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(54) **Parking barrier**

(57) An obstruction or barrier unit for protecting a parking space, comprises an obstruction member (12) arranged to move between raised and lowered positions, an actuator (18) arranged to receive fluid under pressure to move the obstruction from one position to

the other, a storage means (26) for storing fluid under pressure, valve means (22) arranged to be remotely controlled to allow fluid to flow from the primary storage means (26) to the actuator (18), and recharging means (27, 29) which respond to depression by the wheels of a vehicle to recharge the storage means (26).

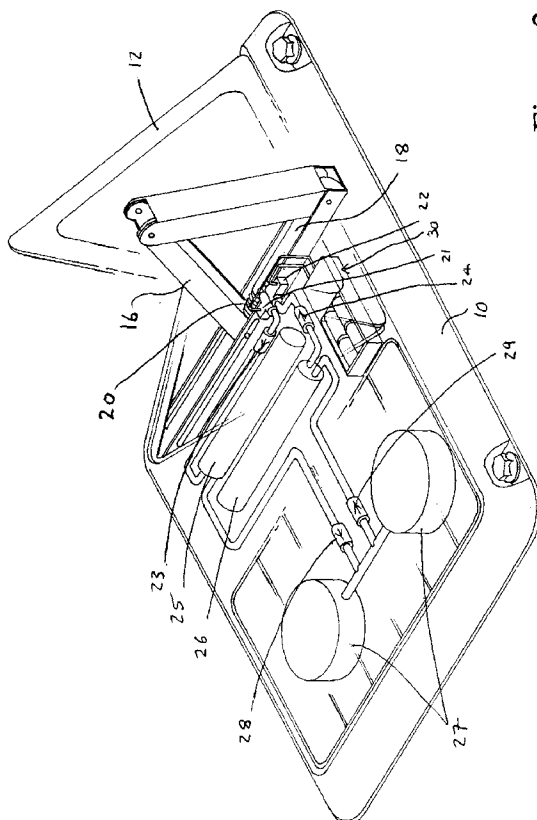


Figure 2

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Description

This invention relates to a unit which serves as a barrier or obstruction for parking spaces.

Various arrangements have been proposed previously for providing a barrier or obstruction for car parking spaces, in order to reserve these spaces for intended users. These arrangements have however suffered from a number of disadvantages, mainly being either difficult to use or of complex construction and requiring electrical power.

I have now devised a barrier or obstruction unit which is straightforward to use and is of relatively simple construction and does not require connection to an external power source.

In accordance with this invention there is provided an obstruction or barrier unit for protecting a parking space, the unit comprising an obstruction member arranged to move between raised and lowered positions, an actuator arranged to receive fluid under pressure to move the obstruction from one said position to the other, means for storing said fluid under pressure, valve means arranged to be remotely controlled to allow said fluid to flow from the storage means to the actuator, and means responsive to depression by the wheels of a vehicle to recharge the storage means.

Preferably the obstruction member is spring-biased towards its lowered position but is held in its raised position by fluid introduced into the actuator and held against escape. The obstruction member is then lowered by remotely-controlling the valve means to allow fluid to be expelled from the actuator: preferably the expelled fluid flows to a second storage means. In order to raise the obstruction, the valve means is remotely-controlled to allow fluid from the primary storage means to flow into the actuator. It will be appreciated that the primary storage means operates at substantially higher pressures than the secondary storage means. Preferably each storage means comprises a cylinder having a spring-loaded plunger.

Preferably the recharging means comprises one or more compressible chambers disposed within the unit under a pad over which the vehicle wheels pass. Under compression of these chambers, the fluid within them is forced into the primary storage means. Once the vehicle has passed over the unit, the compressed chambers are restored by receiving fluid from the secondary storage means.

It will be appreciated that the barrier or obstruction unit of this invention is of relatively simple construction and is straightforward to operate. In particular it does not require connection to an external power source.

An embodiment of this invention will now be described by way of example only and with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a unit in accordance with this invention;

FIGURE 2 is a similar view of the unit with parts cut away to show internal components of the unit; and
FIGURE 3 is a section through the unit showing details of a pivoted obstruction member of the unit.

