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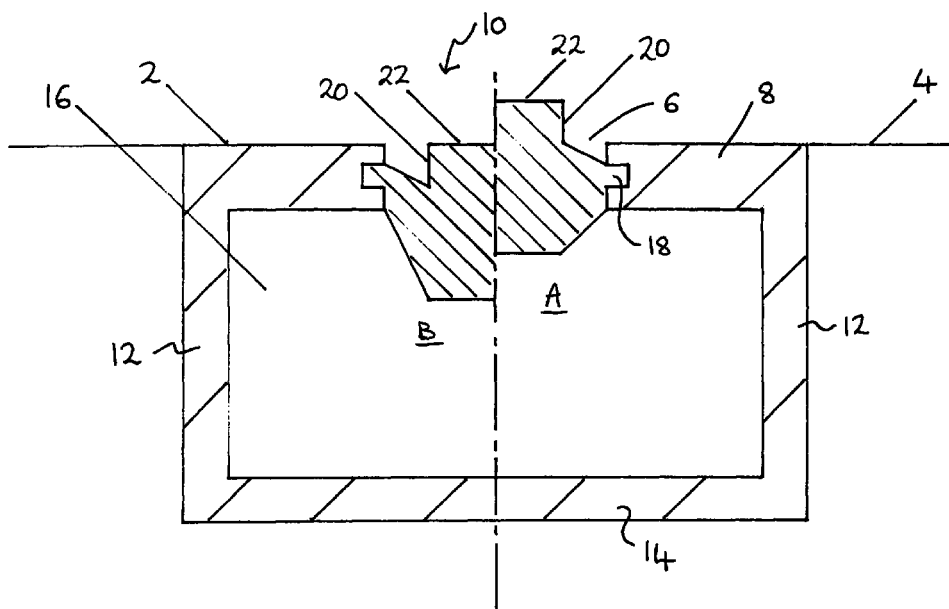
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(54) **Traffic lane marker**

(57) A lane marker comprises a housing (2) and a movable element (10) mounted in or on the housing. A fluid (16) is contained within a cavity defined by the housing and movable element. When the temperature is

above freezing the movable element extends from the housing and when the temperature falls below freezing the movable element retracts into the housing.



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Description

[0001] The present invention relates to a traffic lane marker and, in particular, to a device to be placed within the construction of a carriageway to indicate the position of a traffic lane.

[0002] Discrete devices using light to indicate the position of a traffic lane have found wide use but not in areas in which snow ploughs or the like are used regularly due to the problem of damage to the device caused by a snow plough. Known lane markers, such as that described in US 4595312, have attempted to overcome this problem by providing lane markers which have a depressable reflector element such that the reflector retracts into a housing upon impact. The cavity between the reflector element and the housing may be air filled as in US 459 312 or may be filled with a flexible or resilient member such as described in US 4597691 or US 4871280. However, such known devices are relatively complex to produce and the fact that they require impact of an oncoming vehicle to induce retraction means that they are inherently liable to damage.

[0003] In areas where snow ploughs or the like are used regularly, a common further problem is that of indicating to road users when the presence of ice on the carriageway is to be expected.

[0004] The present invention has been made from a consideration of the disadvantages with known lane markers and in order to provide a lane marker which overcomes one or more of the abovementioned problems. In particular, one preferred aim of the present invention is to provide a lane marker which both reduces the risk of damage thereto by snow ploughs or the like and which acts as an indicator of adverse temperature conditions.

[0005] According to the invention there is provided a lane marker comprising a housing, a movable element mounted in or on said housing and a fluid contained within a cavity defined by said housing and said movable element, the arrangement being such that when the temperature of said fluid is above a predetermined level said movable element assumes an extended position wherein at least part of said movable element extends beyond said housing and when the temperature of said fluid is at or below said predetermined level said movable element assumes a retracted position wherein said movable element does not extend substantially beyond said housing.

[0006] Preferably, the fluid comprises a gas, such as air. Preferably, the fluid comprises a compressible fluid. Preferably, the cavity is filled with the fluid. The predetermined level is preferably substantially in the range of -10°C to 10°C, typically in the range -3°C to 3°C.

[0007] Preferably, the predetermined level is substantially 0°C or the freezing point of water.

[0008] Preferably, the housing comprises a rigid enclosure. Preferably, the housing comprises an aperture for receiving the movable element. Preferably, the

movable element is flexible and spans the aperture in the housing. Preferably, the movable element comprises a flange adapted to be located in a corresponding channel of the housing.

[0009] Preferably, the movable element comprises visibility enhancement means. Preferably, such means are exposed when the element is in the extended position and concealed when the element is in the retracted position.

[0010] Preferably, the lane marker comprises one or more temperature sensitive means such as bimetallic strips. Thus, the lane marker of the invention is a temperature sensitive traffic lane position indicator which solves both problems.

[0011] The invention will now be described further by way of example only, with reference to the accompanying drawing which is a cross-sectional view through a lane marker of the invention.

[0012] The lane marker comprises a housing 2 which is typically a stiff or rigid enclosure. In use, the housing is embedded in the carriageway 4 so that the upper surface or rim thereof is substantially flush with the road surface. In the embodiment shown the housing has a hollow box-section shape with an aperture 6 in the top wall 8 thereof for receiving a movable element 10. The top wall 8, movable element 10, side walls 12 and base 14 of the housing define a cavity which contains a fluid 16. Typically, the cavity is substantially filled by the fluid. It will be appreciated that the housing may have any suitable form. The housing is typically sealed or integral to retain the fluid.

[0013] The movable element 10 typically comprises a flexible element which spans the aperture 6 and is secured to the housing 2 by suitable means such as a peripheral flange 18 locating in a corresponding channel in the side wall of aperture 6. The movable element may have any suitable shape corresponding to the shape of the aperture. The movable element may have any suitable profile but typically has sides 20 on the upper portion thereof which have properties which enhance its visibility to carriageway users when the element is in the extended position. The sides 20 may be reflectorised or the like. Typically the sides 20 may extend at substantially a right angle to the carriageway in use to enhance visibility.

[0014] In use, the housing 2 is embedded in the carriageway 4 to be substantially flush with the surface thereof. Under normal temperature conditions, for example above-freezing, fluid pressure raises the moveable element 10 to the extended position as shown at A on the right of the broken line in the drawing. The upper surface 22 of the element 10 extends beyond the housing 2 and the sides 20 thereof are exposed and project above the carriageway surface. When the temperature conditions of the system are at or fall below the predetermined temperature, for example at or below freezing, the fluid 16 contracts and the movable element 10 retracts to the position shown at B on the left of the

broken line. In the retracted position, the upper surface 22 of the element is typically substantially flush with the carriageway surface and the sides 20 are concealed.

[0015] The fluid in the cavity may comprise any suitable compressible fluid.

[0016] In general, the fluid, the dimensions of the stiff enclosure and the properties and dimensions of the flexible element are chosen such that only at temperatures above the predetermined level, for example above freezing, is the top of the flexible element above the level of the carriageway surface. Thus, when the movable element retracts under freezing conditions, the lane marker acts as an indicator of such conditions and allows free use of a snow plough.

[0017] The lane marker may include features not shown in the drawing such as an internal support for the movable element in its retracted position and a valve to provide access to the fluid filled chamber. The lane marker may also include one or more bimetallic strips or other temperature sensitive devices which may influence the position of the movable element.

[0018] In the example embodiment of the invention, failure of the housing seal causing leakage of the fluid results in retraction of the movable element thus providing an added safety advantage.

[0019] The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

[0020] All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

[0021] Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

[0022] The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

Claims

1. A lane marker comprising a housing (2), a movable element (10) mounted in or on said housing and a fluid (16) contained within a cavity defined by said housing and said movable element, the arrange-

ment being such that when the temperature of said fluid is above a predetermined level said movable element assumes an extended position wherein at least part of said movable element extends beyond said housing and when the temperature of said fluid is at or below said predetermined level said movable element assumes a retracted position wherein said movable element does not extend substantially beyond said housing.

2. A lane marker according to claim 1, wherein the fluid comprises a gas.
3. A lane marker according to any preceding claim, wherein the fluid comprises a compressible fluid.
4. A lane marker according to any preceding claim, wherein the predetermined level is substantially 0°C.
5. A lane marker according to any preceding claim, wherein the freezing point of the fluid is below the predetermined level.
6. A lane marker according to any preceding claim, wherein the housing comprises a rigid enclosure and the movable element is flexible.
7. A lane marker according to any preceding claim, wherein the housing comprises an aperture 6 for receiving the movable element and the movable element spans said aperture.
8. A lane marker according to any preceding claim, wherein the movable element comprises a flange (18) adapted to be located in a corresponding channel of the housing.
9. A lane marker according to any preceding claim, wherein the movable element comprises visibility enhancement means (20) which are exposed when the element is in the extended position and concealed when the element is in the retracted position.
10. A lane marker according to any preceding claim, comprising one or more temperature sensitive means.

