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(71) Applicant: **Paoletti, Luciano**
60124 Ancona (IT)

(72) Inventor: **Paoletti, Luciano**
60124 Ancona (IT)

(74) Representative: **Baldi, Claudio**
Ing. Claudio Baldi S.r.l.
Viale Cavallotti, 13
60035 Jesi (Ancona) (IT)

(54) **A modular traffic divider comprising two solar panels**

(57) The present invention relates to a module (10) of a modular traffic divider comprising a base unit (20) adapted to be placed on the ground, said base unit (20) being provided with a housing groove (70) open towards the top, and at least two solar panels (3) disposed facing each other inside said housing groove (70) of the base unit (20).

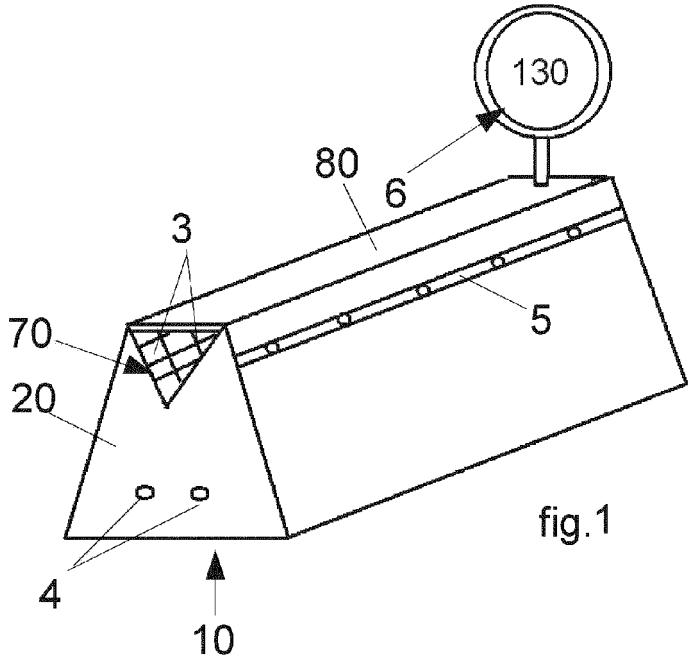

fig.1

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Description

[0001] The present invention relates to a module of a modular traffic divider and to a modular traffic divider comprising at least one of said modules.

[0002] A very popular kind of traffic dividers in roads and highways is used in the carriageway between two opposite lanes to separate lanes and increase safety, preventing a vehicle from invading the opposite lane.

[0003] Examples of this kind of traffic dividers, which are relatively modern, are reinforced concrete traffic dividers, often marketed with the name of "new-jersey", which are composed of a plurality of prefabricated modules interconnected by a modular fixing system and often mounted to separate the two lanes of the highway.

[0004] In spite of being very functional as separation element between the lanes, these traffic dividers are impaired by a drawback, which is especially related to their limited vertical volume.

[0005] While this is done, on one side, to reduce the total weight of each module, thus limiting the fabrication costs and simplifying installation, on the other side this requires the use of additional measures to reduce glare of users driving along the highway in one direction caused by the main headlights of the vehicles traveling in the opposite direction.

[0006] In view of the above, these traffic dividers are often combined with high hedges to prevent the aforesaid glare.

[0007] The application of hedges to the known types of traffic dividers, however, involves an initial installation cost followed by the need to maintain said hedges, which occupy a valuable space without any other advantage than preventing the undesired glare of users.

[0008] JP 2002 322617 discloses a module comprising two solar panels above the module that can be tilted with different angles.

[0009] KR 101 027 119 discloses a traffic divider module comprising only one solar panel recessed into the module.

[0010] CN 201 224 873 discloses a traffic divider module provided with solar panels externally provided on it.

[0011] The present invention intends to solve the drawbacks of the prior art by providing a multi-use modular traffic divider that can prevent glare, and is simple to install and maintain, while offering additional advantages and making the most of space.

[0012] Such a purpose is reached by a traffic divider according to the first attached claim.

[0013] Additional advantageous characteristics are the object of the attached subclaims, which are an integral part of this document.

[0014] The present invention is based on the idea of providing each module of the modular traffic divider with one or more solar panels, in such manner to use the space taken by the traffic divider to produce electrical energy that can be used by the module or transmitted to other utilities (other modules, street signs, storage batteries, lighting devices or the like) by means of an electrical connection between a module and the adjacent one.

[0015] The module of a modular traffic divider according to the invention comprises a base unit adapted to be placed on the ground, said base unit being provided with a housing groove open towards the top, and at least two solar panels disposed facing each other inside said housing groove of the base unit.

[0016] The invention will become clearer following to a detailed description of the enclosed drawings, which illustrate an embodiment, wherein:

- figure 1 is a module of a traffic divider according to the present invention; and
- figure 2 is an electrical diagram of the traffic dividers of Fig. 1.

[0017] Fig. 1 shows a module (10) of a traffic divider according to the present invention.

[0018] More specifically, Fig. 1 shows a single traffic divider module (10) that, in its operating condition, is adapted to be mounted in adjacent position and connected to other similar modules (10), in such manner to form a traffic divider with extension and direction (either rectilinear or curved) according to the street where it is mounted.

[0019] The traffic divider module (10) comprises a base unit (20) adapted to be positioned on the ground and provided with structural resistance in order to prevent a vehicle involuntarily hitting the traffic divider module from breaking through it and passing to the opposite lane.

[0020] For example, the base unit (20) is made of concrete, reinforced concrete, steel and the like, and can be optionally provided with water tanks to dampen impacts with vehicles.

[0021] The module (1) comprises two solar panels (3).

[0022] The solar panels (3) are electrically connected one with another and/or with an electrical socket, such as a bipolar socket (4) installed at the front and/or at the back of the module, in such manner to place two modules (10) side by side and connect them electrically.

[0023] Such an electrical connection can be made in series or, more preferably, in parallel, as shown for example in the electrical diagram of Fig. 2.

[0024] In this diagram each panel is connected to two electrical lines (L1) and (L2) running in the module (10); one line for positive (L1) and one line for negative (L2). However, the latter can be clearly omitted, by ground-connecting the negative pole of each panel (3). In such a case the socket (4) is simplified and can be of unipolar type.

[0025] The electrical energy produced by the panels (3) can be transferred to a storage battery, for example by means of lines (L1, L2) or used directly by the module (10). The module (10) can comprise a street sign (6) that is advantageously of back-lit type, for example LED.

[0026] In such a case, given the very low energy ab-

sorption of LEDs, LEDs can be powered in continuous, by connecting them directly to the panels (3) or electrical lines (L1,L2) in order to improve the visibility of the signal (6).

[0027] Alternatively or in combination the module (1) is provided with a luminous signaler (5), such as a strip with light sources, for example LEDs, which are powered by the energy produce by the panels (3). The luminous signaler (5) makes the traffic divider more visible and improves the safety conditions of the street where it is mounted.

[0028] The panels (3) are mounted under the top of the base unit (20).

[0029] The base unit (20) is provided with a housing groove (70) wherein two solar panels (3) are mounted, one in front of the other. The housing groove (70) has a V cross section, on the internal walls of which solar panels (3) are mounted, in such manner to be disposed one in front of the other, in oblique position and along the sides of an isosceles triangle with downward tip.

[0030] The groove (70) opens above the base unit (20) with upward opening.

[0031] In such a case, the exposure of the panels (3) to sunlight depends on the opening angle at the vertex of the "V" of the groove (70), which should therefore be sufficiently large; suitable values of said angle may be determined by an expert of the art without any inventive effort when the installation position and place of the traffic divider is determined, together with its exposure with respect to the sun.

