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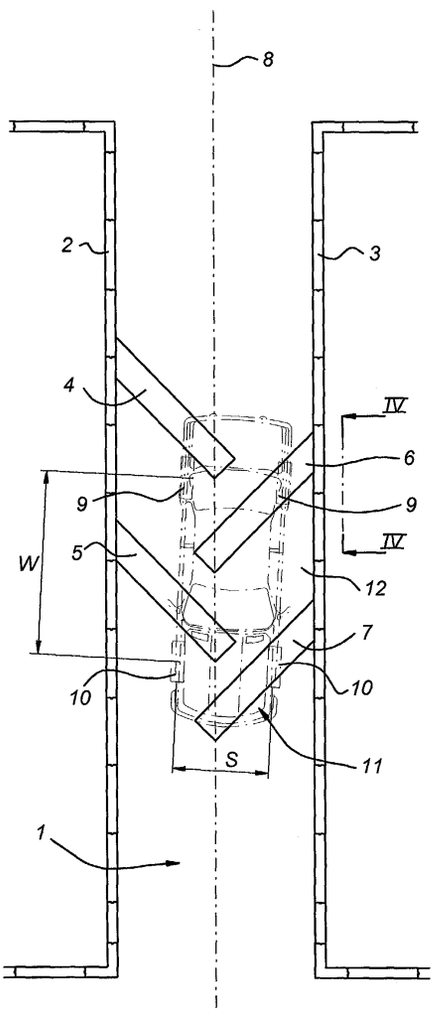
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## (54) Engineered gateway for selectively allowing road vehicles to pass through

(57) An engineered gateway for selectively allowing road vehicles to pass through, comprises a road section, the pavement surface of which has lowered sections such that vehicles which have a wheelbase and/or track width and/or tyre size less than a nominal value are not able to pass through. The lowered sections are determined by elongated patterns oriented obliquely with respect to the axis of the road section, such that vehicles can or cannot be allowed to pass through, depending on their wheelbase.

*Fig 1*




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## Description

**[0001]** The invention relates to a engineered gateway for selectively allowing road vehicles to pass through, comprising a road section provided with a pavement surface with differences in height, such as a pattern with lowered sections, such that vehicles which have a wheelbase and/or a track width and/or a tyre size less than a nominal value are not able to pass through.

**[0002]** An engineered gateway of this type is known. It is widely used in those circumstances where it is desirable, for example, to allow a public transport bus to travel along a certain route that is prohibited to other traffic. Such a case arises, for example, under circumstances where rat run traffic has to be kept out of a built-up area, whilst public transport has to be given easy access. Simply installing no entry signs is found not to be adequate for this purpose. Especially in the case of rat run traffic that is confronted by such a ban every day, there is a discernible trend that in the longer term the ban is ignored.

**[0003]** In these cases measures must be taken that make it physically impossible for a vehicle that is not permitted, frequently a car, to pass through. Various suggestions have already been made in this regard. A first possibility relates to the installation of a movable barrier (for example lift barriers), which opens as soon as an authorised vehicle has to pass through. A further possibility is to install a permanent engineered gateway, consisting of locally raised and lowered road sections. The dimensions thereof are so chosen that a relatively large vehicle, such as a public transport bus is able to pass through easily. However, smaller vehicles drop into the lowered road section or become stuck on the raised road section. As a result, the chassis makes contact with the higher road sections, such that the vehicle is stranded and in the worst case is damaged.

**[0004]** The advantage of this latter possibility is that this is relatively inexpensive and low maintenance. There is no need for moving parts and sensors, which require maintenance and can also easily be rendered inoperative or damaged. Nevertheless, the engineered gateway with a lowered surface also has disadvantages. As a consequence of the nature of this construction, the traffic that is permitted also has to pass through cautiously. A further disadvantage is found when buses with a low access platform pass through. These have a relatively small ground clearance, as a result of which there is a high risk that the underside of the bus becomes damaged by the relatively high parts of the engineered gateway. Of course, this problem arises mainly in the case of heavily loaded buses.

**[0005]** The aim of the invention is, therefore, to provide an engineered gateway of the permanent type described above that does not have these disadvantages. Said aim is achieved in that the lowered sections are determined by elongated patterns oriented obliquely with respect to the axis of the road section.

**[0006]** These elongated patterns preferably comprise continuous grooves and are matched to the dimensions of a car in such a way that the latter could become stuck in them when passing through. Vehicles with a larger wheelbase, such as public transport buses, are, however, able to pass through easily, even without reducing speed too much. The oblique direction of the patterns/grooves has the effect that the relatively broad tyres of such larger road vehicles make a gradual transition from the one edge of the grooves to the opposing edge, such that the wheels barely drop into the grooves.

