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(54) Method and device for reproduction of traffic information

(57) System arrangement for optical reproduction of traffic information having at least one information transmitter positioned on a traffic route and at least one optical information reproduction device. A controller having information receivers, the controller is connected to the information transmitter, preferably integrated therein, and the information transmitter has a transmission and/or projection unit, which projects traffic information, which is received by the information receiver and to be reproduced, on the reproduction device or transmits said traffic information thereto. The reproduction device is spatially separated from the information transmitter.

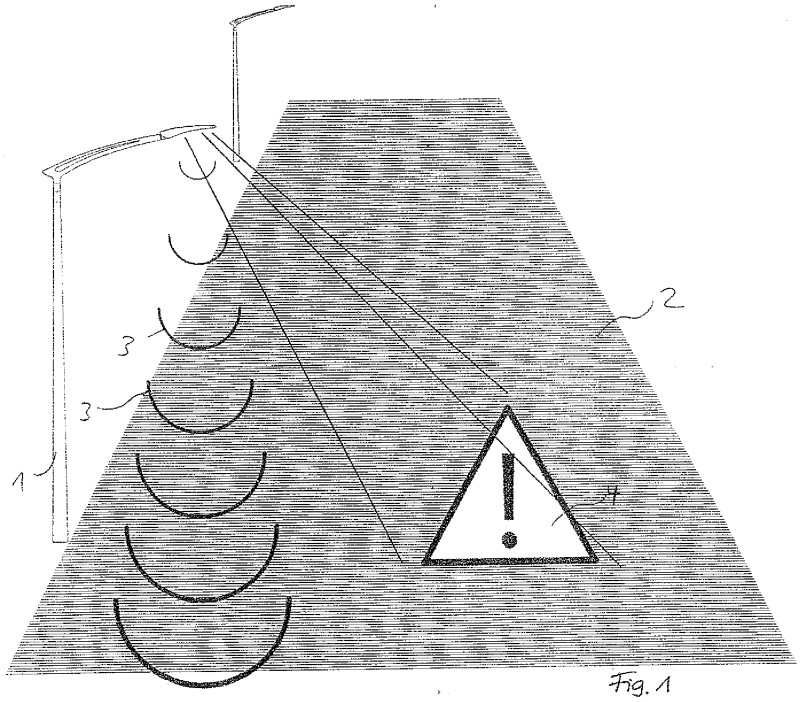

Fig. 1

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Description

[0001] The invention relates to a device for optical reproduction of traffic information, in the case of which an information transmitter is positioned on a traffic route, in particular a road, from which information transmitter the traffic information is displayed via an optical information reproduction device.

[0002] These are usually traffic control systems, as known, for example, from bridge-type displays which extend over motorways, which indicate speed limits adapted to the traffic or weather conditions.

[0003] Methods for optical reproduction of traffic information are also known, in which methods, for example, traffic notifications are received by the information system of a motor vehicle and displayed on a display, for example of the navigation device.

[0004] Said previously known systems and methods generally use widely available information systems and are thus little suited to the local circumstances of the relevant traffic route.

[0005] The invention is therefore based on the object of providing a device and a method for optical reproduction of traffic information, which has a high degree of individualization. This object is achieved by a system arrangement having the features of claim 1 and by a method having the features of claim 12.

[0006] For this purpose, the system arrangement is provided with a controller with information receivers, which controller is connected to the information transmitter positioned on the traffic route. It may preferably even be integrated in said information transmitter. The information transmitter can be, in particular, a traffic route luminaire, often referred to as a street-light, wherein the term traffic route includes, in addition to roads, inter alia, paths, crossings, cycle paths and other transport routes. Correspondingly, traffic route luminaires are to be understood not only as streetlights but any lighting devices in connection with traffic routes.

[0007] According to the invention, the information transmitter has a transmission and/or projection unit, which, in a manner driven by the controller, transmits traffic information (EN), which is received by the information receiver and to be reproduced, to the information reproduction device or projects said information thereon, wherein, likewise according to the invention, the information reproduction device is spatially separated from the information transmitter. Therefore, this does not concern just the directly driven neon signs from the prior art. In contrast to the prior art, the reproduction device is therefore not a part of the information transmitter.

[0008] The transmission of information from the information transmitter to the information reproduction device can take place, in particular, via light waves. Even conventional traffic route luminaires can thus project a traffic information signal directly onto a traffic route, for example, via an optical module. Said method is usable, in particular, at night or in tunnels. In order also to enable projection in the case of greater brightness, for example during the day or in general when the traffic route is illuminated, a spray-mist generator can be used, which spray-mist generator is coupled to the information transmitter and outputs spray mist or artificial mist where the projection of the traffic information is to occur. The output spray mist in this case forms a temporary information reproduction device. The spray-mist generator may, for example, be integrated in a pole of the information transmitter or arranged spatially separate from but adjacent to said information transmitter.

