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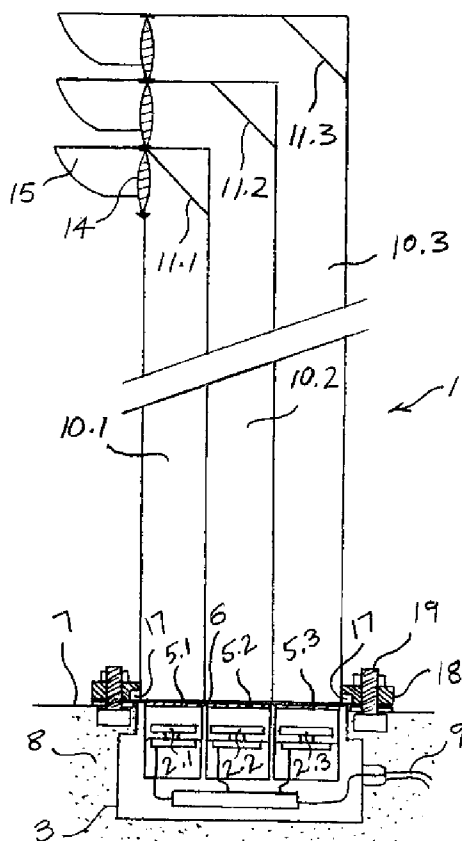
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ning of each regular issue of the PCT Gazette.

(54) Title: A TRAFFIC LIGHT



(57) **Abstract:** The invention provides a traffic light. The apparatus in-
cludes a light source contained in a housing and a reflector to direct light
at a position spaced apart from the source. The housing is planted in the
ground, preferably cemented in the pavement. The reflector is conve-
niently a suitably arranged object with a reflective surface. The support
extends upwardly from the housing providing a conduit arranged so that
the source projects light upwardly through the support to the reflective
object. From here the light is directed through a lens in an opening in the
support. The light source is an array of light emitting diodes (LEDs). In
a preferred embodiment, three such arrangements are provided together
as a traffic light assembly which switches between green, amber and red
light signals in the usual way. The upright support is removably secur-
able and relatively inexpensive. All the working components are pro-
tected in the housing. The traffic light also poses a reduced risk should a
motor vehicle collide with it. A damaged support can be easily replaced
using suitable fastening means.

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A TRAFFIC LIGHT**FIELD OF THE INVENTION**

- 15 The invention relates to a traffic light, in particular, for directing motor vehicle traffic on roads.

BACKGROUND TO THE INVENTION

- 20 Traffic lights are used on roads almost everywhere. They are important in regulating the crossing of motor vehicles through road intersections and generally controlling the flow of traffic. They also control the crossing of pedestrians.

- 25 These lights are often located on the pavement at road intersection corners and also on islands separating lanes of traffic. In these locations, they are exposed to any motor vehicle which strays from the road.

The impact in hitting a traffic light can itself be dangerous and sometimes fatal.

- 30 The absence of a traffic light following such an accident can be dangerous for other motorists. It also generally causes delays by preventing normal flow of traffic. Damage to a single traffic light can sometimes result in all the robots at

an intersection not working. In addition to all of this, the replacement costs involved in where traffic lights are damaged can be relatively significant.

5 The term "traffic light" is not to be limited to equipment used to signal motorists through switching between green, amber and red lights. Other signaling lights, such as for a pedestrian or a railway crossing are also the subject of this invention.

OBJECT OF THE INVENTION

10

It is an object of the current invention to provide a traffic light that at least partially overcomes the abovementioned problems.

SUMMARY OF THE INVENTION

15

In accordance with this invention there is provided a traffic light comprising a light source contained in a housing and a reflector to direct light at a position spaced apart from the source.

20 The invention further provides for the housing to be locatable in the ground and the reflector arranged to direct light from an elevated position.

Further features of the invention provide for the reflector to be provided on an elongate support; for the light source to be connected to the reflector through a
25 conduit; and for the reflector to be a reflective object.

The support preferably extends vertically from the housing and provides the conduit. The apparatus is arranged so that the source projects light upwardly through the support to the reflective object which directs light through an
30 opening in the support.

A further feature of the invention provides for the light from the reflector to be directed through a lens.

Further features of the invention provide for the light source to be an array of light emitting diodes (LEDs); for the source to emit green, amber and red light.

- 5 The term “reflector” is used in a broad sense as including any apparatus, equipment or component which will direct light from the source as required. This will thus extend to a conduit which reflects light along its length, such as optical fiber, and also to a prism, for example.

10 **BRIEF DESCRIPTION OF THE DRAWINGS**

These and other features of the invention will become more apparent from the following description, by way of example only, of the accompanying drawings in which

15

Figure 1 shows a schematic part cross-sectional side view of a traffic light in accordance with this invention;

Figure 2 shows a front view of the traffic light in Figure 1; and

Figure 3 shows a schematic cross-sectional side view of an alternative upper end for a traffic light of this kind.

