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Yoo et al.

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(54) **IMAGE BOARD FOR ROTARY WHEEL AND ROTARY WHEEL INCLUDING SAME**

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B60B 7/20 (2006.01)
B60B 7/06 (2006.01)

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CPC ***B60B 7/0053*** (2013.01); ***B60B 7/20*** (2013.01); *B60B 7/004* (2013.01); *B60B 7/066* (2013.01)

(58) **Field of Classification Search**
CPC B60B 7/0053; B60B 7/20; B60B 7/004; B60B 7/066
(Continued)

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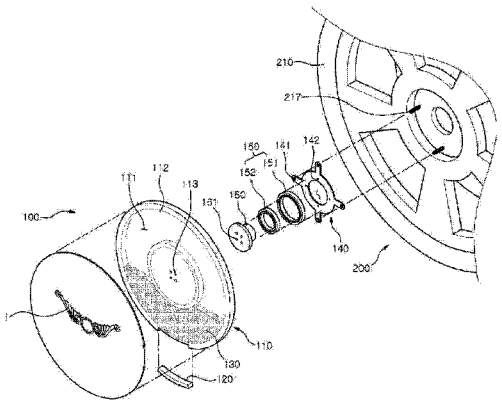
(57) **ABSTRACT**

An image board for a rotary wheel which is mounted on a rotary wheel of a vehicle and displays a stationary image regardless of the rotation of the rotary wheel, the image board including: a base plate which is uprightly arranged on the outer portion or the inside of a wheel frame provided on the rotary wheel and mounted to be independently rotatable with respect to the wheel frame, and on one side or both sides of which a predetermined image is arranged, the base plate including a chamber on which a space is formed to be extended along the circumferential direction with respect to a rotational axis; a main weight which is fixedly mounted on the bottom of the base plate and applies a load to the bottom of the base plate; and a compensation weight which moves within the space as the main weight rotates in any direction and applies a load to the main weight so that the main weight

(Continued)



returns to the original position thereof, the compensation weight being arranged within the space.

17 Claims, 12 Drawing Sheets

(58) **Field of Classification Search**
USPC 301/37.24, 37.25, 37.26, 37.108, 37.109
See application file for complete search history.

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"Related Art"

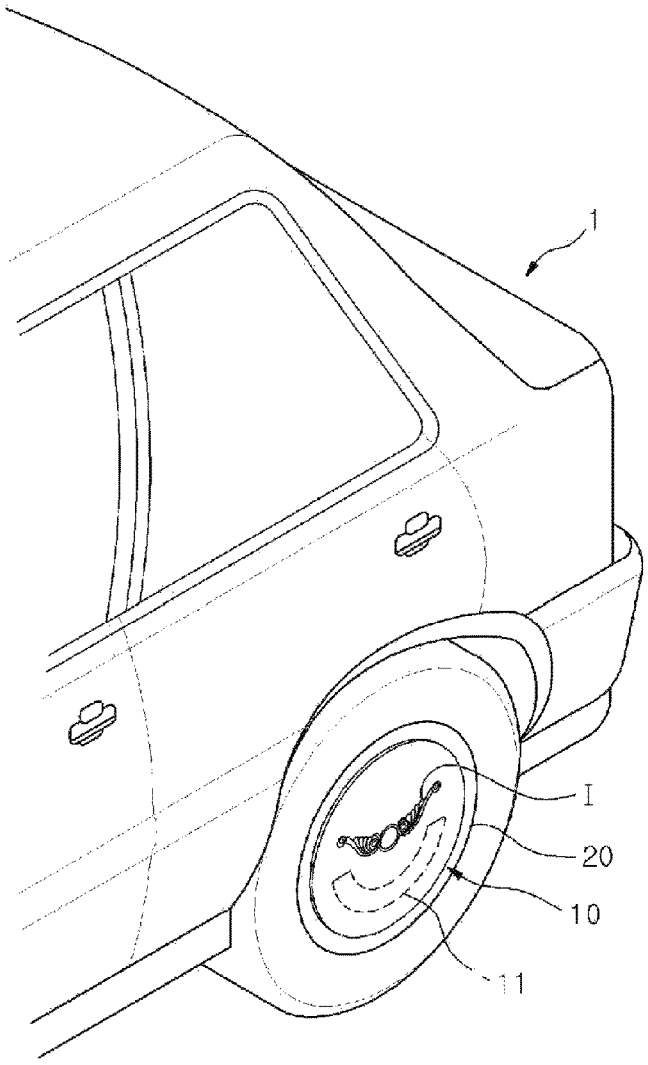

FIG.1

"Related Art"

