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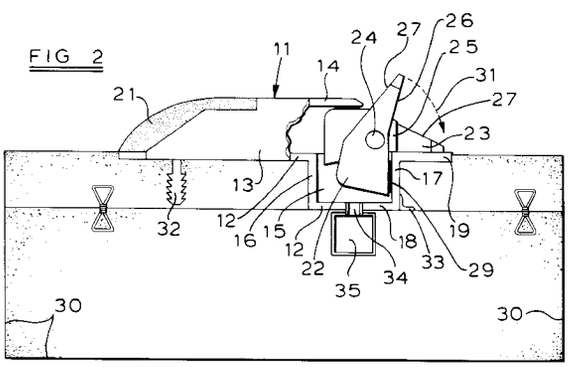
## (54) Traffic flow control unit.

(57) A traffic flow control unit for installation at a road surface comprises a fixed body (11), a barrier member (22 or 23) pivotally mounted to the body and pivotal between a deployed position where it projects upward and acts as a barrier to prevent traffic flow and a retracted position where it allows traffic to pass. The body (11) projects above the road surface such as to provide a speed bump with a speed control entry ramp (21) at its entry side and the barrier member (22 or 23) at its exit side.

FIG 2

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The invention relates to a traffic flow unit for installation at a road surface for controlling the flow of road traffic.

In some car parking areas or on factory sites or in other areas where it is desired to control road traffic flow it is known to provide a traffic flow unit in the road surface for this purpose. A traffic flow control unit incorporates a plate which is movable, normally by pivoting action, between a retracted position where it is flush with the road surface and a deployed position where it projects sufficiently from the surface to prevent flow of traffic.

Typically such a flow plate is used in a situation where traffic flow is always allowed in one direction and is always to be prevented in the opposite direction. The flow plate can then be a simple pivoting member which retracts by pivoting when engaged by wheels of a road vehicle in one direction but incorporates a stop to prevent rotation in the reverse direction whereby it prevents traffic flow. Of course this prevention is not necessarily absolute but the plate should project sufficiently to act as a very strong deterrent and generally to inflict damage on a vehicle which does endeavour to pass in the reverse direction.

One problem with traffic flow control units incorporating flow plates is that traffic can pass over them quickly in the direction in which traffic flow is permitted. This can result in very noisy operation and a high degree of wear and tear on the mechanism.

An object of the invention is to provide a traffic flow control unit in which this disadvantage is overcome or reduced.

The invention is concerned particularly with a traffic flow control unit for installation at a road surface comprising: a fixed body, a barrier member pivotally mounted to the body and pivotal between a deployed position where it projects upward and acts as a barrier to prevent traffic flow and a retracted position where it allows traffic to pass. According to the invention such a traffic flow control unit is characterised in that the body projects above the road surface such as to provide a speed bump with a speed control entry ramp at its entry side and the barrier member at its exit side.

The provision of a speed bump in connection with the flow control unit slows traffic down and thus acts as a deterrent to fast traffic flow over the unit.

Preferably the barrier member when retracted forms an exit ramp from the speed control bump. This allows a good height of barrier to be presented to prevent traffic flow from the exit side whereas the height of the barrier above the speed bump as encountered by a vehicle from the entry side is much less and facilitates retraction of the barrier by engagement by a vehicle wheel.

The shape or inclination of the entry and exit ramps may be such that the entry ramp provides a harsher disturbance to vehicle suspension than is provided by the exit ramp. Typically, the entry ramp has a convex contour and the exit ramp is a straight inclined ramp. The height of the speed bump above the road surface should preferably be at least 60 mm and more typically is between 70 mm and 80 mm. This provides sufficient height for an effective speed bump.

The barrier member may be biased towards its deployed position, held against further movement in one direction by a stop and freely pivotable in the opposite direction against the bias by contact from a vehicle wheel. It may be biased by its own weight.

The barrier member may be wedge shaped such that in its deployed position it provides an inclined face from the entry side and a vertical or near vertical face from the exit side.

There may be means for locking the barrier member in its retracted position.

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

Figure 1 is a perspective view of two traffic flow control units of the invention, also illustrating a vehicle wheel passing over one of the units; and

Figure 2 is a side elevation of one traffic flow control unit, with parts broken away, in particular showing details of its installation.