20

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings, a traffic light (1) in accordance with the invention is shown. The traffic light (1) has a light source (2) contained in a housing (3). The source is an array of light emitting diodes (LEDs) (2). The LEDs (2) are positioned behind a lower transparent lens (5) supported in the top (6) of the housing (3).

25

30 The housing (3) is planted with its top (6) slightly above ground level (7). It is shown, in the drawings, between paving stones or cement slabs of a pavement (8). An electrical cable (9), from the housing (3) leads to suitable control

equipment (not shown) and also to a power supply. The control equipment may alternatively be provided in the housing (3).

5 An elongate support (10) is held erect above the lens (5). The support (10) is hollow forming a conduit to a light reflector (11). The reflector is a reflective object (11) within the support (10) at an elevated position adjacent its free, upper end. The reflector (11) is arranged to direct light from the source (2) through an opening (13) in the support (10). The opening (13) is provided with an upper lens (14). Mounted over the opening is a shade (15) of the
10 conventional kind. In addition to restricting visibility of the light to the correct lane of traffic, this also improves the visibility of the light during daylight conditions.

The support (10) is removably securable and has a laterally extending flange
15 (17) at its lower end. Suitable clamps (18) are used to engage the support (10) around the flange (17) fastening it in an upright position above the housing (3). The clamps (18) are shown secured to bolts (19) in the pavement (8) around the housing (3).

20 More specifically, the support (10) of the traffic light (1) shown includes three conduits (10.1), (10.2) and (10.3). Each conduit (10) is for a separate light source (2.1), (2.2) and (2.3) and has a separate reflector (11.1), (11.2) and (11.3).

25 Suitable colouring of the LEDs, either of the upper or lower lenses or even of the reflector will enable the assembly to operate as a traffic control light, with red, yellow (or amber) and green light signals. Separate coloured LED arrays are a preferred option but light from a single source may also be mixed to achieve the required colours.

30

The support (10) can be manufactured from suitable plastics pipe. A variation in configuration of the upper end of the traffic light (1) is shown in Figure 3. Alternatively the support (10) can be specifically moulded or extruded to a

desired form or otherwise made to requirement. For example, the support (10) can have a rectangular cross-section and be divided longitudinally into three conduits, each with a substantially square cross-section. Such a support could be extruded. Any suitable material may be used.

5

The reflector (11) could be a mirror or polished suitable metal plate providing the necessary reflective surface. A suitably arranged prism can also be used. Alternatively, it could be made of or include coloured reflective material, such as that used on road signs, for example.

10

The traffic light may include more than one reflective object where the support or conduit has a design which includes a bend. It will also be appreciated that a thinner support or conduit (10) could be used leading to a group of reflectors arranged to spread the light which is to be directed as a signal.

15

The support (10) can be designed to crumple or give way if it is hit by a motor vehicle. The support (10) and its components can be kept to a reasonably low cost. Impact by a motor vehicle should not damage any other parts of the traffic light. A replacement support (10) can be relatively easily fitted using the clamps (18) or some other suitable arrangement to fasten it in position. The fastening means is preferably not connected directly to the housing (3). Even if the clamps (18) are damaged, the housing (3) will be of robust construction to remain intact.

20

The top (6) of the housing (3) may be formed as a lid, hinged along one side and, having a seal at the edges. Suitable metal, plastics materials or settable resin can be used to make the housing (3). A hatch (not shown) in the top, to the side of the support (10) can be used to afford access to the housing without having to remove the support. Changing of the light source or any other necessary repairs can be effected when necessary. However, where LEDs are used, the light (1) should function for some number of years without requiring repairs or changes.

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The housing (3) may also contain any necessary controls for switching of the lights, as already mentioned, or other electrical equipment. The light source can be of any suitable kind.

- 5 In another, simpler embodiment the support need not provide a closed conduit. Light from the source can simply be directed upwardly to a reflector on a pole or other support. This can be used to provide a useful signal, particularly at night.

- 10 A further embodiment may use optical fibers or another suitable reflective conduit to carry light from the light source to a suitable elevated position. This would allow for thinner supports or far more complex traffic light arrangements on a single support, which need not be straight.

- 15 The invention provides a traffic light that is a less dangerous obstacle to motorists. The electrical components need not be damaged or and their workings affected should the support be struck down in an accident. As soon as a new support is erected, the traffic light will be operational again. Response units can carry supports in their vehicles and restore operation of damaged traffic lights within minutes of their arrival.

- 20 It will be appreciated that the apparatus of the traffic light (1) may also include mechanical and electric mechanisms to control or produce the required light signals. For example shutters may be used to prevent light from entering a conduit or a movable light fitting can direct light from a single source into
25 different selected conduits.

- The departure that this invention represents from the traffic lights conventionally used will be appreciated by a suitably skilled person. As such, the skilled person will also appreciate that a number of variations to the features of the described
30 embodiments can be made without departing from the scope of the current invention.