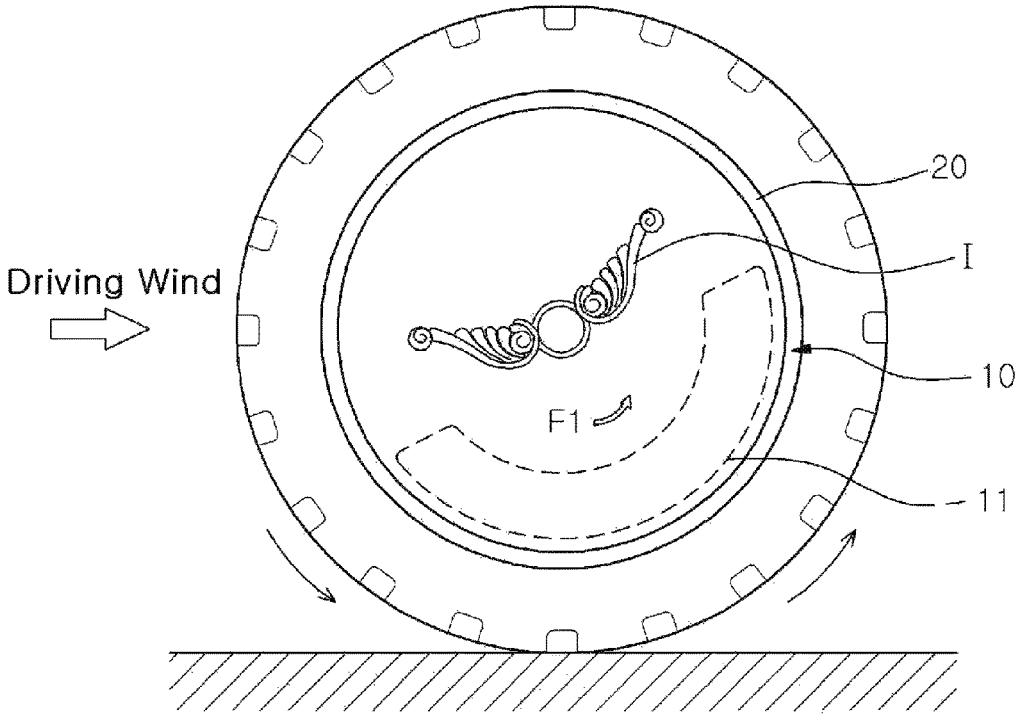

FIG. 2

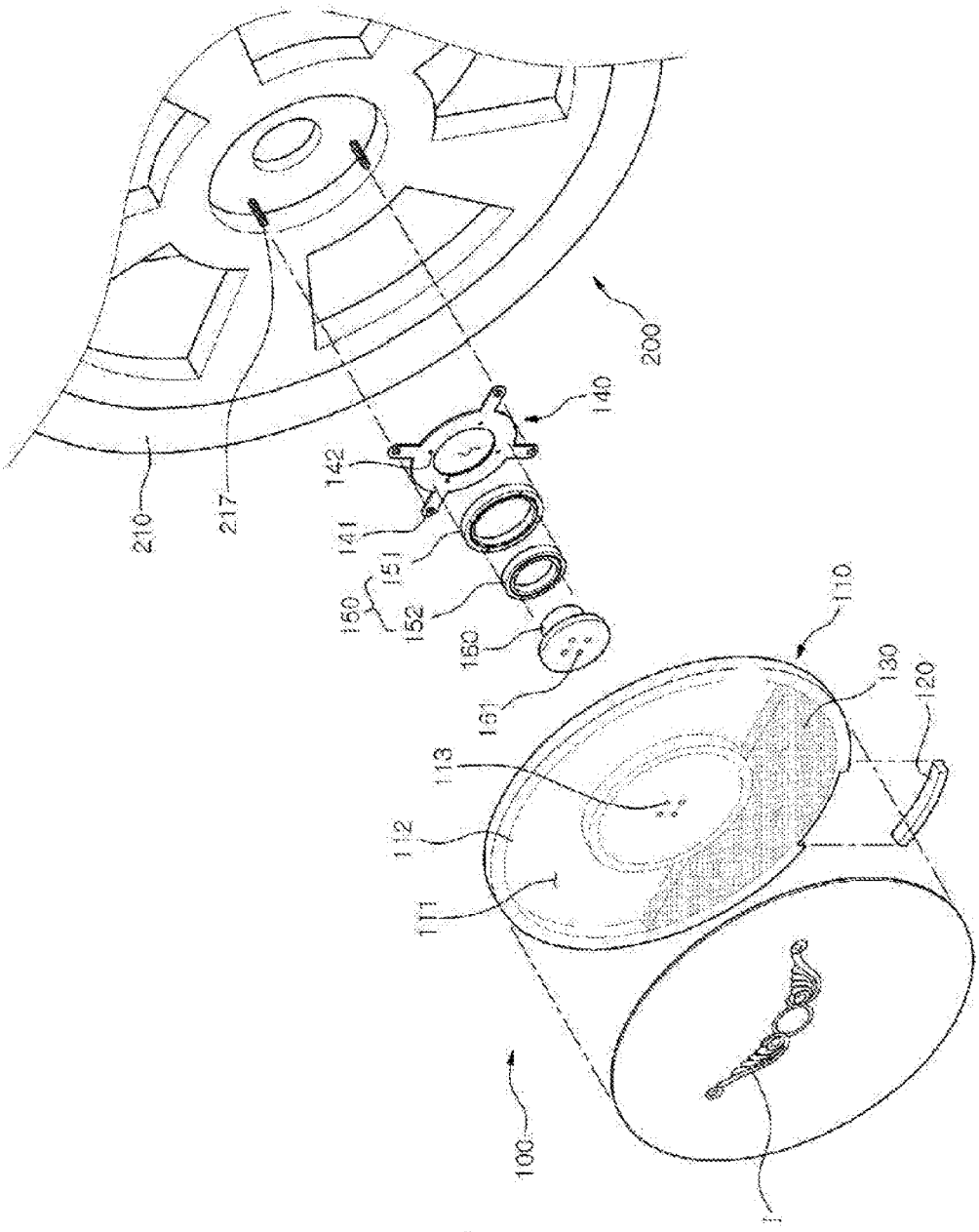
200
140
142
141
151
150
152
160
161
210
217
110
130
120
113
112
111
100

