Title: WHEEL COVER STRUCTURE FOR VEHICLE

Abstract: A wheel cover structure for a vehicle includes a hollow protective case member which is secured to a wheel of the vehicle at one surface thereof, a rotation case member which has a floating chamber filled with liquid and is fixedly mounted to an inner surface of the protective case member by way of an outer bearing, and a floating member which is disposed in the floating chamber and is held in a constant direction. The floating member comprises a decorative plate formed with various pictures or patterns; and a floating plate coupled to the decorative plate and defined with a semi-circular cut-away portion on an upper portion thereof to form an air chamber.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
Description

WHEEL COVER STRUCTURE FOR VEHICLE

Technical Field

The present invention relates, in general, to a wheel cover structure for a vehicle, and more particularly, to a wheel cover structure for a vehicle, which has a floating member capable of being always held in a constant direction without being influenced by the rotation of wheels while a vehicle travels on a road, thereby accomplishing improved decoration and advertisement effects and rendering an aesthetic appearance.

Background Art

These days, a vehicle serves not only as transportation means but also as means for representing the personality or the social position of a vehicle owner. In consideration of this fact, vehicles having various and peculiar designs to satisfy customers' desires have been developed.

In accompanying with such trend, wheels are made of various materials to have various configurations. In this regard, a problem is caused in that, since the wheels are rotated at a high speed, it is difficult to properly discern the decorative configuration of a rotating wheel.

In order to cope with this problem, the present applicant has disclosed a wheel cover in Korean Patent No. 439348. The wheel cover is constructed in a manner such that a decoration mounted to a wheel is not rotated and is held in a constant direction while the wheel of a vehicle is rotated.

Concretely speaking, the wheel cover has a case which is secured to the wheel of the vehicle and is filled with liquid, and a floating member is installed in a floating chamber which is filled with the liquid. Therefore, even when the wheel is rotated, the floating member can be held in a constant direction.

In other words, as the floating member floats by the buoyant force of the liquid, even when surrounding component parts are rotated, the floating member can be maintained in a stable state. Also, as the liquid absorbs kinetic energy produced by the acceleration and deceleration or vibration of the vehicle, it is possible to hold the floating member in a constant direction by a weight mounted to the lower end of the floating member.

However, since eccentricity is caused due to the presence of the weight mounted to the lower end of the floating member, in the case where the case is rotated at a speed which is greater than a critical speed, a problem is caused in that the liquid is rotated along with the case. Also, when accelerating or decelerating at a speed which is greater than the critical speed, the safe and stable functionality of the wheel cover cannot be
ensured due to eccentricity.

**Disclosure of Invention**

**Technical Problem**

Accordingly, the present invention has been made in an effort to solve the problems occurring in the related art, and an object of the present invention is to provide a wheel cover structure for a vehicle, which has a floating member capable of being always held in a constant direction without causing eccentricity and without being influenced by the rotation of wheels while a vehicle travels on a road, thereby accomplishing improved decoration and advertisement effects and rendering an aesthetic appearance.

**Technical Solution**

In order to achieve the above object, according to one aspect of the present invention, there is provided a wheel cover structure for a vehicle, including a hollow protective case member which is secured to a wheel of the vehicle at one surface thereof, a rotation case member which has a floating chamber filled with liquid and is fixedly mounted to an inner surface of the protective case member by way of an outer bearing, and a floating member which is disposed in the floating chamber and is held in a constant direction, the floating member comprising a decorative plate formed with various pictures or patterns; and a floating plate coupled to the decorative plate and defined with a semi-circular cut-away portion on an upper portion thereof to form an air chamber.

According to another aspect of the present invention, the floating member is installed in the floating chamber by way of a center shaft which projects from an inner surface of the rotation case member and an inner bearing which is fitted around the center shaft.

According to still another aspect of the present invention, an inner magnet member is fastened to an edge portion of the rotation case member, and an outer magnet member having the same polarity as the inner magnet member is fastened to an edge portion of the protective case member.

**Brief Description of the Drawings**

The above objects, and other features and advantages of the present invention will become more apparent after a reading of the following detailed description when taken in conjunction with the drawings, in which:

**FIG. 1** is an exploded perspective view illustrating a wheel cover structure for a vehicle in accordance with an embodiment of the present invention;

**FIG. 2** is a longitudinal cross-sectional view illustrating the wheel cover structure for a vehicle shown in **FIG. 1**; and

**FIG. 3** is a longitudinal cross-sectional view illustrating a wheel cover structure for
a vehicle in accordance with another embodiment of the present invention.

**Best Mode for Carrying Out the Invention**

[16] Reference will now be made in greater detail to a preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings. Wherever possible, the same reference numerals will be used throughout the drawings and the description to refer to the same or like parts.

[17] FIG. 1 is an exploded perspective view illustrating a wheel cover structure for a vehicle in accordance with an embodiment of the present invention, and FIG. 2 is a longitudinal cross-sectional view illustrating the wheel cover structure for a vehicle shown in FIG. 1.

[18] Referring to FIGs. 1 and 2, a wheel cover structure for a vehicle in accordance with an embodiment of the present invention includes a hollow protective case member 12 and 26 which is secured to the wheel (not shown) of the vehicle at one surface thereof, a rotation case member 36 which has a floating chamber 38 filled with liquid and is fixedly mounted to the inner surface of the protective case member 26 by way of an outer bearing 30, and a floating member 34 which is disposed in the floating chamber 38 and is held in a constant direction.