[0009] To improve visibility in the case of traffic information projected onto a surface region of the traffic route, said surface region can be designed to enhance luminescence and/or reflection, for example by virtue of an appropriate admixture in the road surface coating. It is also possible to configure the surface regions of the traffic route forming the reproduction device to be calibrated to particular light wavelengths. Thus, for example, the surface region of the traffic route can already figuratively contain a traffic information symbol, wherein the symbol only becomes visible when irradiated with the predetermined light wavelengths. The irradiation or projection by the projection unit can then occur without a shape since the desired shapes only become visible by virtue of the specific figurative configuration of the surface region of the traffic route. In this way, it is also possible to provide a plurality of traffic information symbols in a surface region of the traffic route by virtue of different admixtures or coatings which react to different light wavelengths. For this purpose, the information transmitter, in particular the traffic route luminaire, should then have a module, controlled by the controller, for outputting different light wavelengths and/or light spectra. The information or light output can also take place in a pulsed manner, with the result that the traffic information symbol appears to be flashing.

[0010] Another type of information transmission than projection can be effected by transmitting information from the information transmitter positioned on the traffic route to a display in a means of transport or a display device, in particular a mobile display device, of a road user. Then, the traffic information to be transmitted would appear, for example, on the navigation device of a vehicle or in another display region in the field of view of the vehicle driver. In contrast to conventional systems, in which traffic notifications are transmitted to the navigation system of a vehicle via radio, for example, the information reproduction device of the invention here present receives only information from the spatially adjacent information transmitter. Such information is therefore perceived to be more relevant, while, in the case of information spread across large areas, as in the prior art, attention wanes and a dulling effect is had on the vehicle driver. For the information transmission according to the invention in reproduction devices of a means of transport or on display devices of road users, modules which are suitable for short-range communication can preferably be used here, and so even RFiDs are suitable. However,

conventional broadcast transmission can of course also be used in the vehicle, for example using the ZigBee standard.

[0011] The information receiver of the system arrangement according to the invention can obtain its data via a network. Groups of information transmitters can also be incorporated into large networks. In particular, it is advantageous if a program interface to a traffic control computer is provided in connection with the controller. However, the system arrangement may also have its own sensors, for example sensors for detecting air humidity, temperature and/or how busy the traffic route is. Thus, for example, the information to be reproduced may only be transmitted or projected if a road user, for example a vehicle, is actually approaching the information transmitter. The sensor or one of the sensors may also be designed as a person detector. In this way, it is possible, for example, to detect whether a person would like to cross a road, for example at a zebra crossing, with the result that, for example, a warning symbol is superimposed there for motor vehicles which are likewise approaching.

[0012] In the system arrangement according to the invention, it is likewise possible to connect a plurality of information transmitters to one another such that data forwarding and/or data exchange is possible between the controllers of said information transmitters. This enables communication between the controllers and/or, for example, with a central unit, for example a server controlling an associated network of luminaires. An imaged traffic information symbol can thus be reproduced a plurality of times, for example, when a vehicle moves along a plurality of information transmitters. A plurality of closely spaced information transmitters can also share a controller when said information transmitters are connected in a conventional manner, such as by a cable.

[0013] The method according to the invention and the corresponding device are adaptable in an extraordinarily flexible manner to the local conditions of traffic routes and ensure a concrete, current transmission of traffic information without overload by information which is not relevant to the respective traffic route section. Retrofitting in the field of present traffic control systems and traffic luminaires is possible.

[0014] The appended two figures show, merely in a schematic fashion, how the system may be designed.

[0015] In figure 1, a traffic route luminaire 1 illuminates a traffic route 2 in a conventional manner, indicated by arcs 3. In addition, it may also project a traffic information symbol 4 on a surface region of the traffic route 2, for example when a vehicle approaches.

[0016] Figure 2 shows how, alternatively or in addition, a traffic information symbol 4 can appear on one or more displays 5 in a vehicle, to which display(s) said traffic information symbol has been transmitted by the information transmitter, for example the traffic route luminaire 1.

Claims

1. System arrangement for optical reproduction of traffic information (4) having at least one information transmitter positioned on a traffic route (2) and at least one optical information reproduction device, **characterized by** a controller having information receivers, wherein the controller is connected to the information transmitter, preferably integrated therein, and the information transmitter has a transmission and/or projection unit, which projects traffic information, which is received by the information receiver and to be reproduced, on the reproduction device or transmits said traffic information thereto, wherein the reproduction device is spatially separated from the information transmitter.