Referring to the drawings, there is shown a unit which serves as a barrier or obstruction to protect a reserved car parking space. The unit comprises a flat, generally rectangular body 10 for bolting in place on the ground, and a triangular obstruction member 12 which is hinged adjacent the front edge of the flat body 10: in use the member 12 pivots between a raised position (shown in Figure 1) and a lowered position, in which it lies flat on the top of the body 10. The top of the body 10 is formed with a rectangular aperture into which a flexible pad 14 is fitted, for a purpose which will be described below. The edges of the body 10 are chamfered as shown.

A strut 16 is hinged at one end to a mid-point of the obstruction member 12 and at its other end to the piston of an actuator cylinder 18 which is positioned within the body 10, extending from front-to-rear of the latter. A spring 20 acts on the lower end of the strut 16 and urges this end of the strut rearwardly of the unit, so as to bias the member 12 towards its lowered position, flush with the top of the body 10.

As shown in Figure 2, the interior of actuator cylinder 18 is connected via two solenoid-operated valves 21,22 and respective one-way valves 23,24 to respective storage cylinders 25,26: it will be noted that one-way valves 23,24 are directed oppositely to each other. Two compressible chambers 27 are positioned under the flexible pad 14 of the unit, and are connected together and via oppositely-directed one-way valves 28,29 to the storage cylinders 25 and 26 respectively. The unit further comprises a battery-powered electronic control system 30 for the solenoid valves 21,22: the car driver authorised to use the parking space has a controller for remotely operating the unit. Preferably the unit includes a solar panel arrangement for recharging the batteries of the electronic control system 30.

In use, suppose the obstruction member 12 is in its raised position: at this time, the actuator cylinder 18 is filled with fluid under pressure so as to hold its piston in its retracted position against the bias of the spring 20, and the solenoid valves 21 and 22 are closed to maintain the fluid pressure within the cylinder 18. When the authorised car wishes to park, the driver remotely operates the control system 30 to open the solenoid valve 21: fluid then flows from within the cylinder 18 via one-way valve 23 and into the storage cylinder 25, as the spring 20 acts to extend the piston of the actuator cylinder 18 and lower the obstruction member 12. The solenoid valve 21 then closes.

The driver is then able to drive over the unit: in so doing, the car wheels ride over the flexible pad 14 and compress the fluid chambers 27; this expels fluid from the compressed chambers 27, and this fluid passes via

the one-way valve 29 into the storage cylinder 26. The latter cylinder comprises a spring-loaded plunger which is depressed as the fluid is forced into the cylinder.

Once the driver has parked his car, he is able to raise the obstruction member 12 by remote control: this opens solenoid valve 22 and the pressurised fluid within storage cylinder 26 then flows via one-way valve 24 and solenoid valve 22 into the actuator cylinder 18; the fluid from storage cylinder 26 is at such a high pressure that the bias of spring 20 is overcome and the member 12 is raised. The solenoid valve 22 then closes.

When the obstruction member 12 lowers, fluid from the actuator cylinder 18 flows to the storage cylinder 25 and stored in that cylinder at relatively low pressure. After the chambers 27 have been compressed by the car wheels, the pressure within storage cylinder 25 is however sufficient to replenish the fluid within chambers 27 via the one-way valve 28.

Claims

1. An obstruction or barrier unit for protecting a parking space, said unit comprising an obstruction member (12) arranged to move between raised and lowered positions, an actuator (18) arranged to receive fluid under pressure to move said obstruction (12) from one said position to the other, primary storage means for storing said fluid under pressure, valve means (22) arranged to be remotely controlled to allow said fluid to flow from said primary storage means (26) to said actuator (18), and recharging means (27, 29) responsive to depression by the wheels of a vehicle to recharge said primary storage means (26).
2. An obstruction or barrier unit as claimed in Claim 1, wherein said obstruction member (12) is spring-biased towards its lowered position
3. An obstruction or barrier unit as claimed in Claim 1 or 2 wherein said obstruction member (12) is normally held in its raised position by fluid introduced into said actuator (18) and held against escape.
4. An obstruction or barrier unit as claimed in any preceding claim, comprising a secondary storage means (25) for receiving fluid expelled from said actuator (18) in response to remote-controlled opening of a valve (21).
5. An obstruction or barrier unit as claimed in any preceding claim, wherein said recharging means comprises one or more compressible chambers (27) disposed under a pad (14) and arranged so that a vehicle passing over said pad (14) causes fluid within said chambers (27) to be forced into said primary storage means (26).

