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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) Signal display

(57) A signal display (1), in particular a railway signal, comprises a plurality of first display elements (2) which are arranged in the form of a valid signal pattern (3) and are able to generate a reflex phantom, wherein light of at least one light source (6) is emitted via the first display elements (2) to the outside in order to display the valid signal pattern (3), and a plurality of second display elements (4), wherein no light is emitted via the second display elements (4) to the outside and wherein the second display elements (4) are arranged to form another signal pattern (5) together with the first display elements (2).

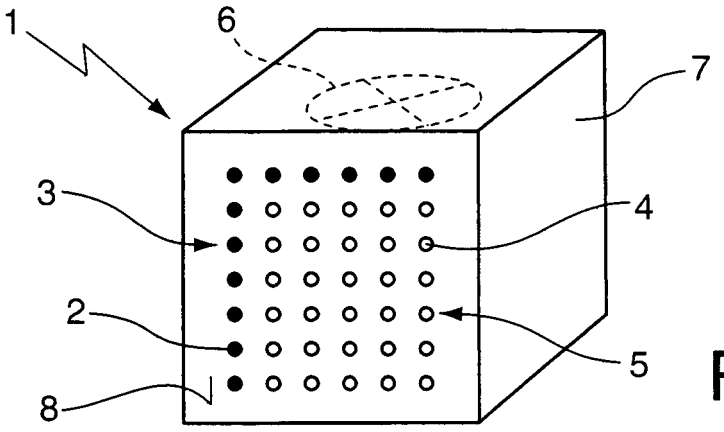


Fig. 1

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Description

Background of the invention

[0001] The invention relates to a signal display, in particular a railway signal, comprising a plurality of first display elements which are arranged in the form of a valid signal pattern and are able to generate a reflex phantom, wherein light of one or more light sources is emitted via the first display elements to the outside in order to display the valid signal pattern.

[0002] **Fig. 3** shows an example of a railway signal **101** according to prior art. The railway signal 101 comprises a plurality of display elements **102** (e.g. lenses or reflectors) which are arranged in the form of a valid signal pattern **103,** here shown as a "right angle" pattern. By activating a light source **104** inside the housing **105** of the railway signal 101, the light of the light source 104 is emitted via the display elements 102 to the outside in order to display or illuminate the valid signal pattern 103. However, as the surfaces of the display elements 102 can also reflect light incident from the outside, incidence and reflection of outside light can be erroneously perceived by an viewer (e. g. engine driver) as a displayed signal pattern, which is called a "reflex phantom". In other words, a valid signal pattern can be seen as being illuminated although it is not activated. In the case that a reflex phantom is not devaluating but revaluating for the railway signal, the generation of a valid signal pattern due to a reflex phantom must be prevented.

[0003] For this purpose, railway signals are provided with special shields or coverings which partially prevent this problem but can not completely eliminate it. For this reason, railway signals with shields are only used if a reflex phantom is devaluating for the railway signal. In the case of a reflex phantom the displayed signal pattern is devaluating and therefore safe.

Object of the invention

[0004] It is the object of the invention to further obtain a signal display mentioned introductorily such that the generation of a valid signal pattern due to a reflex phantom is prevented.

Short description of the invention

[0005] This object is achieved, in accordance with the invention, by a plurality of second display elements in any form, wherein no light is emitted via the second display elements to the outside and wherein the second display elements are arranged to form another signal pattern (e. g. an invalid or devaluating signal pattern) together with the first display elements.

[0006] According to the invention, in the case of a reflex phantom all or parts of the display elements are seen as being illuminated whereby another signal pattern is perceived by a viewer. In other words, in the case of a reflex phantom the valid signal pattern is changed and made unrecognizable to the viewer. According to the invention, a valid signal pattern caused by a reflex phantom is eliminated. As either another signal pattern is displayed due to a reflex phantom or a valid signal pattern is only displayed when the light source is activated, both devaluating and revaluating signal patterns can be displayed in a simple and safe manner.

[0007] The invention can be used for all signal displays, such as railway signals, outside displays and supplementary indicators.

[0008] Further advantages can be extracted from the description and the enclosed drawing. The features mentioned above and below can be used in accordance with the invention either individually or collectively in any combination. The embodiments mentioned are not to be understood as exhaustive enumeration but rather have exemplary character for the description of the invention.

Drawing

[0009] The invention is shown in the drawing, in which:

- Fig. 1 shows schematically a railway signal according to the invention with a valid signal pattern being displayed by first display elements;
- Fig. 2 the railway signal of Fig. 1 with another signal pattern being displayed by first and second display elements in the case of a phantom reflex; and
- Fig. 3 shows schematically a railway signal according to prior art with a valid signal pattern being displayed by all display elements of the railway signal.

[0010] The railway signal **1** shown in **Fig. 1** comprises a plurality of first display elements **2** which are arranged in the form of a valid signal pattern **3** here shown as a "right angle" pattern. Any geometric form for the valid signal pattern 3 is possible, e. g. letters, numbers, forms.

[0011] The railway signal 1 further comprises a plurality of second display elements **4** which, in the embodiment shown, are identical to the first display elements 2 and are arranged to form another signal pattern **5** together with the first display elements 2. In the example shown, the other (e. g. invalid) signal pattern 5 formed by the first and the second display elements 2, 4 is a square. The first and the second display elements 2, 4 are, for example, lenses, transparent light disks or reflectors.

[0012] By activating a light source **6** inside the housing **7** of the railway signal 1, the light of the light source 6 is emitted only via the first display elements 2 to the outside in order to display or illuminate the valid signal pattern 3 as shown in Fig. 1. The second display elements 4 are separated from the light source 6 and, therefore, no light is emitted via the second display elements 4 to the outside.

[0013] However, as the surfaces of the display ele-

ments 2, 4 can also reflect light incident from the outside, reflection of outside light can be erroneously perceived by a viewer as a displayed signal pattern, which is called a "reflex phantom". As shown in **Fig. 2,** in the case of a reflex phantom all display elements 2, 4 are seen as being illuminated, whereby the invalid square signal pattern 5 is perceived by an viewer (e. g. engine driver). This invalid signal pattern 5 can not be interpreted or interpreted as erroneous by the viewer (e. g. engine driver) and, therefore, results in no action being taken by the viewer (e. g. engine driver). In other words, in the case of a reflex phantom the valid signal pattern 3 is made unrecognizable to the viewer (e. g. engine driver).

[0014] In the embodiment shown, the complete signal area **8** of the railway signal 1 is provided with the first and the second display elements 2, 5. Instead of only one light source 6 for all first display elements 2, a plurality of light sources can be provided in the housing 7, wherein each light source can be associated with one of the first display elements 2.

Claims

1. Signal display (1), in particular a railway signal, comprising a plurality of first display elements (2) which are arranged in the form of a valid signal pattern (3) and are able to generate a reflex phantom, wherein light of at least one light source (6) is emitted via the first display elements (2) to the outside in order to display the valid signal pattern (3),
characterized by a plurality of second display elements (4), wherein no light is emitted via the second display elements (4) to the outside and wherein the second display elements (4) are arranged to form another arbitrary signal pattern (5) together with the first display elements (2).

2. Signal display according to claim 1, **characterized in that** the first and the second display elements (2, 4) are lenses or transparent light disks.

3. Signal display according to claim 1, **characterized in that** the first and the second display elements (2, 4) are reflectors.

4. Signal display according to any one of the preceding claims, **characterized in that** one light source (6) is provided for all first display elements (2).

5. Railway signal according to any one of the claims 1 to 3, **characterized by** a plurality of light sources, wherein each light source is associated with one or more of the first display elements (2).

6. Signal display according to any one of the preceding claims, **characterized in that** the complete signal area (8) of the railway signal (1) is provided with the first and the second display elements (2, 4).

7. Signal display according to any one of the preceding claims, **characterized in that** the second display elements (4) are identical to the first display elements (2).

Amended claims in accordance with Rule 137(2) EPC.

1. Signal display (1), in particular a railway signal, comprising a plurality of first display elements (2) which are arranged in the form of a valid signal pattern (3) and are able to generate a reflex phantom, wherein light of at least one light source (6) is emitted via the first display elements (2) to the outside in order to display the valid signal pattern (3), and comprising a plurality of second display elements (4), wherein no light is emitted via the second display elements (4) to the outside and wherein the second display elements (4) are arranged to form another arbitrary signal pattern (5) together with the first display elements (2), **characterized in that**,
one light source (6) is provided for all first display elements (2) and that the first and the second display elements (2, 4) are lenses or transparent light disks.