FIG. 3

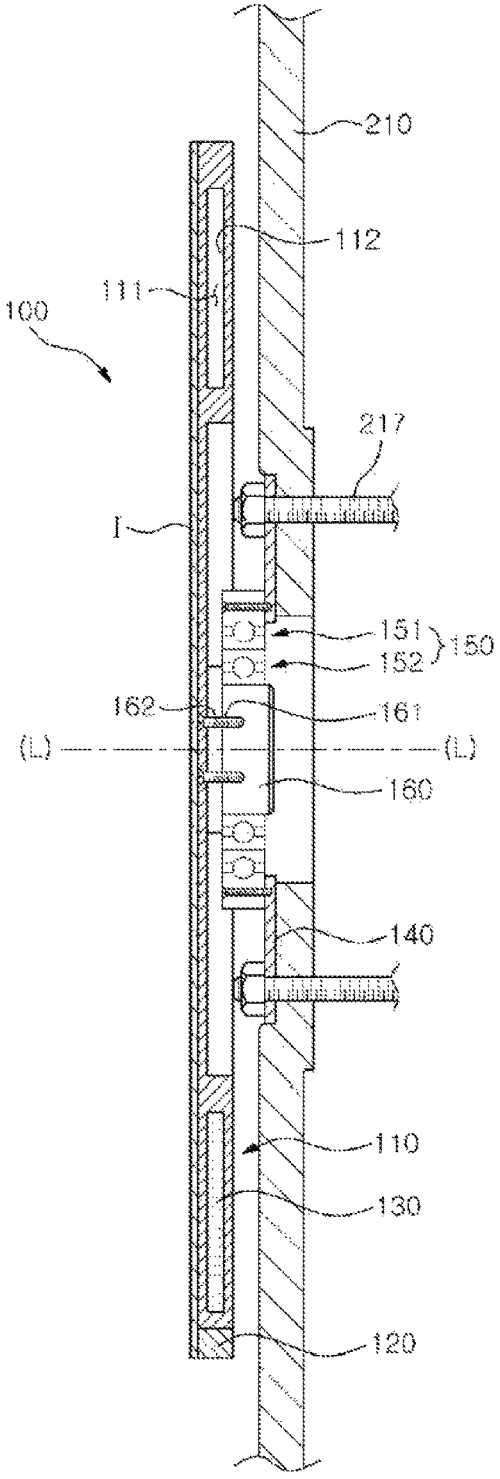

FIG. 4

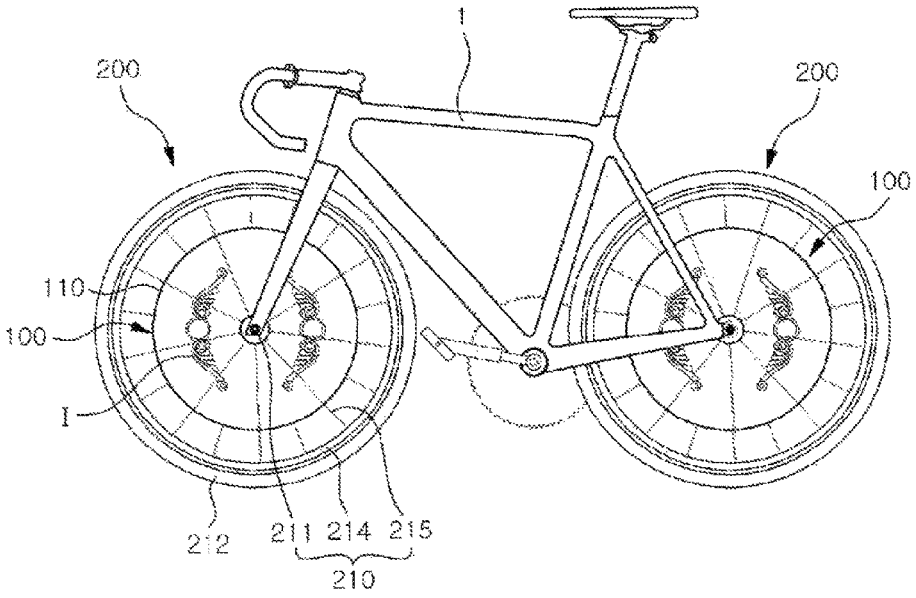
1
200
200
100
110
100
I
212
211
214
215
210

FIG. 5

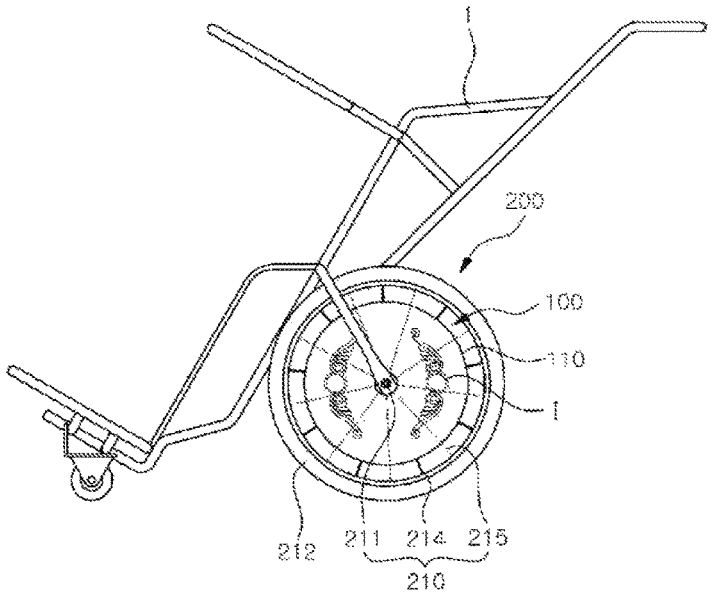
1
200
100
110
I
212
211
214
215
210

FIG. 6

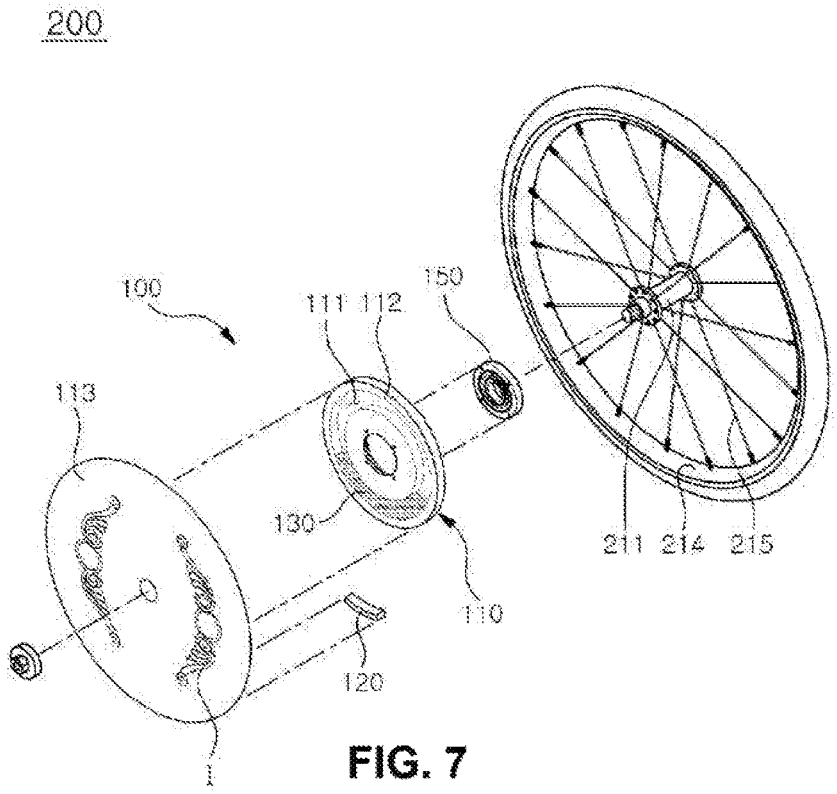
200
100
111 112
150
113
130
211 214 215
110
120

FIG. 7

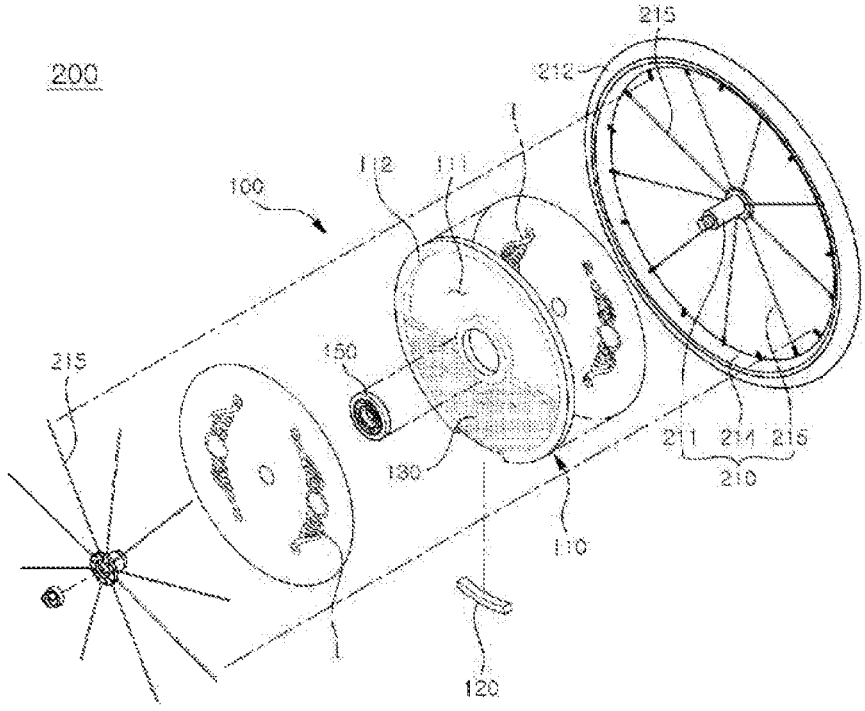
215
200
212
112 111
100
215
150
130
211 214 215
210
110
120