The main body 11 of a traffic flow control unit is a fabricated steel structure. The structure incorporates a base plate 12, side plates 13 and a top plate 14. A recess 15 below the level of the base plate 12 is defined by further vertical plates 16 and 17 and a horizontal plate 18. A secondary base plate 19 continues the line of the base plate 12 on the opposite side of the recess 15. The left hand section of the assembly as shown in Figure 2 is its entry side, in the form of a conventional speed bump, with the steel body 11 carrying a rubber or similar block 21 which acts as a ramp at the left hand side of the bump. The entry side speed bump contour is convex, following normal practice, to provide a harsh disturbance to vehicle suspension.

Towards its right hand end, the assembly incorporates two barrier members 22 and 23 which are freely pivotal about a transverse pivot pin 24 carried in two opposite side members 13 and also carried in a further central vertical support plate 25. To provide a long life to the pivot, the pin 24 is of stainless steel and a bronze or similar bush is provided for running on the pivot. The operative upper part of each barrier member 23 as shown in Figure 1 is generally wedge shaped with a steep near vertical surface 26 presented to flow of traffic from the right and a less steep angled surface 27 presented to flow of traffic from the left. The barrier member also incorporates a heavy lower section as shown which tends to cause it to pivot under its own weight into the deployed position shown for member 22 in Figure 1. The lower part of the barrier member as shown is housed within the recess 15 below the level of the roadway.

When traffic approaches from the right that is the

exit side, it meets the steep high wall 26 and if a vehicle is driven against this wall of the unit, retraction of the barrier member is prevented by engagement of the lower part of the member against a stop formed by vertical wall 17 of the recess 15. Thus traffic flow is prevented unless a driver takes very drastic action which is likely to damage the vehicle. The surface 26 incorporates red reflectors 28 to warn approaching traffic and may be painted in a prominent colour or otherwise have surface features to warn a vehicle driver. A rubber buffer 29 on the vertical plate 17 acts to silence and cushion movement of the barrier member into the near vertical position.

When a vehicle approaches from the left, that is the entry side, one feature which the driver sees is the up-ramp as provided in a conventional speed bump and this naturally causes the driver to slow to a speed of the order of 8 Kph. Once the wheels have ridden up onto the speed ramp, they engage the inclined surface of the barrier member 27. As they bear against it, they cause the barrier member to pivot as indicated by arrow 31 until the engaged barrier member reaches the generally horizontal retracted position shown for member 23 in Figure 2. In this position, the inclined surface 27 acts as an exit ramp with a straight inclined surface, allowing the vehicle to pass easily. After passage of a front wheel over a barrier member, the barrier member pivots up again to the near vertical position shown for plate 22. It can do this between passage of front and rear wheels so a rear wheel following a front wheel again pivots the barrier member down for passage of that rear wheel before the barrier member moves up again to its deployed position. Cushioning corresponding to the rubber block 29 is provided on the under surface of plate 14 to limit noise as the barrier member 22 or 23 is pivoted to its retracted position.

In order to install the traffic flow control unit in a roadway, some excavation is required and the whole assembly is then set in concrete. Lines 30 in Figure 2 illustrate typical limits for excavation. A projection 32 and a welded on angle section 33 help to anchor the unit firmly in position. A drainage connection 34 leads from the recess 15 to a drainage channel 35 so that rain water can be drained away from the recess. The excavation may be filled in two stages with wire ties connecting the two stages together.

In practice, a series of traffic flow control units are arranged side by side across all or most of the width of a roadway over which it is desired to control passage of traffic. Two such units are shown side by side in Figure 1 which also shows a vehicle traversing the row of units from left to right and in such a position where it has already engaged the inclined surface of a barrier member in its deployed position and swung it over to its retracted position where it acts as the exit ramp from the speed bump.

In most applications a simple pivotal action is all that is required of each barrier member. However, if traffic flow from exit to entry is to be allowed on some ' occasions, means may be provided for locking the barrier members in the retracted position. The barrier members may then be swung over manually and locked in position. Alternatively, means could be provided for powering the barrier members down to the retracted position. The unit could then be controlled by a security guard. For example it may be set to allow flow of traffic from left to right without any controls while passing from right to left is under the control of security personnel.