[0032] Said traffic divider (10) is characterized by simplified maintenance and improved protection of panels (3).

[0033] A transparent protective sheet (80) is provided above the panels (3), closing the groove (70) and preventing the exposed surface of the panels from being subject to impacts (for instance, small stones or debris launched by passing vehicles).

[0034] In the example shown, the sheet (80) is horizontal and extends, like the groove (70), substantially for the entire extension of the module (10), being possibly provided with additional transparent vertical end walls.

[0035] Moreover, in case of an impact of the vehicle against the traffic divider (10), fragments of the panels damaged by the impact are contained inside the groove (70) closed by the sheet (80), thus preventing said debris from being dispersed on the carriageway.

[0036] Also the accumulation of smog or dirt can be eliminated easily; in fact, smog or dirt will only deposit on the sheet (80) and not directly on the surface of the panels (3), which has a considerably larger area.

[0037] On the module (10) the solar panels (3) substantially extend for the same length as the corresponding base unit (20) in such manner to make the most of the useful surface. Variants are provided, wherein said length if covered by multiple adjacent solar panels, as well as other variations wherein the solar panels (3) only extend for part of total length. Other variants of the general idea as described above are also possible, which are all to be considered as an integral part of the present invention.

[0038] According to a preferred embodiment, the traffic divider modules are provided with sensors that are able to detect the speed of the vehicles traveling along the carriageway. Because of said sensors, each module can detect the slowing down of vehicles caused by traffic jams or accidents. In such a case, the traffic divider modules situated upstream said slowing down - with respect to the traveling direction of the lane where vehicles are slowing down - can be activated to inform the users of vehicles on the lane through said street signs (6). The signals emitted by said sensors can be processed by a remote operator or by a management and control unit able to automate said activations of street signals (6).

Claims

1. A module (10) of a modular traffic divider comprising a base unit (20) adapted to be placed on the ground; said base unit (20) being provided with a housing groove (70) open towards the top,
characterized in that said module comprises

   - at least two solar panels (3) disposed facing each other inside said housing groove (70) of the base unit (20).

2. The module (10) as claimed in claim 1, **characterized in that** said solar panels (3) are sloped towards each other.

3. The module (10) as claimed in claim 2, **characterized in that** said solar panels (3) are disposed along the sides of an isosceles triangle with tip downwards.

4. The module (10) as claimed in claim 2 or 3, **characterized in that** said housing groove (70) of the base unit (20) has a "V"-shaped cross-section, bordered by two sloped walls and said solar panels are disposed on the walls of said housing groove (70).

5. A module (10) as claimed in any one of the preceding claims, **characterized in that** it comprises a transparent protective sheet (80) which closes said housing groove (70) towards the top and extends horizontally for substantially the entire length of said module (10).

6. The module (10) as claimed in any one of the preceding claims, **characterized in that** it comprises an electric circuit for electrical connection of said at least two panels (3) with at least one socket (4) and/or at least one electrical supply (5, 6).

7. A modular traffic divider comprising a plurality of mu-

tually connected modules, **characterized in that** it comprises at least one module (10) according to any one of the preceding claims.