CLAIMS

1. A traffic light comprising a light source contained in a housing and a reflector to direct light from the source at a position spaced apart from the source.
- 5
2. A traffic light as claimed in claim 1 in which the housing is locatable in the ground and the reflector arranged to direct light from a position elevated above the housing.
- 10
3. A traffic light as claimed in claim 2 in which the reflector is a reflective object provided on an elongate support and the light source is connected to the reflective object through a conduit.
- 15
4. A traffic light as claim in any of claims 1 to 3 in which light from the reflector is directed through a lens.
5. A traffic light as claimed in any of claims 1 to 4 in which the light source is an array of light emitting diodes (LEDs).
- 20

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Figure 1:

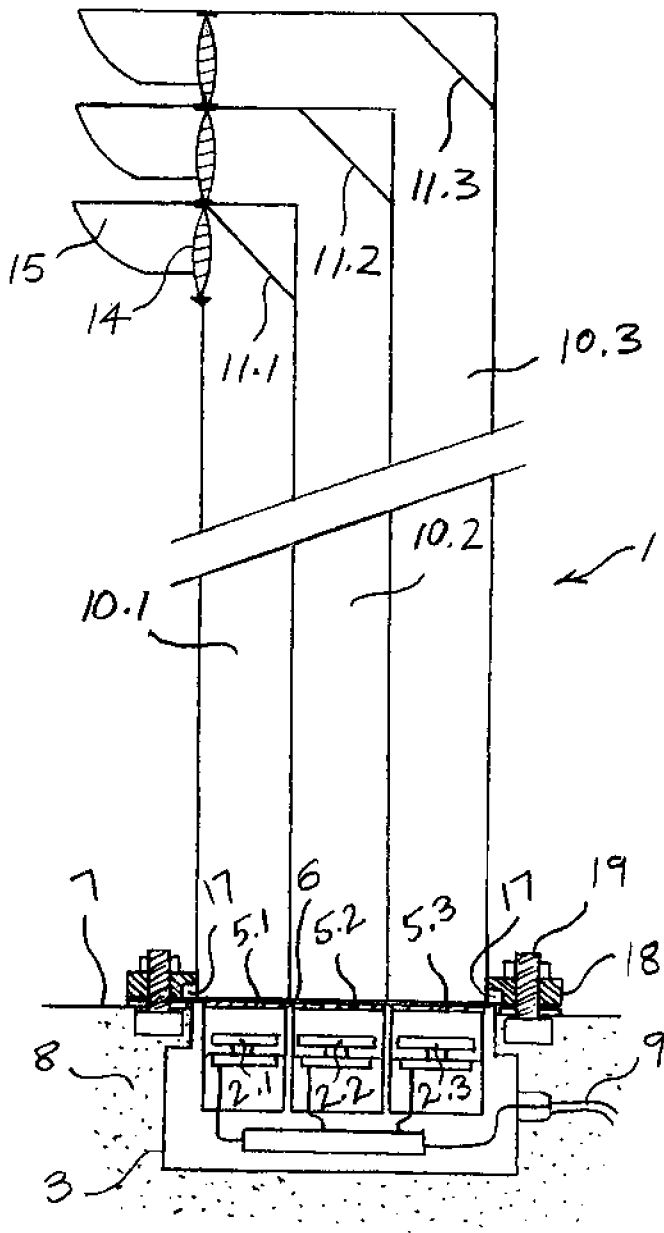


Figure 2:

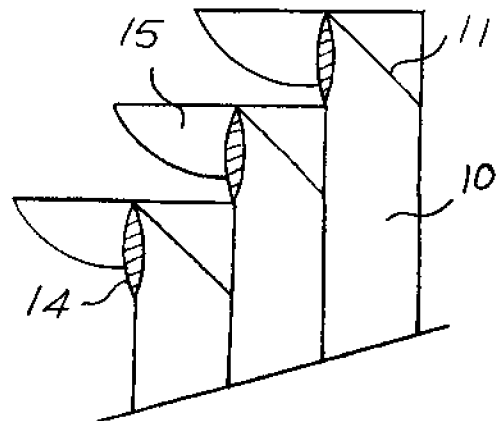
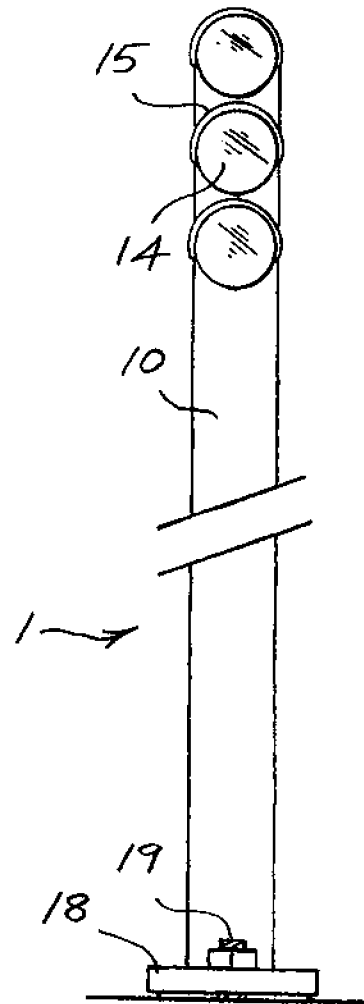


Figure 3: