
Candidate's Answer

Specification

1 General Technical Field

The invention describes a headlight for a vehicle with means for directing a light beam in the turning direction of the vehicle.

2 Description of Prior Art

D1 discloses a headlight rotatable about a vertical axis by a motor controlled by a microprocessor. The headlight is rotated by an adequate angle to provide optimum illumination when turning.

A headlight according to D1 has the disadvantage that its entire structure must be rotated and that it cannot respond to an incline of a vehicle, such as a motorcycle.

D2 discloses three headlights on the front end of a motorcycle. Each of the headlights has a screen for producing a low beam. The headlights are switched on and off depending on the inclination of the motor.

D2 has the disadvantage that 3 headlights must be used, and that an illumination adapted to the momentary incline of the vehicle is binary (through the on / off switch) and also imprecise (it may not respond to fast turns or curves with a large radius of curvature).

D3 discloses a lighting system for a two-wheeled vehicle, whereby the headlight, containing an integrated screen, is rotated all together with the help of gear wheels, one of which is provided with a weight.

D3 has the disadvantage that again the entire headlight must be turned, and that the gear wheels may not provide sufficient compensation for the incline of the vehicle.

The problem underlying the herewith presented invention is to be seen in providing a headlight with illumination adapted to the turning state of a vehicle which is easily installed into the vehicle.

The above problem is solved by the invention as claimed in claim 1.

Dependent claims cover preferred embodiments of the invention.

The invention according to claim 1 has the advantage that only the screen must be rotatable, nothing else in the headlight. This arrangement avoids having to rotate the entire headlight, whilst nevertheless providing adaptive illumination depending on the state of incline, or turning, of the vehicle. Such a headlight also enables the installation of a motor for rotating the screen into a headlight housing (see claim 9), thus making the headlight particularly easily installable or replaceable.

This also has the advantage that the screen, and, if necessary, the motor, can both be protected in the housing from outside influences. The arrangement is also compact, making it advantageous for installation in modern vehicles where space is always a concern.

Claims:

- 1 Headlight for a vehicle, comprising:
 - at least one light source (14, 15, 11, 111),
 - a reflector (12, 112) suitable for reflecting light from the light source into a direction of vehicle heading,
 - a screen (17, 117) for blocking a portion of a light distribution pattern emitted by the light source,characterised in that,
the screen is rotatable relative to the reflector, thereby enabling a rotation of said light distribution pattern following a turn of the vehicle.

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- 2 Headlight according to claim 1, whereby the screen is rotated by a motor (18, 19).
- 3 Headlight according to one of the claims 1 or 2, whereby the screen is rotatable together and in tandem with the light source.
- 4 Headlight according to claim 3, whereby the screen is mechanically affixed to the light source and the light source is a lamp (11).
- 5 Headlight according to one of the claims 1 or 2, whereby the screen is rotatable both relative to the reflector and to the light source.
- 6 Headlight according to one of the preceding claims, whereby the screen has a shape enabling the projection of a light distribution with an upper edge.
- 7 Headlight according to one of the preceding claims, whereby the screen is located at a lower half of the axis of symmetry of the reflector.
- 8 Headlight according to one of the preceding claims, whereby the headlight is contained in a designated headlight housing (10).
- 9 Headlight according to one of the claims 2 or 8, whereby the motor is contained in the headlight housing (10).
- 10 Headlight according to one of the preceding claims, whereby two light sources (14, 15) for a low beam and a high beam, respectively, are provided.
- 11 Headlight according to one of the preceding claims, whereby the reflector is parabolic.
- 12 Headlight according to one of the claims 1 to 10, whereby the reflector is elliptical.
- 13 Headlight according to one of the claims 2 to 12, whereby the motor is controlled by an electronic control unit (ECU) which calculates the angle of inclination of the vehicle and controls the motor dependent on this.

14 Vehicle, comprising:

- a headlight according to one of the claims 1 to 13.

15 Vehicle according to claim 14, comprising electronic distance sensors whose output signals enable calculation of angle of inclination of vehicle.

16 Vehicle according to one of the claims 14 or 15, which is a motorcycle.

Notice to the Examiner

The idea of the relative rotation of the screen vis à vis the reflector was considered as being the determinant difference between the invention and documents D1 to D3. None of these documents show that the screen is rotatable as a separate entity (in D3 the screen is rotated with the lamp housing). In D2 the screen is fixed, and not rotatable. D1 shows no screen at all.

Instead of using the word “screen” in independent claim 1, it would have been possible to use the wording “means for blocking a portion of light distribution etc”. However, it does seem that this can only really be achieved with a screen. If another device were to be used, then it would take the claim or invention far away from the client’s letter and the subject matter contained therein.

It was not considered necessary to include the motor in claim 1, as any means for rotating the screen, such as the one with the weights in D3, should be allowed.

The legal issues of low and high beams being required also did not limit the claim as the inventor specifically proposed an embodiment only with a low beam function.