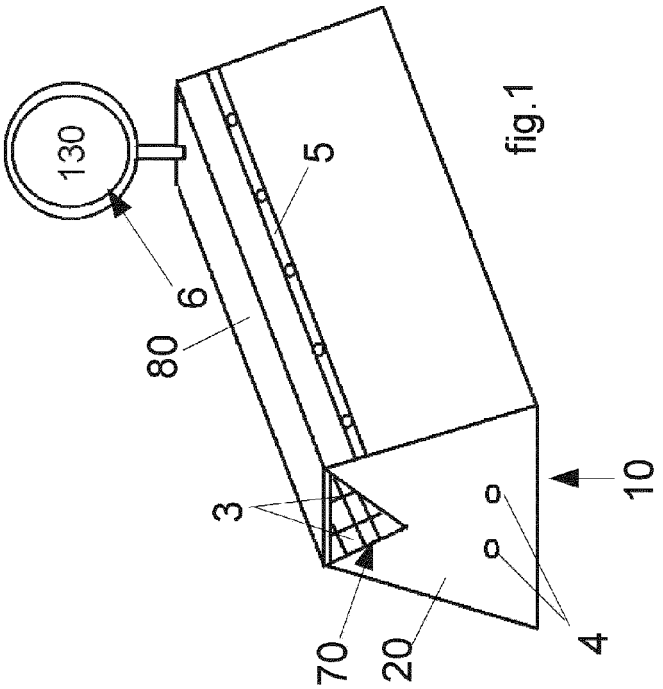

fig.1

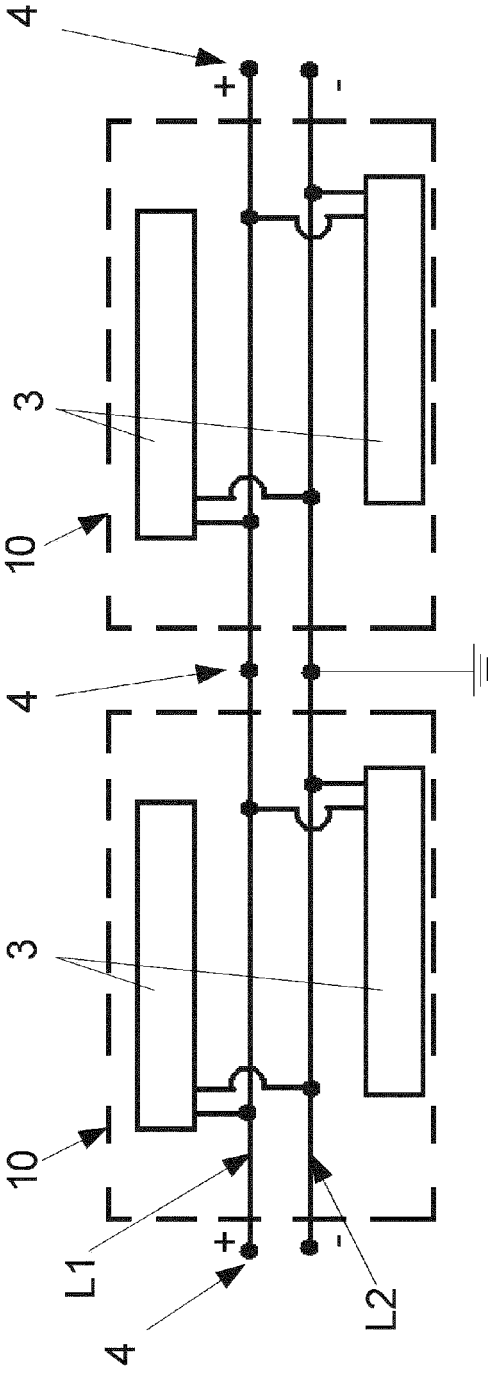

fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 12 17 4895

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	KR 101 027 119 B1 (KUK DONG ENGINEERING CO [KR]; YEKYUNG CO LTD [KR]) 5 April 2011 (2011-04-05) * figures 1,2,3 * -----	1	INV. E01F15/08
A	JP 2002 322617 A (KAWASAKI HEAVY IND LTD) 8 November 2002 (2002-11-08) * figure 3 * -----	1	
A	CN 201 224 873 Y (ZHIMING CHEN [CN]) 22 April 2009 (2009-04-22) * figures * -----	1	
A	CA 2 160 584 A1 (LEDERBAUER WOLFGANG [AT]) 27 October 1994 (1994-10-27) * figures 1,3 * -----	1	

TECHNICAL FIELDS SEARCHED (IPC)

E01F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 September 2012	Tran, Kim Lien

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 17 4895

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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03-09-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- KR 101027119 **[0009]**
- CN 201224873 **[0010]**