FIG. 8

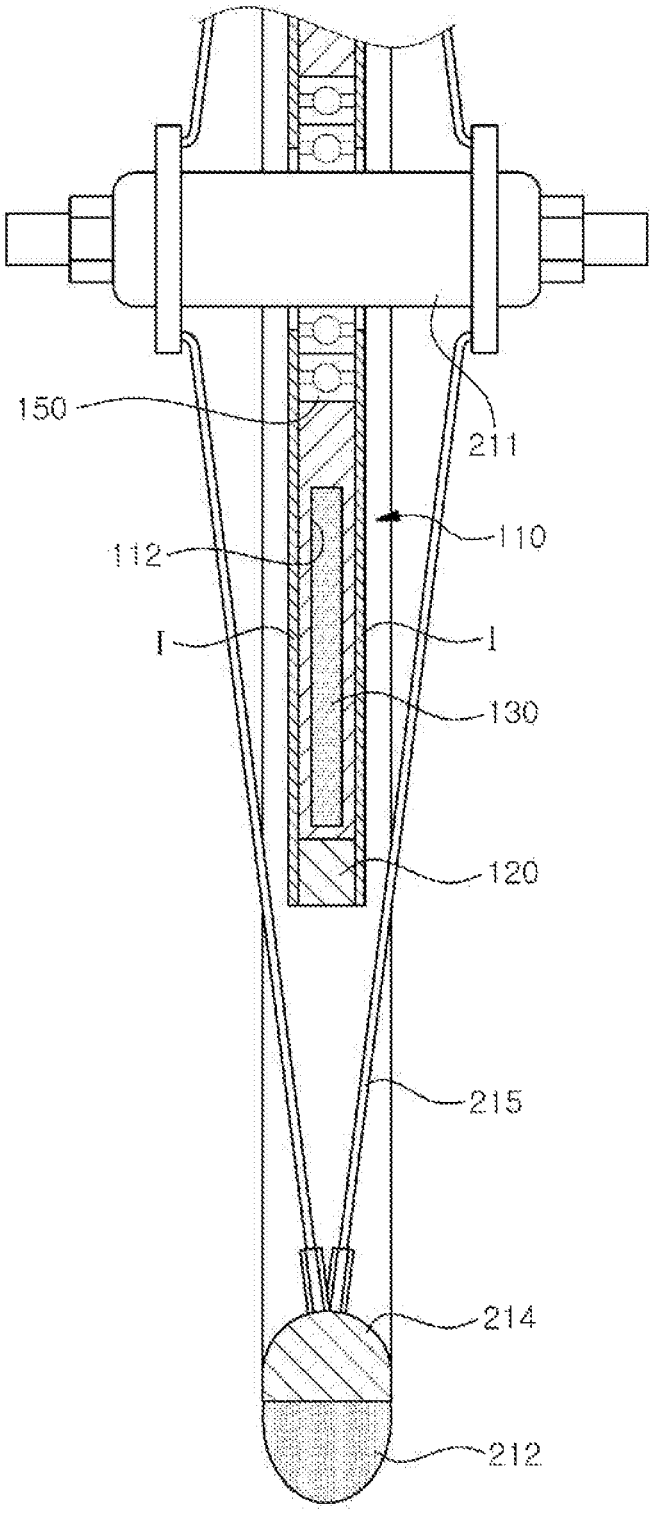

FIG. 9

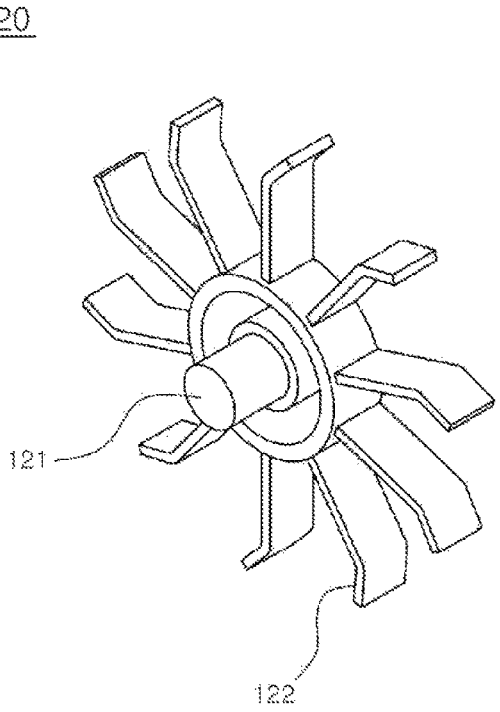
120
121
122

FIG. 10

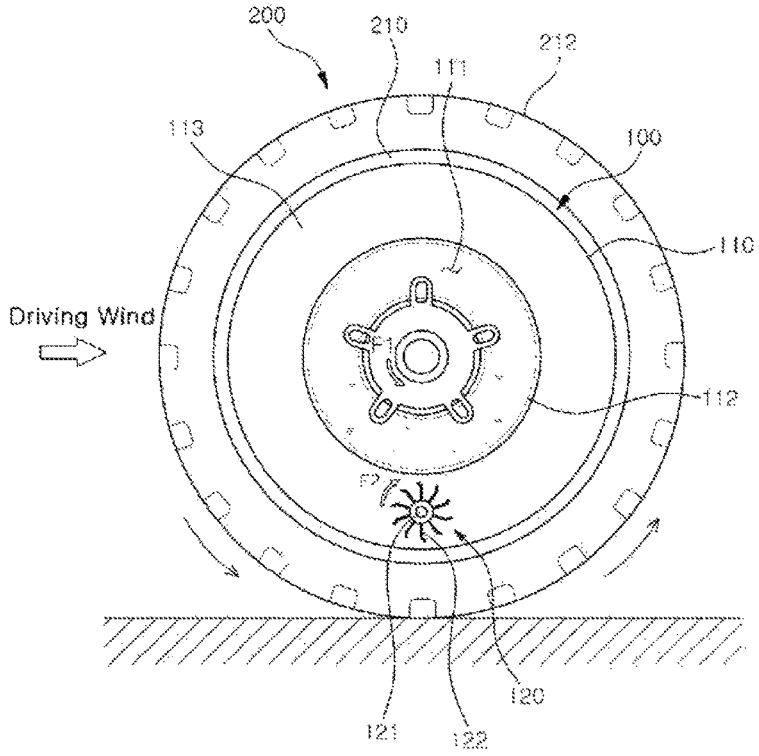
200
210
111
212
113
100
110
Driving Wind
112
120
121
122