By combining a traffic flow control unit with a speed bump, a deterrent is provided against fast driving over the control unit which would generate excessive noise and wear. Also, it allows a relatively high barrier member to prevent traffic flow in one direction whilst there is only a low projection for engagement by the vehicle for its passage in the opposite direction. The overall height of the barrier member 22 above the road surface should be limited to about 100 mm to ensure that it does not damage a vehicle as the front wheels run down the ramp so that the vehicle straddles the unit. Where low ground clearance cars cross the unit regularly it could be useful to reduce the height to 85 mm.

The speed bump itself should have a height of at least 60 mm, otherwise it would not be very effective as a speed bump and preferably its height should be 70 to 80 mm.

By having a convex entry ramp for an effective speed bump and a straight inclined exit ramp which causes a less harsh disturbance to the vehicle suspension, the risk of grounding the vehicle on the barrier members is reduced while effective speed bump performance is retained.

## Claims

1. A traffic flow control unit for installation at a road surface comprising: a fixed body (11), a barrier member (22 or 23) pivotally mounted (at 24) to the body and pivotal between a deployed position (22-Fig 2) where it projects upward and acts as a barrier to prevent traffic flow and a retracted position (23-Fig 2) where it allows traffic to pass, characterised in that the body (11) projects above the road surface such as to provide a speed bump with a speed control entry ramp (21) at its entry side and the barrier member at its exit side.

2. A traffic flow control unit according to Claim 1 characterised in that the barrier member when retracted (23-Fig 2) forms an exit ramp from the speed control bump.

3. A traffic flow control unit according to Claim 2

characterised in that the shape or inclination of the entry and exit ramps are such that the entry ramp (21) provides a harsher disturbance to vehicle suspension than is provided by the exit ramp (27).

4. A traffic flow control unit according to Claim 3 characterised in that the entry ramp (21) has a convex contour and the exit ramp (27) is a straight inclined ramp.

5. A traffic flow control unit according to any one of the preceding claims characterised in that the height of the speed bump above the road surface is at least 60 mm.

6. A traffic flow control unit according to any one of the preceding claims characterised in that the barrier member is biased towards its deployed position, is held against further movement in one direction by a stop (17) and is freely pivotable in the opposite direction against the bias by contact from a vehicle wheel.

7. A traffic flow control unit according to Claim 6 characterised in that the barrier member is biased towards its deployed position by its own weight.

8. A traffic flow control unit according to any one of the preceding claims characterised in that the barrier member is wedged shaped (26-27) such that in its deployed position it provides an inclined face (27) from the entry side and a vertical or near vertical face (26) from the exit side.

9. A traffic flow control unit according to any one of the preceding claims characterised by further means for locking the barrier member in its retracted position.

10. A traffic flow control unit according to any one of the preceding claims characterised in that the body incorporates a recess (15) intended for installation below road surface level to allow part of the barrier member (22) to lie below road surface level when the barrier member is in its deployed position.

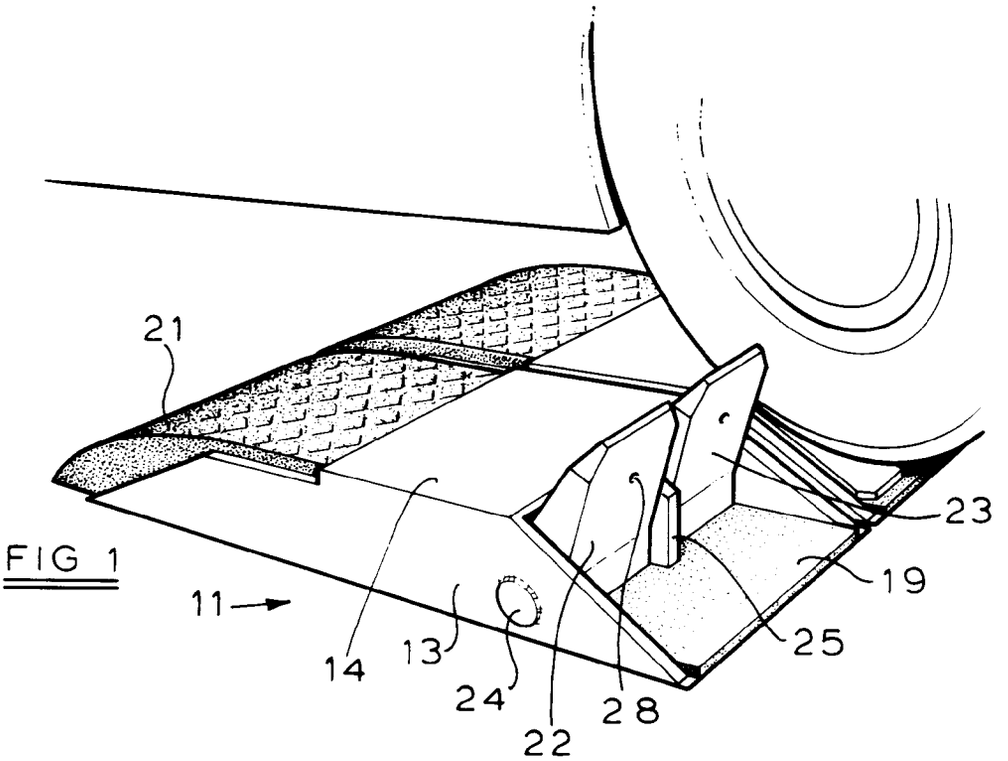
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FIG 1