2. System arrangement according to Claim 1, **characterized in that** the information transmitter is a traffic route luminaire (1).

3. System arrangement according to either of the preceding claims, **characterized in that** the reproduction device is a surface region of the traffic route (2).

4. System arrangement according to Claim 3, **characterized in that** the surface region of the traffic route (2) is designed to enhance luminescence and/or reflection.

5. System arrangement according to Claim 3 or 4, **characterized in that** the surface region of the traffic route (2) is calibrated to particular light wavelengths and is figuratively designed such that it shows a symbol (4) when irradiated with the predetermined light wavelengths.

6. System arrangement according to any of the preceding claims, **characterized in that** the information transmitter has a module which is controlled by the controller and is for outputting different light wavelengths, light spectra and/or light pulses.

7. System arrangement according to any of the preceding claims, **characterized by** a spray-mist generator coupled to the information transmitter, which spray-mist generator outputs spray mist such that a projection of traffic information (4) is visible even in the light.

8. System arrangement according to any of the preceding claims, **characterized in that** the reproduction device is a display (5) in a means of transport or a mobile display device of a road user.

9. System arrangement according to any of the preceding claims, **characterized by** at least one sensor coupled to the information transmitter for detecting,

for example, air humidity, temperature and/or the approach of a road user.

10. System arrangement according to any of the preceding claims, **characterized in that** the information transmitter is incorporated in a network via the controller, in particular connected to a traffic control computer.

11. System arrangement according to any of the preceding claims, **characterized in that** a plurality of information transmitters are connected to one another such that data forwarding and/or data exchange can occur between the controllers of said information transmitters.

12. Method for optical reproduction of traffic information (4) by means of a system arrangement according to any of the preceding claims, wherein an information transmitter positioned on a traffic route (2) transmits data of received traffic information via a controller having information receivers to a transmission and/or projection unit, which transmits the information to a reproduction unit or projects it thereon, said reproduction unit being separate from the information transmitter.