FIG. 11

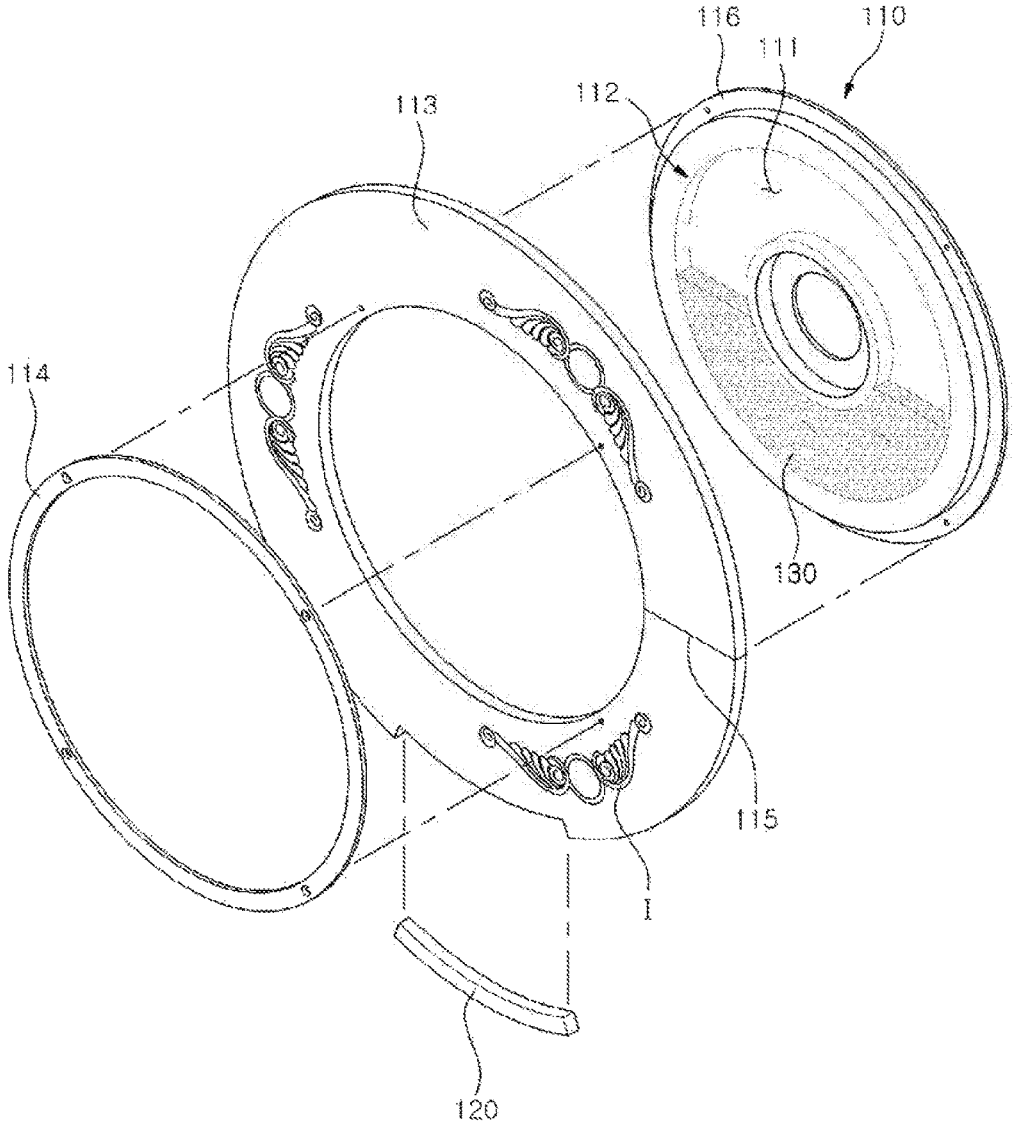

FIG. 12

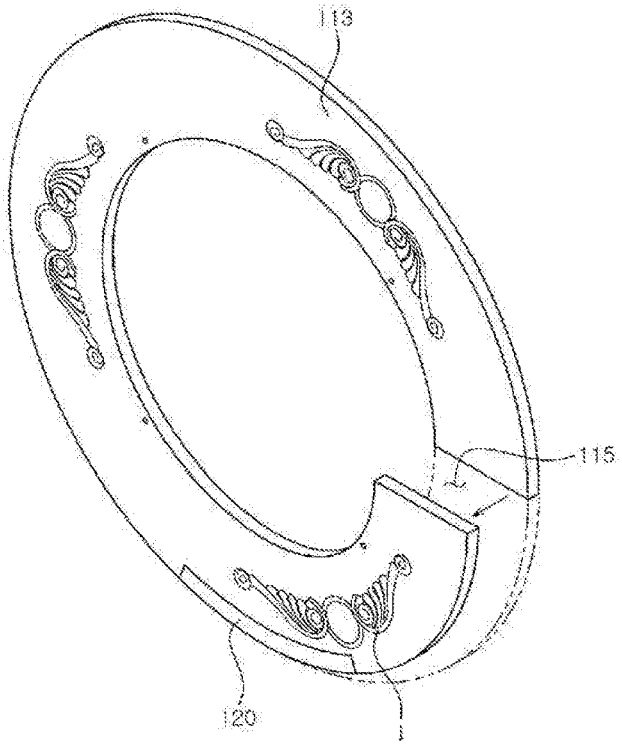

FIG. 13

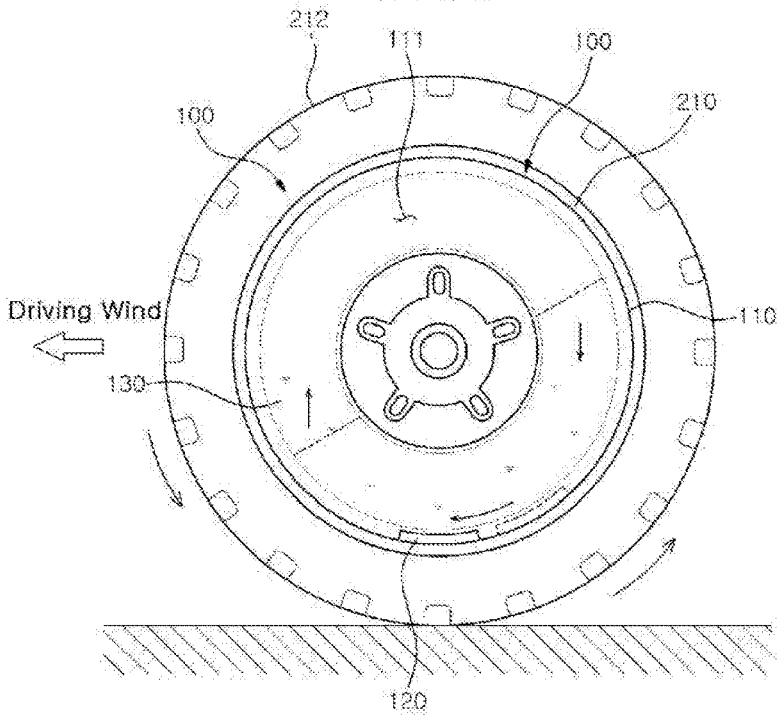

FIG. 14

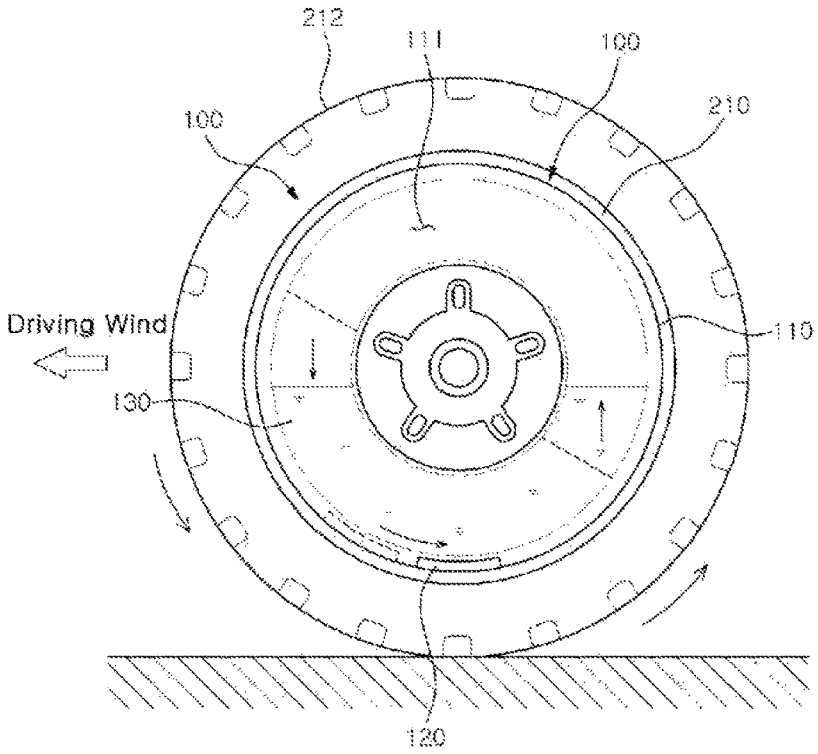
212
111
100
100
210
Driving Wind
110
130
120

FIG. 15

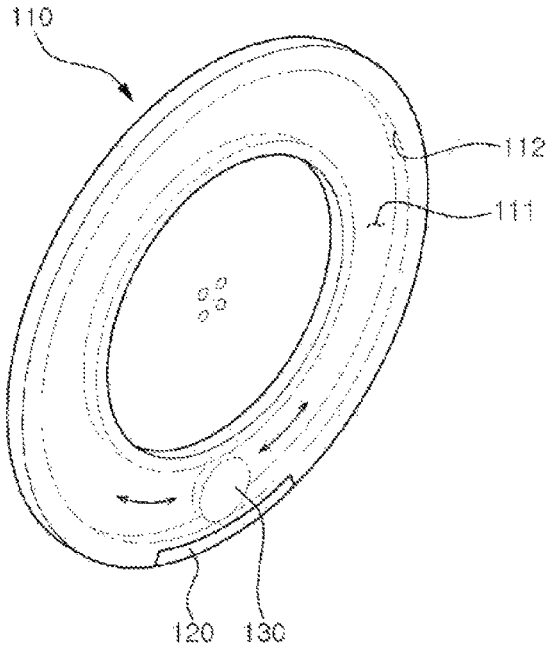
110
112
111
120
130

FIG. 16

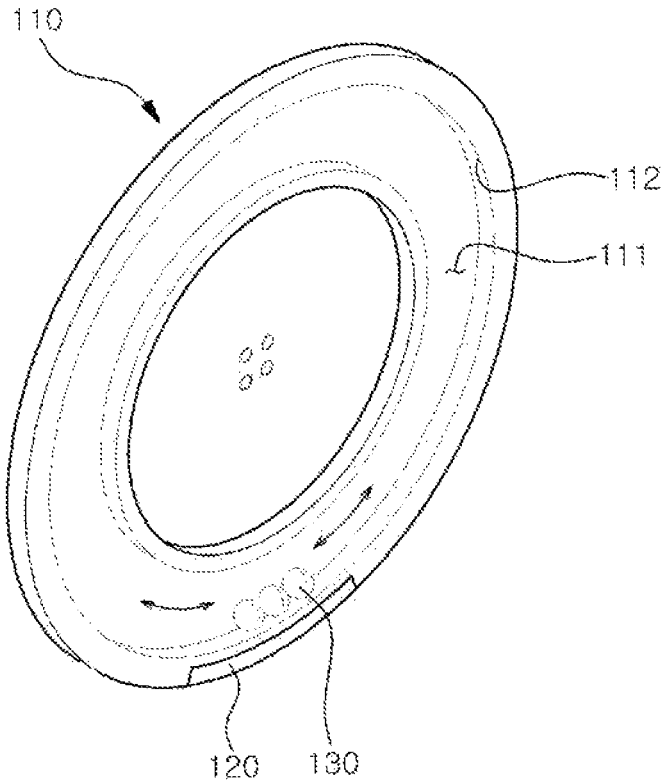

FIG. 17

IMAGE BOARD FOR ROTARY WHEEL AND ROTARY WHEEL INCLUDING SAME

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to an image board for a rotary wheel and a rotary wheel including the same, and more particularly, to an image board for a rotary wheel that is mounted on a rotary wheel of a vehicle such as a car or a bicycle and displays an image at a fixed position regardless of rotation of the rotary wheel, and a rotary wheel including the image board.

Description of Related Art

FIGS. **1** to **2** illustrate the configuration of an image board **10** for a rotary wheel in the related art. Referring to FIG. **1**, the image board **10** of the related art is vertically mounted on a wheel frame **20** of a vehicle **1** to be rotatable through a bearing (not shown). Further, the image board **10** has a weight **11** for predetermined load at a lower portion and various images I such as a logo, an emblem, or and advertising image on the outer side.

Accordingly, even though the wheel frame **20** is rotated while the vehicle **1** runs, the weight **11** keeps the position without rotating by the load of the weight **11** and the image I is displayed at a fixed position, so the image board **10** can provide an advertising effect and a decorative effect as an accessory.

However, while the bearing is rotated such that a wheel frame **20** and the image board **10** are rotated relative to each other, friction is generated on bearing balls inside the bearing. Further, while the vehicle **1** runs, driving wind generates friction on the image board **10** exposed to the outside, so torque F**1** is generated in the image board **10**, as illustrated in FIG. **2**. Accordingly, the image board **10** that is not rotated when the vehicle **1** runs at a low speed is rotated with the wheel frame **20** when the vehicle **1** runs at a high speed.

Further, when the vehicle **1** that is running stops, inertia for forward movement is generated in the weight **11**, so the image board **10** is rotated in the opposite direction to the wheel frame **210**.

Further, since the weight **11** is eccentrically disposed at the lower portion of the image board **10**, when the weight **11** is rotated with the image board **10** due to malfunction of the bearing, vibration is generated by an eccentric weight change of the weight **11**, in which the heavier the weight **11**, the more the vibration increases, and it adversely influences the steering function of the vehicle **1**.

SUMMARY OF THE INVENTION

The present invention has been made in an effort to solve the problems and an object of the present invention is to provide an image board for a rotary wheel that can always display a still image by applying load to return a main weight disposed at a lower portion of a base plate to the original position using a compensating weight even if the main weight is rotated with the base plate that is rotated by friction on bearing balls, driving wind, and inertia force, and a rotary wheel including the image board.

According to an aspect of the present invention, an image board for a rotary wheel, which is mounted on a rotary wheel of a vehicle and displays an image at a fixed position regardless of rotation of the rotary wheel, includes: a base plate that is vertically disposed on the outer side of or inside a wheel frame of the rotary wheel to be rotatable independently from the wheel frame, has a predetermined image on one or both sides, and has a chamber having a space circumferentially extending around a rotational axis; a main weight that is fixed at a lower potion of the base plate and applies load to the lower portion of the base plate; and a compensating weight that is disposed in the space and applies load to return the main weight to an original position by moving in the space when the main weight rotates in a predetermined direction.

The main weight may be an impeller that is rotated in the opposite direction to the wheel frame by driving wind that comes when the vehicle runs.

The compensating weight may be fluid that is injected in the space by a predetermined amount and applies load to the base plate by moving to be leveled by its weight when the main weight rotates.

The image board may further include an expansion plate that is vertically disposed, is larger in diameter than the base plate, is mounted on a side or around the edge of the base plate, and has a predetermined image on one or both sides.

According to another aspect of the present invention, a rotary wheel that is mounted at a lower portion of a vehicle, moves the vehicle by rotating, and displays an image at a fixed position, includes: a wheel frame that is fitted in a tire and rotated by power; and an image board that includes a base plate that is vertically disposed on the outer side of or inside the wheel frame of the rotary wheel to be rotatable independently from the wheel frame, has a predetermined image on one or both sides, and has a chamber having a space circumferentially extending around a rotational axis, a main weight that is fixed at a lower potion of the base plate and applies load to the lower portion of the base plate, and a compensating weight that is disposed in the space and applies load to return the main weight to an original position by moving in the space when the main weight rotates in a predetermined direction.

According to the present invention, the following effects can be achieved.

First, even if the base plate is rotated and the main weight at the lower portion is accordingly rotated by friction between bearing balls generated while the vehicle runs and inertia generated by driving wind or stop of the vehicle, the compensating weight in the chamber of the base plate applies load to return the main weight to the original position by moving in the space of the chamber, so it is possible to display an image at a fixed position.

Second, when an impeller that is rotated in the opposite direction to the wheel frame by driving wind that comes when the vehicle runs is used as the main weight, the faster the wheel frame rotates, the larger the rotational speed of the impeller and the larger the inertia force and the friction force generated by the impeller, so it is possible to minimize the torque of the base plate at a high speed.

Third, when fluid injected in the space by a predetermined amount is used as the compensating weight, the weight can apply load by instantaneously moving to be leveled in the space when the main weight is rotated, so it is possible to maximize the response speed for applying load to return the main weight to the original position.

Fourth, since the expansion plate having a predetermined image on the outer side is vertically disposed on a side or around the edge of the base plate, it is possible to make the base plate thin and it is also possible to largely increase the area where an image can be disposed in accordance with the diameter of the wheel frame.

Further, since the expansion plate can be separated from the base plate, a user can freely change the image. Further-

more, when the base plate is vertically disposed inside the wheel frame, it is possible to fit the expansion plate inside the spokes of the wheel frame through the slit formed at a predetermined position on the expansion plate, so convenience for the user is improved and the expansion plate can be easily replaced.

These and other features and advantages of the invention will become apparent to those skilled in the art from the following description and the accompanying drawing. It should be understood, however, that the detailed description and specific examples, while indicating a preferred embodiment of the present invention, are given by way of illustration and not of limitation. Many changes and modifications may be made within the scope of the present invention without departing from the spirit thereof, and the invention includes all such modifications.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. **1** and **2** are a perspective view and a side view, respectively, illustrating the configuration and the operational principle of an image board for a rotary wheel in the related art;

FIGS. **3** and **4** are an exploded perspective view and a lateral cross-sectional view, respectively, illustrating a configuration in which an image board for a rotary wheel according to a preferred embodiment of the present invention is mounted on the outer side of a wheel frame;

FIGS. **5** and **6** are side views illustrating a configuration in which the image board for a rotary wheel according to a preferred embodiment of the present invention is mounted on various vehicles;

FIG. **7** is an exploded perspective view illustrating another configuration for mounting an image board for a rotary wheel according to a preferred embodiment of the present invention on the outer side of a wheel frame;

FIGS. **8** and **9** are an exploded perspective view and a lateral cross-sectional view, respectively, illustrating a configuration in which an image board for a rotary wheel according to a preferred embodiment of the present invention is mounted inside a wheel frame;

FIG. **10** is a perspective view illustrating a configuration in which a main weight according to a preferred embodiment of the present invention is formed in the shape of an impeller;

FIG. **11** is a side view illustrating the operational principle of the main weight having the shape of an impeller according to a preferred embodiment of the present invention;

FIGS. **12** and **13** are an exploded perspective view, a lateral cross-sectional view, and a perspective view illustrating the configuration of an expansion plate according to a preferred embodiment of the present invention;

FIGS. **14** and **15** are side views illustrating the operational principle of a compensating weight according to a preferred embodiment of the present invention; and

FIGS. **16** and **17** are perspective views illustrating the operational principle of a disc and a spherical compensating weight according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The objects, features, and advantages of the present invention described above will be made clear by the following detailed description. Hereinafter, preferred embodiments of the present invention are described in detail with reference to the accompanying drawings.