[19] The protective case member is composed of a protective case body 26 which has a predetermined width and is mounted to the wheel of the vehicle, and a protective case cover 12 which is positioned outermost and is made of a transparent material. The rotation case member 36 is composed of a rotation case body 22 which has a predefined width, is positioned in place by an outer center shaft 28 and is integrally rotated with the rotation of the protective case cover 12 and 26, and a rotation case cover 14 which is coupled to the rotation case body 22 and defines the floating chamber 38 to be filled with the liquid.

[20] At this time, the liquid filled in the floating chamber 38 comprises oil or antifreeze which has relatively low viscosity and heat resistance, and must be transparent.

[21] The floating member 34 comprises a decorative plate 16 which is formed with various pictures or patterns, and a floating plate 18 which is coupled to the decorative plate 16 and is defined with a semi-circular cut-away portion on the upper portion thereof to form an air chamber 32.

[22] Due to the fact that the air chamber 32 is formed in the floating member 34, buoyant force is increased. Therefore, since it is possible to remove a weight, eccentricity is not caused. The floating member 34 is positioned in place by a center shaft 24 which projects from the inner surface of the rotation case member 36 and an inner bearing 20 which is fitted around the center shaft 24.

[23] That is to say, due to the fact that the floating member 34 is positioned in place by
installing the inner bearing 20 to be aligned with the center of the floating member 34, eccentricity is not caused, whereby it is possible to contribute to the safe driving of the vehicle.

For example, even when the bearing 20 of the rotation case member 36 is out of order, no eccentricity is caused in the rotation case member 36, and no influence is exerted on the driving of the vehicle. Also, even though the rotation case member 36 is broken by an external shock and thereby the antifreeze leaks outside, no eccentricity is caused in the floating member 34, and the rotation case member 36 exerts no influence on the driving of the vehicle.

Although the wheel is buried and frozen in the snow in the wintertime and the rotation case member and the protective case member are frozen with the wheel to be rotated therewith, eccentricity is not caused in the wheel, the protective case member, the rotation case member and the floating member, and the driving of the vehicle is not adversely influenced.

FIG. 3 is a longitudinal cross-sectional view illustrating a wheel cover structure for a vehicle in accordance with another embodiment of the present invention.

Since this embodiment shown in FIG. 3 is distinguished from the above-described embodiment only in view of the configurations of the rotation case member 36 and the protective case cover 12, the descriptions given below will be concentrated thereon.

According to this embodiment, an inner magnet member 40 is fastened to the edge portion of the rotation case member 36, and an outer magnet member 42 having the same polarity as the inner magnet member 40 is fastened to the edge portion of the protective case cover 12, whereby a magnetic levitation effect is accomplished.

As a consequence, while the protective case cover 12 which is secured to the wheel is rotated integrally with the wheel, the rotation case member 36 is magnetically levitated.

Hence, as the wheel cover structure having no eccentricity is provided, eccentricity is not caused by kinetic energy produced while driving the vehicle.

**Industrial Applicability**

As is apparent from the above description, the wheel cover structure for a vehicle according to the present invention provides advantages in that, since the wheel cover structure has a floating member capable of being always held in a constant direction without causing eccentricity and without being influenced by the rotation of wheels while a vehicle travels on a road, improved decoration and advertisement effects can be accomplished, and an aesthetic appearance can be rendered. Further, no influence is exerted on the driving of the vehicle even under any situations.

In the drawings and specification, there have been disclosed typical preferred emb-
bodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the following claims.
Claims

[1] A wheel cover structure for a vehicle, including a hollow protective case member which is secured to a wheel of the vehicle at one surface thereof, a rotation case member which has a floating chamber filled with liquid and is fixedly mounted to an inner surface of the protective case member by way of an outer bearing, and a floating member which is disposed in the floating chamber and is held in a constant direction, the floating member comprising:
- a decorative plate formed with various pictures or patterns; and
- a floating plate coupled to the decorative plate and defined with a semi-circular cut-away portion on an upper portion thereof to form an air chamber.

[2] The wheel cover structure as set forth in claim 1, wherein the floating member is installed in the floating chamber by way of a center shaft which projects from an inner surface of the rotation case member and an inner bearing which is fitted around the center shaft.

[3] The wheel cover structure as set forth in claim 1, wherein an inner magnet member is fastened to an edge portion of the rotation case member, and an outer magnet member having the same polarity as the inner magnet member is fastened to an edge portion of the protective case member.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

**B60B 7/00(2006.01)**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC8 B60B 7/00, B60B 7/04, B60B 7/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KR, JP IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS (KIPO internal) & ‘Keywords wheel, cover, cap, display, logo, advertisement, magnet’

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Relevant to claim No</th>
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<td>WO 03/10010 A1 (RYU, CHUNG SUB) 06 February 2003 See page 5, line 9 - page 7, line 6, &amp; Figures 1-2</td>
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<td>Y</td>
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Further documents are listed in the continuation of Box C

See patent family annex

* Special categories of cited documents
  "A" document defining the general state of the art which is not considered to be of particular relevance
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  "O" document referring to an oral disclosure use, exhibition or other means
  "P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"S" document member of the same patent family

Date of the actual completion of the international search

28 NOVEMBER 2006 (28 11 2006)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR

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Telephone No 82-42-481-5433

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