**[0007]** The grooves can be made in various ways. According to a first possibility, they each extend continuously from the side to approximately the centre of the road section. According to an alternative possibility, the patterns comprise series of at least two grooves, which series extend from the side to approximately the centre of the road section.

**[0008]** The grooves can extend from both sides of the road section, the grooves that extend from the one side being at an angle to the axis that is opposed to that of the grooves that extend from the other side. Furthermore, the grooves that extend from the one side of the road section can be offset with respect to the grooves that extend from the other side. The width of the grooves is preferably greater than the width of a tyre of a nominal car.

**[0009]** Reference has been made above to the wheelbase. This is the distance from the front wheel axle to the rear wheel axle. The track width is defined as the distance from the centre of the left wheel to the centre of the right wheel on one and the same axle.

**[0010]** The invention will be explained in more detail below with reference to an illustrative embodiment shown in the figures.

Figure 1 shows a plan view of the engineered gateway, with a car.
Figure 2 shows a plan view of an engineered gateway, with a bus.
Figure 3 shows the view III-III from Figure 2.
Figure 4 shows the view IV-IV from Figure 1.

**[0011]** An engineered gateway according to the invention intended for selectively allowing road vehicles to pass through is shown in plan view in Figures 1 and 2. The engineered gateway comprises a road section 1, enclosed on both sides between boundaries 2, 3. Four elongated grooves 4 - 7 which are oriented obliquely with respect to the road axis 8 have been made in the road section.

**[0012]** In the illustrative embodiment shown, two elongated grooves 4, 5 and 6, 7 have been made on each of the sides 2, 3, respectively, which grooves extend approximately as far as the road axis 8 and overlap one another.

**[0013]** In Figure 1 it is shown that the distance between the elongated grooves 6, 7 and 4, 5 differs, so

that the front wheel 10 and the rear wheel 9 of each car drop into these grooves. The consequence of this is that on one side the car 11 drops down into the elongated grooves 6, 7 and the underside thereof makes contact with the pavement surface 12. As a consequence of this, the road vehicle 11 is stranded and the underside is possibly also damaged. The engineered gateway is thus an effective barrier for cars.

**[0014]** The situation is completely different when the engineered gateway is used by a bus, as shown in Figure 2. The wheelbase w of the bus is so large that it is never possible for two wheels on one side to drop into a groove 4 - 7 at the same time. The track width is indicated by letter s. As shown in Figure 2, one of the rear wheels 9' is located at the elongated groove 4. However, the other three wheels are firmly on the pavement surface 12, so that the bus 11' is hardly impeded.

**[0015]** An additional factor is that the width and the diameter of a tyre of a bus 11' are so large that the tyre barely drops into the groove 4. The width of the tyre also plays a role here: the tyre can cross fairly gradually from the one side edge to the other side edge of the groove 4, 5, which additionally counteracts dropping down.

**[0016]** However, as shown in Figure 4, the dimensions of a tyre for a normal car are such that this drops down appreciably further and will result in the vehicle becoming stranded.

## Claims

1. Engineered gateway for selectively allowing road vehicles (11, 11') to pass through, comprising a road section (1), the pavement surface (12) of which has lowered sections (4 - 7) such that vehicles which have a wheelbase and/or track width and/or tyre size less than a nominal value are not able to pass through, **characterised in that** the lowered sections (4 - 7) are determined by elongated patterns (4 - 7) oriented obliquely with respect to the axis (8) of the road section (1).

2. Gateway according to Claim 1, wherein the patterns comprise grooves (4 - 7) that each extend continuously from the side (2, 3) to approximately the centre of the road section (1).

3. Gateway according to Claim 1 or 2, wherein the patterns comprise series of at least two grooves, which series extend from the side (2, 3) to approximately the centre of the road section (1).

4. Gateway according to Claim 2 or 3, wherein grooves (4 - 7) extend from both sides (2, 3) of the road section (1).

5. Gateway according to Claim 2, 3 or 4, wherein the grooves (4, 5) that extend from the one side (2) are at an angle to the axis (8) that is opposed to that of the grooves (6, 7) that extend from the other side (3).

6. Gateway according to Claim 5, wherein the grooves (4, 5) that extend from the one side (2) of the road section (1) are offset with respect to the grooves (6, 7) that extend from the other side (2).

7. Gateway according to one of Claims 2 - 6, wherein the grooves (4, 5) that extend from the one side (2) are oriented approximately perpendicularly with respect to the grooves (6, 7) that extend from the other side (3).

8. Gateway according to one of Claims 2 - 7, wherein the grooves (4, 5) that extend from the one side (2) of the road section overlap the grooves (6, 7) that extend from the other side (3) in the direction transverse to the axis (8).