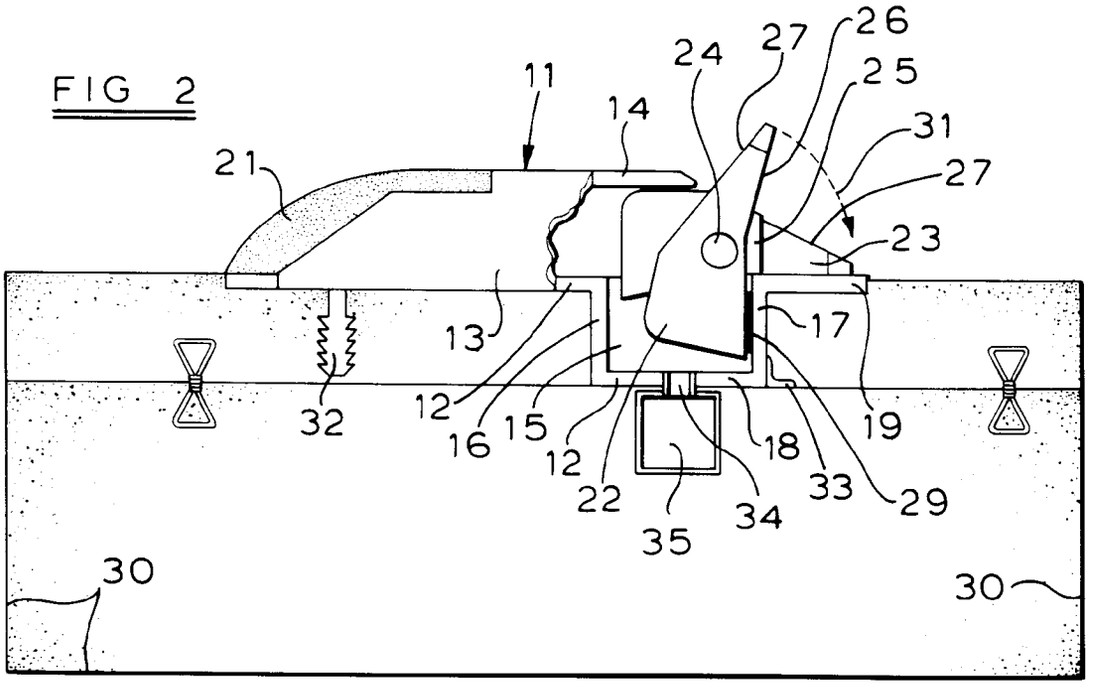
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FIG 2

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number

EP 92 30 2990

## 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<br>Y | FR-A-2 610 958 (L. VALENTIN)<br>* the whole document * | 1,2,8<br>6,7 | E01F13/00 |
| X<br>A | DE-A-2 843 426 (J. WINSPERGER)<br>* the whole document * | 1,6,8<br>2 | |
| X<br>A | EP-A-0 235 548 (C. MALKMUS-DÖRNEMANN)<br>* column 4, line 31 - column 7, line 4; figures *<br>* | 1,9,10<br>2 | |
| Y<br>A | FR-A-2 622 614 (MASAIR)<br>* page 7, line 23 - line 31; figure 2 * | 6,7<br>1 | |
| A | GB-A-2 208 884 (M.D. SILK) | | |
| A | FR-A-2 607 162 (S. KREL) | | |

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E01F

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 13 JULY 1992 | VERVEER D. |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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