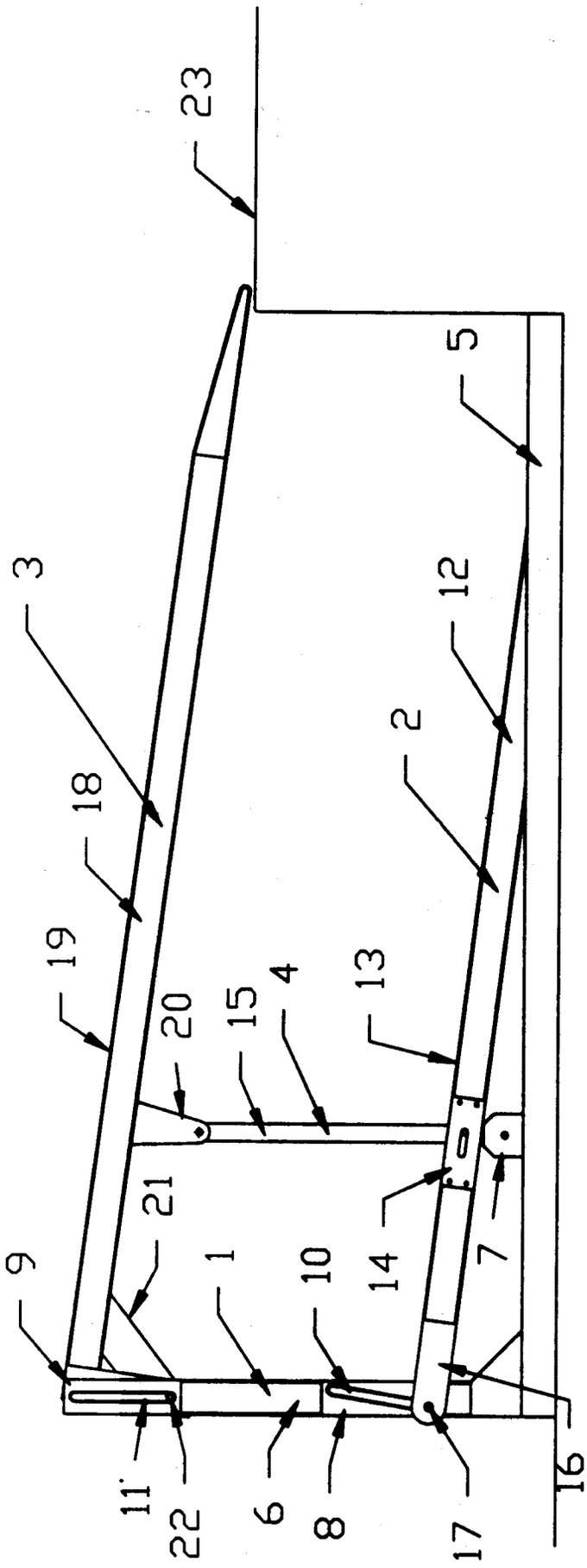


FIGURE 1

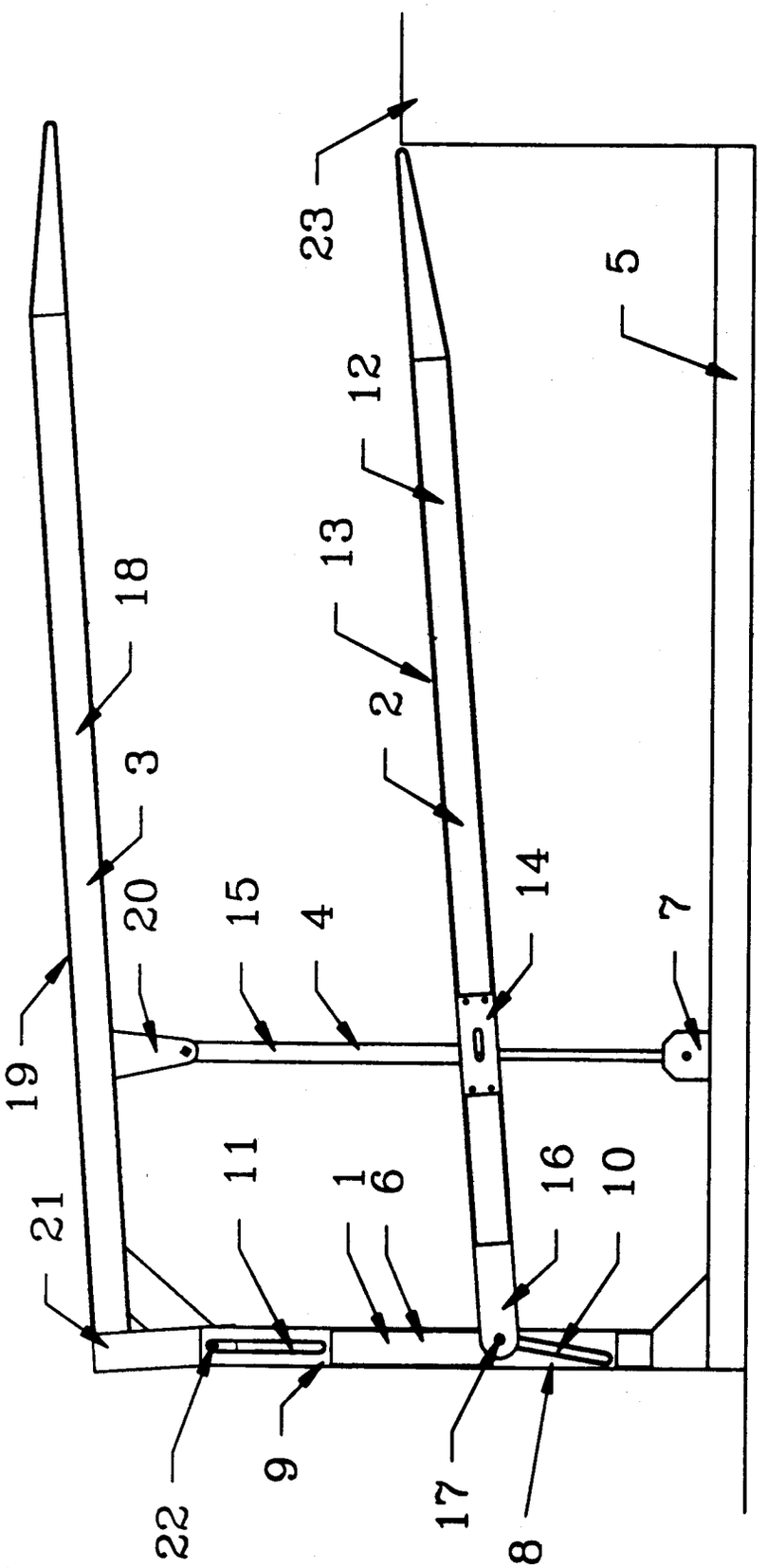


FIGURE 2

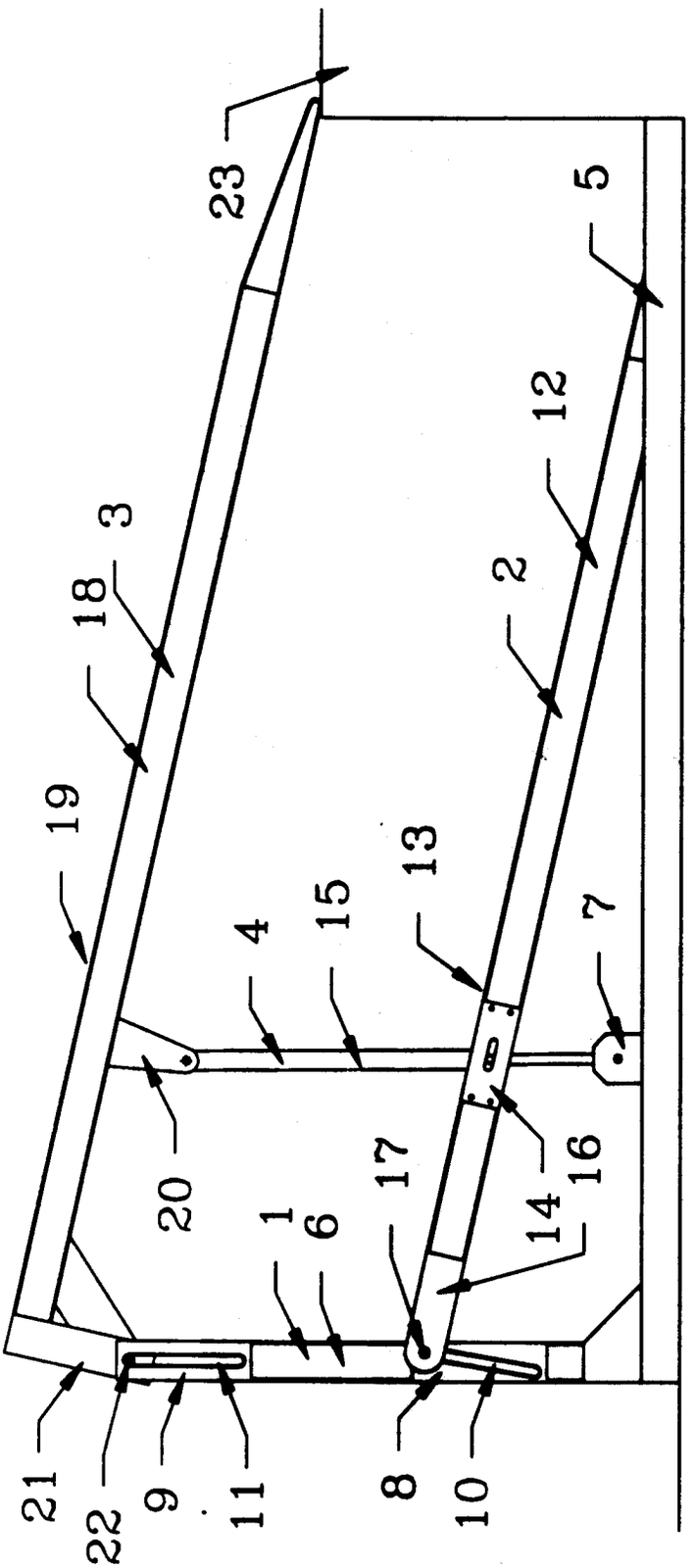


FIGURE 3

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# EUROPEAN SEARCH REPORT

Application Number

EP 92 60 0006

## 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 ) |
|---|---|---|---|
| Y | DE-A-1 929 381 (OTTO WÖHR KG)<br>* page 4, line 27 - page 5, line 11; figures 5,6 * | 1-3 | E04H6/06 |
| Y | DE-A-2 208 654 (ALBERSTADT)<br>* the whole document * | 1-3 | |
| A | US-A-3 984 011 (TREPPESCH)<br>* column 1, line 10 - line 32 *<br>* column 1, line 65 - column 2, line 53 *<br>* column 3, line 15 - line 29; figures 1,2 * | 1-3 | |
| A | DE-A-2 260 711 (WÖHR SEN.) | | |

| TECHNICAL FIELDS SEARCHED (Int. Cl.5 ) |
|---|
| E04H |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 21 SEPTEMBER 1993 | PORWOLL H.P. |

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EPO FORM 1503 03.82 (P0401)