9. Gateway according to one of Claims 2 - 8, wherein two grooves (4 - 7) extend from each side (2, 3).

10. Gateway according to one of the preceding claims, wherein, in the direction of the axis (8), the distance between the grooves (4, 5; 6, 7) that extend from one side (2; 3) of the road section (1) is approximately equal to the wheelbase of a nominal car (11).

11. Gateway according to one of the preceding claims, wherein, in the direction of the axis (8), the centre-to-centre distance of the grooves (4, 5; 6, 7) that extend from one side (2; 3) of the road section (1) is approximately equal to 2 to 5 m.

12. Gateway according to one of the preceding claims, wherein the width of the grooves (4 - 7) is greater than the width of a tyre of a nominal car (11).

13. Method for the use of the gateway according to one of the preceding claims, wherein the configuration of grooves is such that certain vehicles drop into the grooves with at least two wheels at the same time on one side (left or right), but not on the same axle.

Fig 1

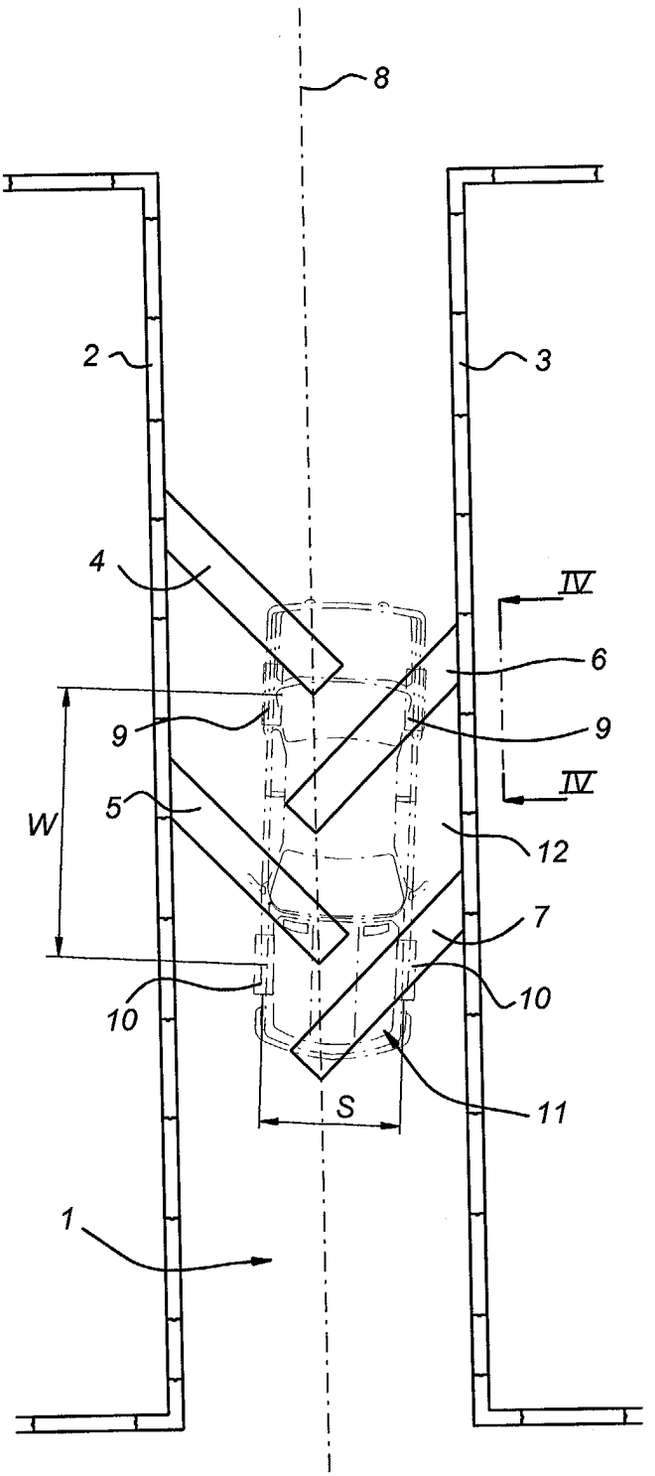


Fig 2

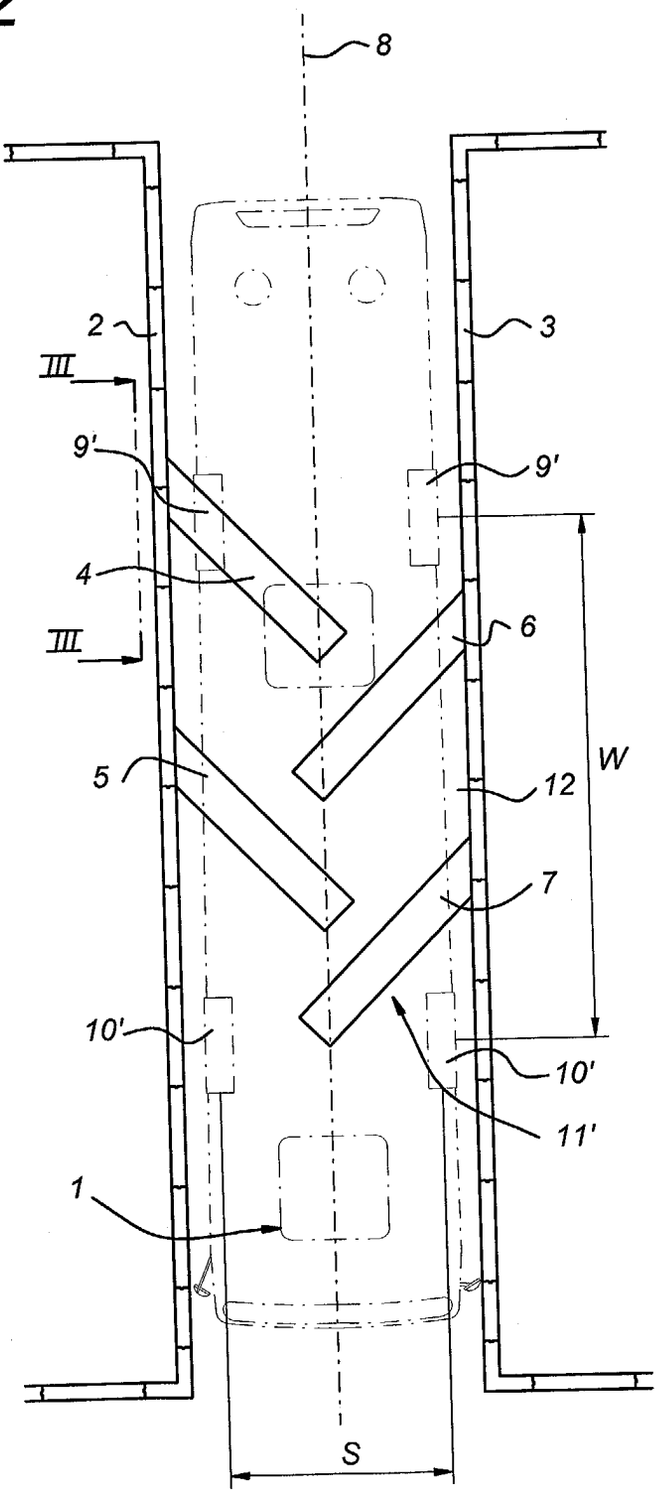


Fig 3

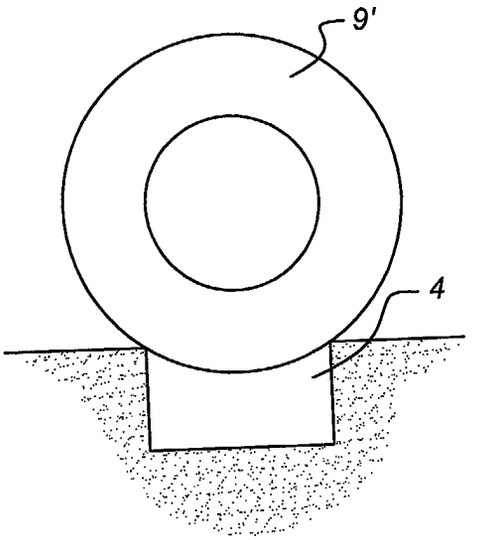
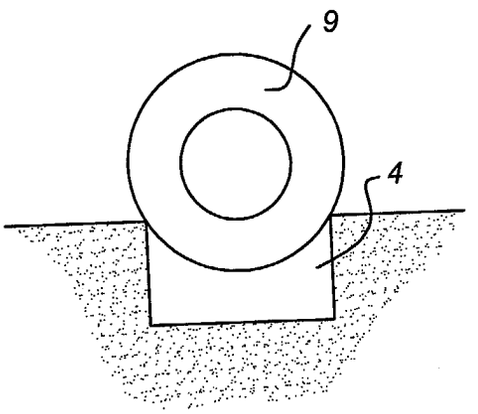



Fig 4



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# EUROPEAN SEARCH REPORT

Application Number
EP 04 07 6552

## 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.7) |
|---|---|---|---|
| A | DE 37 09 686 A (WESTFAELISCHE VERKEHRSGESELLSC)<br>6 October 1988 (1988-10-06)<br>* the whole document *<br>----- | 1,12 | E01F9/047 |
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E01F

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 19 October 2004 | Kriekoukis, S |

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 07 6552

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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19-10-2004

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82