6. An obstruction or barrier unit as claimed in Claim 5 appended to claim 4, wherein said chambers (27) are re-charged with fluid from said secondary storage means (25).
7. An obstruction or barrier unit as claimed in an preceding claim, wherein the or each storage means (25, 26) comprises a cylinder having a spring-loaded plunger.
8. An obstruction or barrier unit as claimed in any preceding claim, wherein said valve means comprises an electrically powered valve means.
9. An obstruction or barrier unit as claimed in Claim 8 comprising one or more batteries for powering said valve means.
10. An obstruction or barrier unit as claimed in Claim 9 comprising a solar panel arrangement for recharging said batteries.

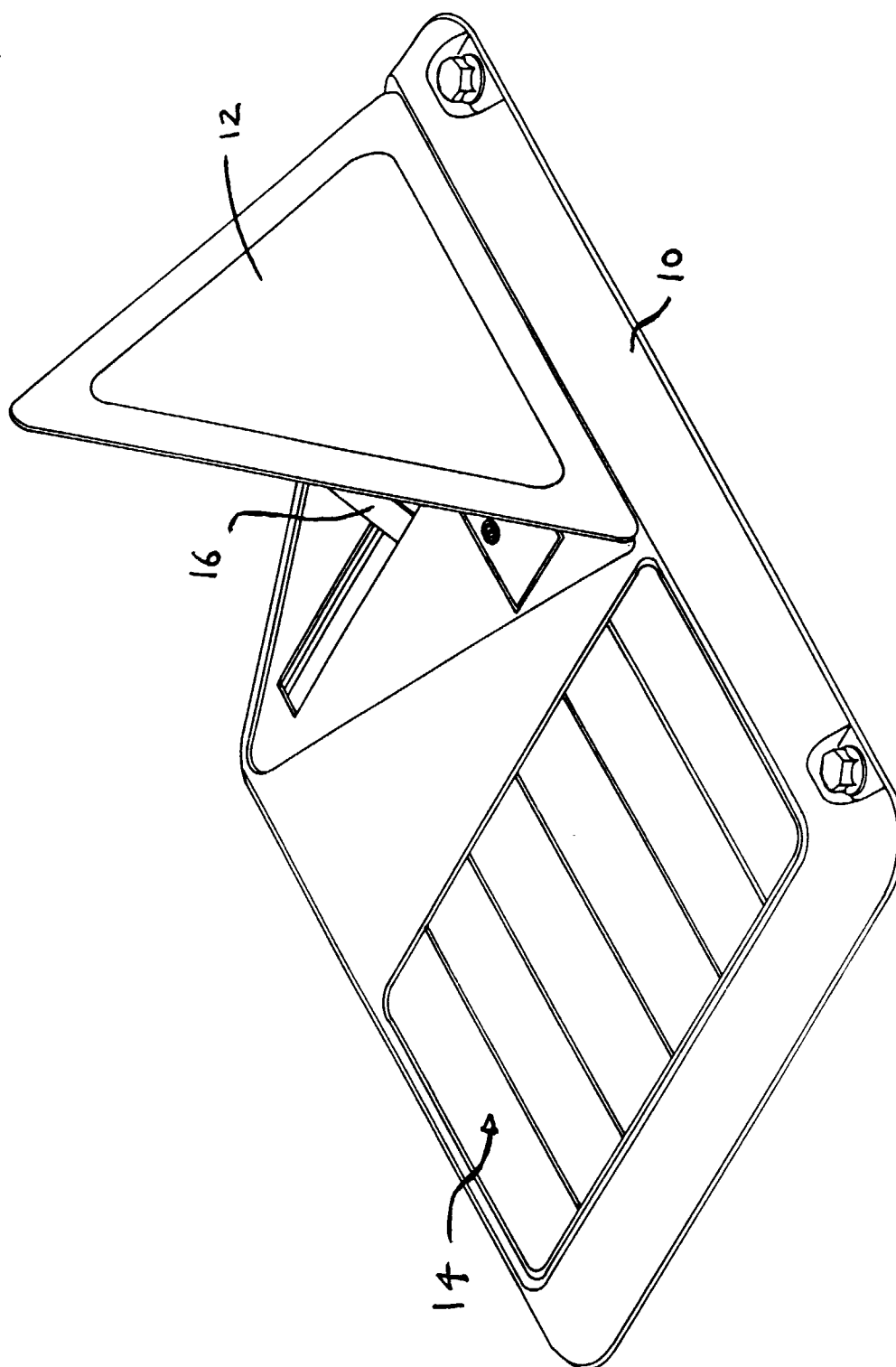


Figure 1

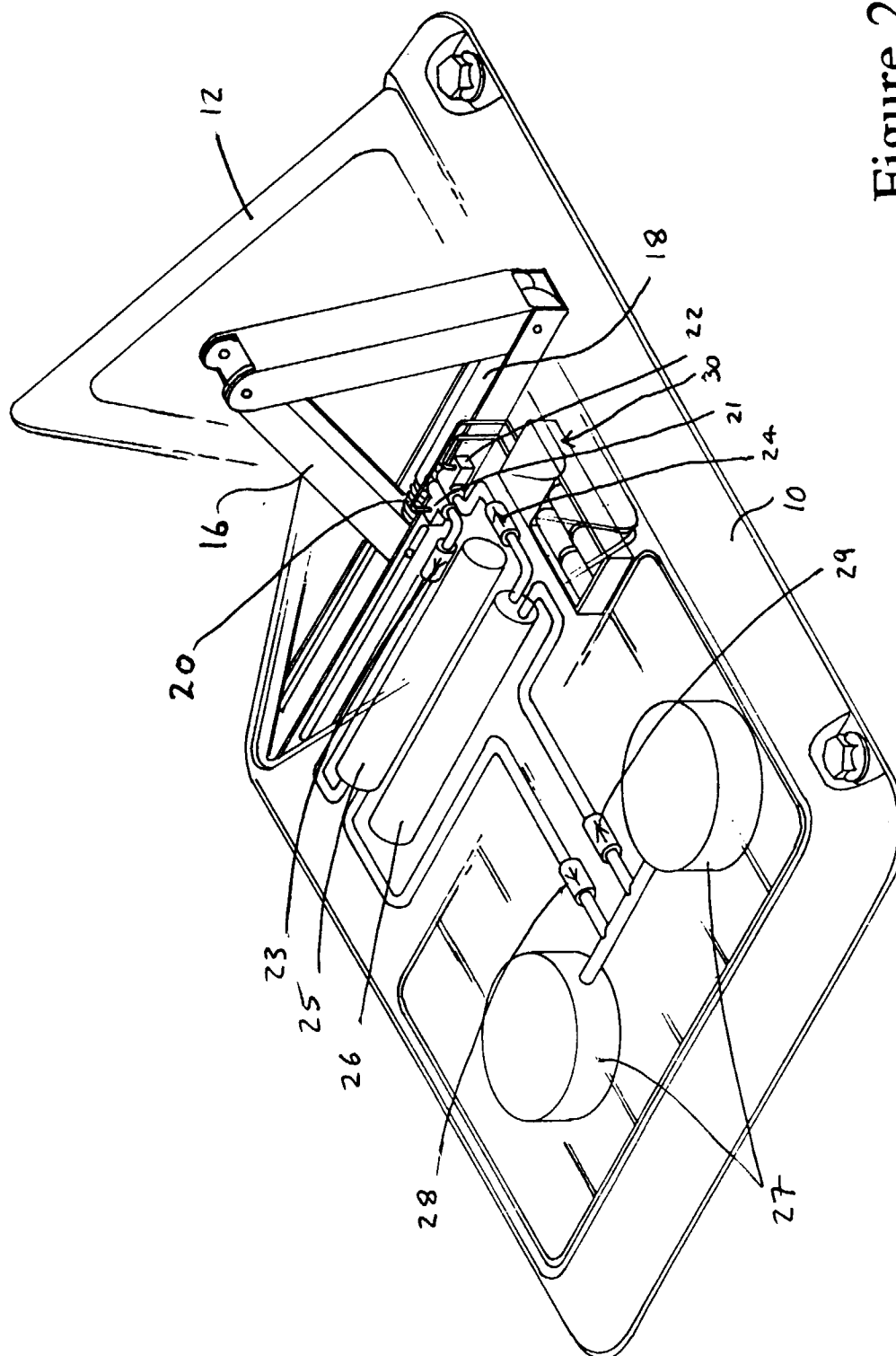


Figure 2

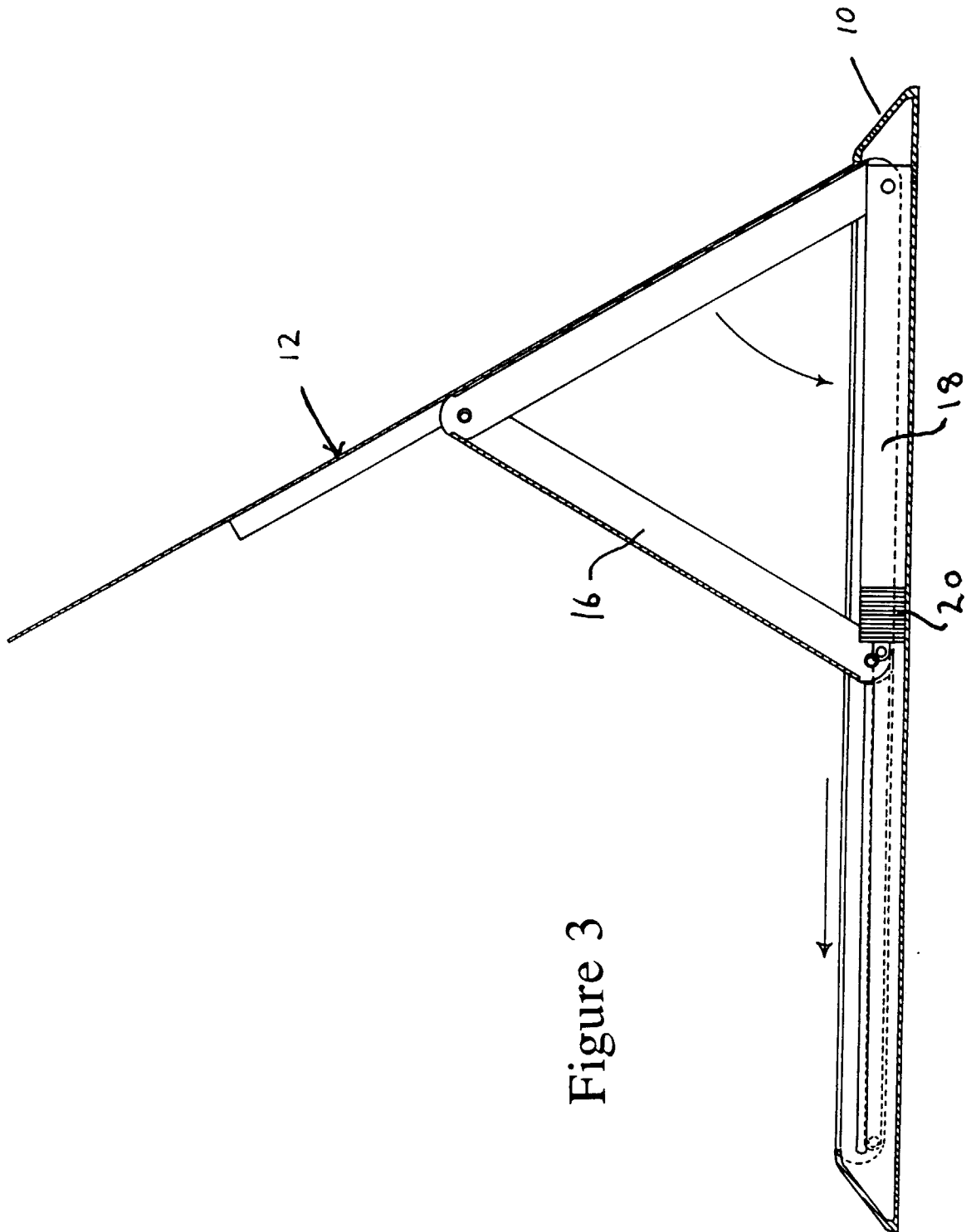


Figure 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 3416

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.6)
X	DE-A-40 30 099 (W. SIMON) * column 1, line 26 - column 2, line 14; figure 1 *	1-3,7-10	E01F13/08
X	EP-A-0 571 305 (J. PICHON) * column 2, line 50 - line 58 * * column 5, line 24 - line 40; figure 5 * -----	1,4-6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E01F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 August 1996	Examiner Verveer, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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