2. Signal display according to claim 1, **characterized in that** the complete signal area (8) of the railway signal (1) is provided with the first and the second display elements (2, 4).

3. Signal display according to any one of the preceding claims, **characterized in that** the second display elements (4) are identical to the first display elements (2).

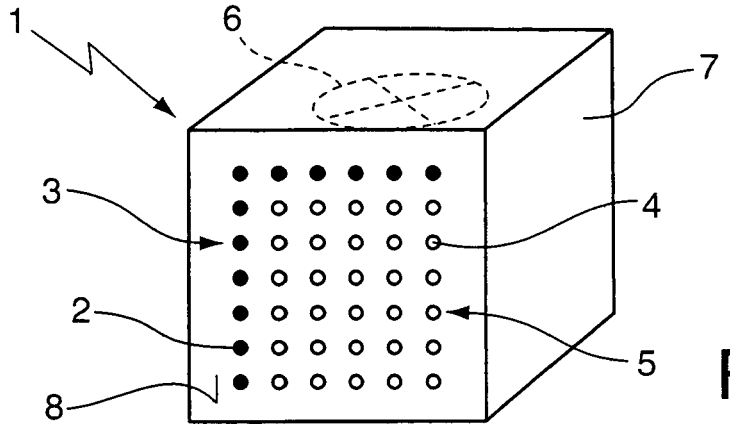


Fig. 1

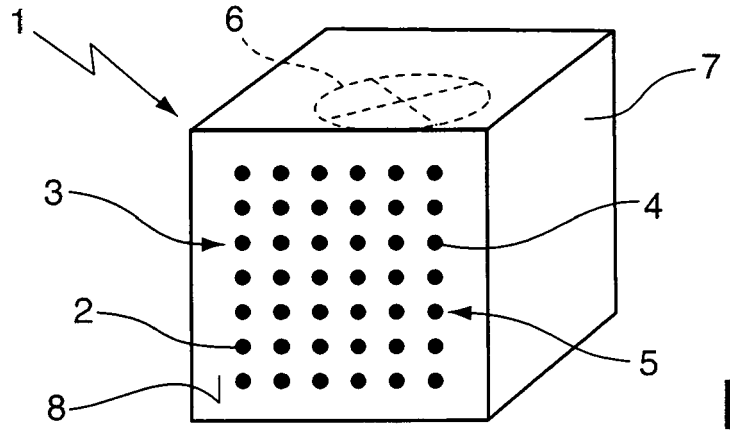


Fig. 2

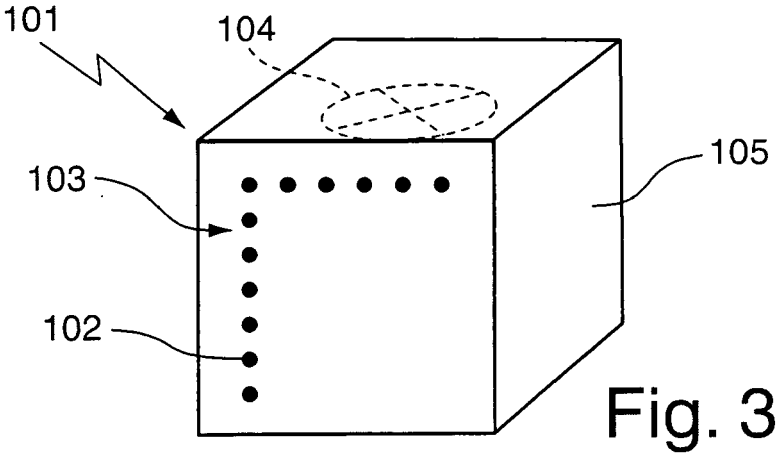


Fig. 3 (prior art)

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EUROPEAN SEARCH REPORT

Application Number
EP 08 02 1960

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	DE 29 41 634 A1 (STANLEY ELECTRIC CO LTD) 30 April 1980 (1980-04-30) * page 1, line 5 - page 20, line 11; figures 14-18 *	1-7	INV. B61L5/18 ADD. G08G1/095
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A	US 4 298 869 A (OKUNO YASUO) 3 November 1981 (1981-11-03) * figures 1a,1b *	1-7	

TECHNICAL FIELDS SEARCHED (IPC)

B61L
G08G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	17 April 2009	Janhsen, Axel

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 02 1960

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17-04-2009

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