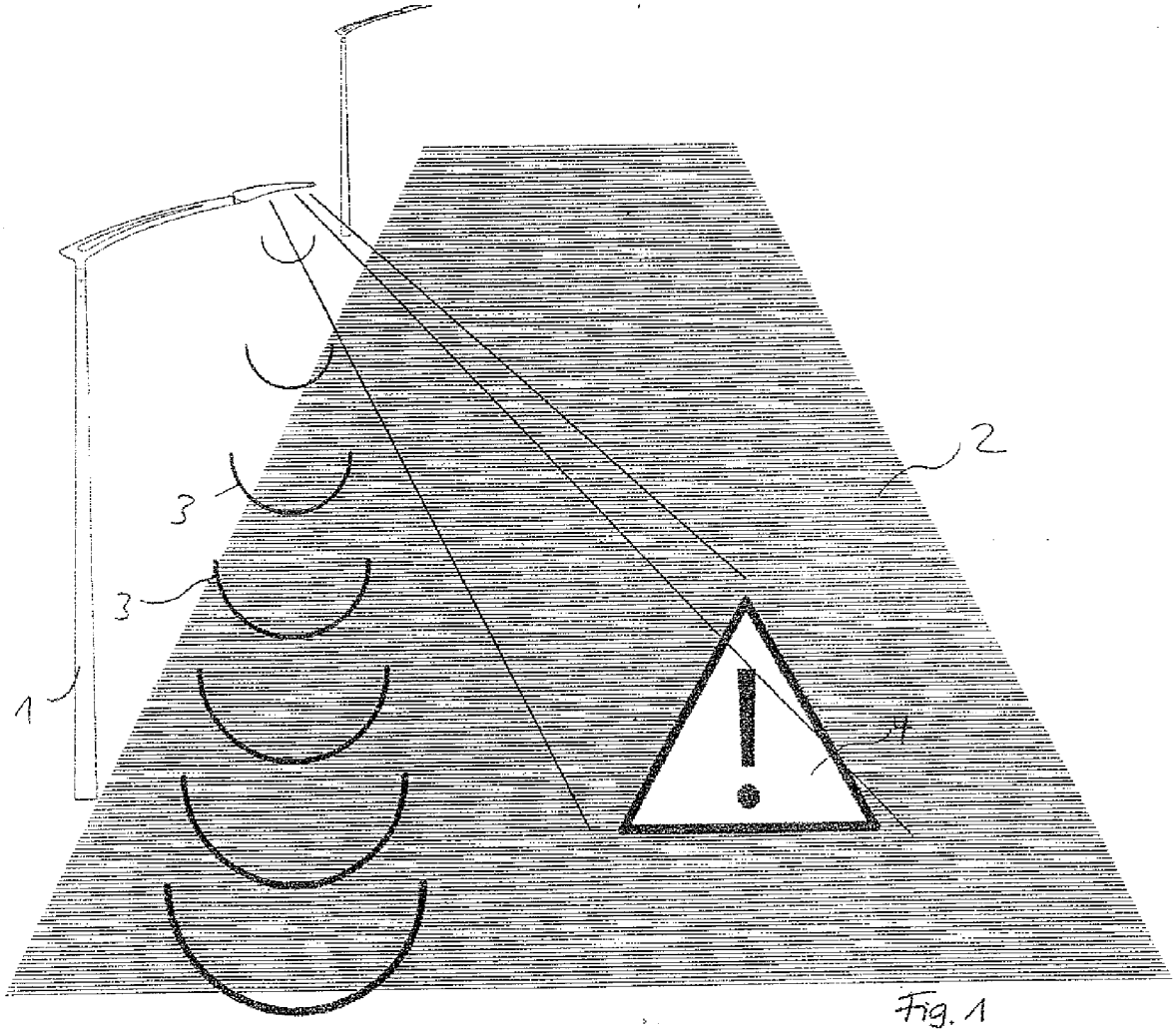

Fig. 1

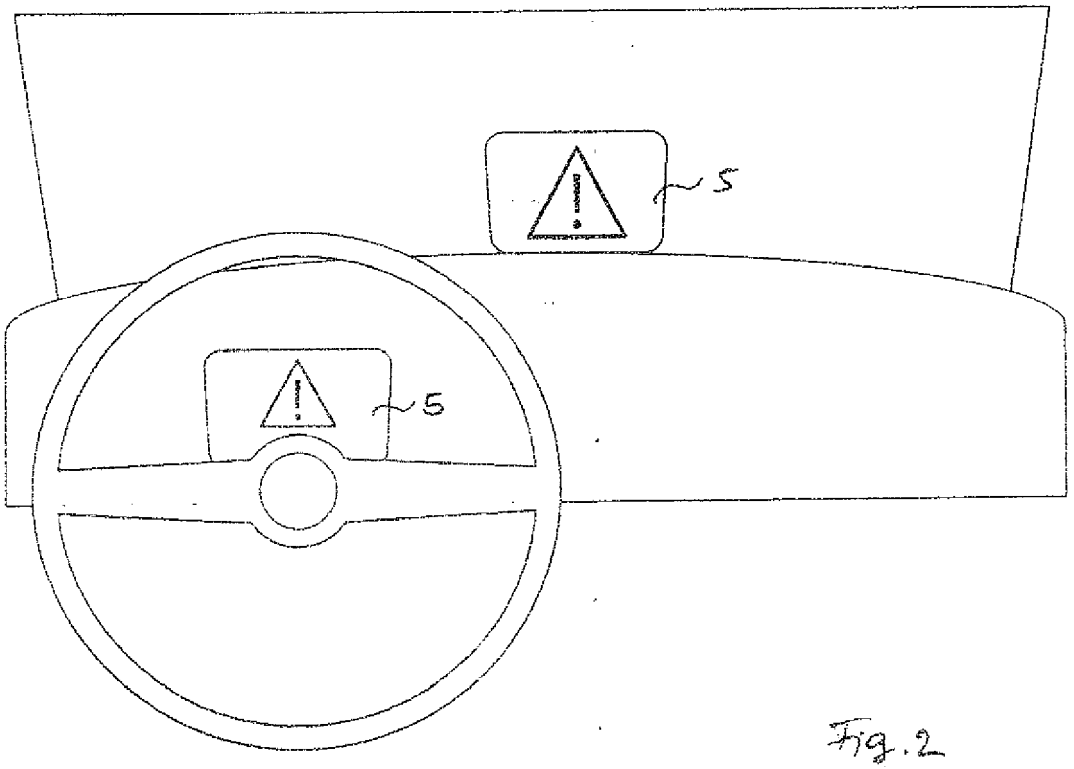

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 15 15 0117

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	DE 10 2012 206691 A1 (ZUMTOBEL LIGHTING GMBH [AT]) 24 October 2013 (2013-10-24) * paragraphs [0001], [0002], [0005], [0007] - [0011], [0013] - [0018], [0021], [0029], [0030], [0037], [0038], [0040], [0043], [0046], [0050], [0060]; figures 1-4 *	1-3,6, 8-12 4,5,7	INV. G08G1/095
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TECHNICAL FIELDS SEARCHED (IPC)

G08G
E01F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 June 2015	Fagundes-Peters, D

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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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08-06-2015

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