A rotary wheel **200** according to a preferred embodiment of the present invention, which is a rotary wheel mounted at a lower portion of a vehicle **1** such as a car or a bicycle and displaying an image I at a fixed position while moving the vehicle (**1**) by rotating, includes a wheel frame **210** and an image board **100**.

Herein, the vehicle **1** can be moved by the rotary wheel **200** and the rotary wheel **200** is a moving device having the wheel frame **210** on which the image board **100** can be mounted. As illustrated in FIGS. **1**, **5**, and **6**, the vehicle **1** includes all of not only a car, bicycle, and a cart, but also other vehicles equipped with the rotary wheel **200** having the wheel frame **210** such as a motor cycle, a golf cart, a wheelchair, and a baby walker.

The wheel frame **210**, which is a wheel member to be fitted in a tire **212** and rotated by power, is mounted with the image board **100** that can independently rotate, may be formed in an integrated type such as the wheel frames for cars, depending on the type of the vehicle **1**, and may be fitted on a driving shaft to be rotatable. Alternatively, the wheel frame **210**, similar to those of a bicycle, may include a rim **214** that is fitted in a tire **212**, a rotary shaft **211** that is disposed at the center of the rim **214** and rotated by torque from a chain or an engine, and a plurality of spokes **215** that connects the rotary shaft **211** and the rim **214** to each other to support load.

The image board **100**, a part independently rotatably mounted on the wheel frame **210** and displaying an image I at a fixed position regardless of rotation of the wheel frame **210**, as illustrated in FIGS. **3** to **9**, includes a base plate **110**, a main weight **120**, and a compensating weight **130**.

The base plate **110**, which is a disc-shaped member forming the body of the image board **100**, is vertically disposed on the outer side of or inside the wheel frame **210** of the rotary wheel **200** to be rotatable independently from the wheel frame **210**.

Further, the base plate **110** has a predetermined image I on a side or both sides and has a chamber **112** providing a space **111** circumferentially extending around a rotational axis L.

Herein, the base plate **110** may be coupled to a bearing **150** and vertically disposed on the outer side of or inside the wheel frame **210** such that it can rotate independently from the wheel frame **210** through the bearing **150**.

The image I, which includes various design images such as a logo, an emblem, or an advertising image, may be intactly printed on the base plate **110** as it is, a sheet printed with the image I may be attached to the base plate **110**, a specific image plate printed with the image I may be mounted on the base plate **110**, or a symbol having a specific shape may be mounted on the base plate **110**.

Further, when the image I is not exposed (illustrated) on the inner side connected to the driving shaft like the wheel frame **210** of a car, but is exposed to the outside on the outer side, it is disposed on the outer side of the base plate **110**. Further, when the image I is exposed to the outside on both sides through the spoke **215** like the wheel frame **210** of a bicycle, it is preferable to dispose the image on both sides of the base plate **110**, thereby increasing the effect of exposing the image.

Further, the chamber **112**, which provides a space and a passage for moving the compensating weight **130**, has a ring-shaped space **111** that is disposed at a side or at the center of the base plate **110** and rotated about the rotational axis L of the base plate **110**.

Although the disc-shaped base plate **110** is exemplified in the drawings, the present invention is not limited thereto and the entire shape is not limited, including an ellipse, a triangle, a rectangle, and a polygon etc. However, it is preferable that the chamber **112** has an entirely circular shape such as an O-shape or a C-shape.

Further, as illustrated in FIGS. **3** and **4**, when the wheel frame **210** is exposed to the outside on the outer side, the image board **100** is rotatably mounted on the outer side of the wheel frame **210**, and to this end, a coupling plate **140**, a bearing **150**, and a fixing shaft **160** are further included.

In more detail, the coupling plate **140**, which is a plate vertically coupled to a side of the wheel frame **210** to support the image board **100** so that the image board **100** is rotatably mounted on the wheel frame **210**, is formed in a plate shape and has a plurality of fastening holes **141** around it for inserting screws **217** protruding from the wheel frame **210** and a fastening hole **142** at the center for coupling the bearing **150**.

Further, the bearing **150**, which is coupled to the center of the coupling plate **140** to physically isolate the image board **100** from rotation of the wheel frame **210**, is fixed to the center of the coupling plate **140** around the outer side and is fitted on the fixing shaft **160**.

Herein, the bearing **150** is composed of a plurality of individual bearings **151** and **152** having different inner diameters and sequentially fitted in larger ones, so torque F**1** (see FIG. **11**) that rotates the image board **100** can be reduced by friction and inertia force generated by rotation of the individual bearings **151** and **152**.

The fixing shaft **160**, which is fitted in the center of the bearing **150** between the bearing **150** and the base plate **110** and is rotatably coupled to the coupling plate **140** through the bearing **150**, as illustrated in FIG. **3**, has a first end fitted in the bearing **150** and a second end coupled to the center of the base plate **110**.

Further, fastening holes **160** for thread-fastening are formed at the second end of the fixing shaft **160**, so, as illustrated in FIG. **4**, the fixing shaft **160** can be firmly fastened inside the base plate **110** by screws **162** that are tightened in fastening holes **113** formed through the base plate **110** at positions corresponding to the fastening holes **161**.

On the other hand, when both sides of the wheel frame **210** are exposed through the spoke **215** such as bicycle, a motor cycle, a golf cart, a wheelchair, and a cart, as illustrated in FIG. **7**, the image board **100** may be mounted on the outer side of the wheel frame **210**, but, as illustrated in FIGS. **8** and **9**, the image board **100** may be rotatably mounted inside the wheel frame **210**.

In more detail, as illustrated in FIG. **7**, the bearing **150** is fitted on a rotary shaft **211** of the wheel frame **210** and the bearing **150** is fitted in the center of the base plate **110**, whereby the image board **100** can be vertically mounted on the outer side of the wheel frame **210** to be independently rotatable.

In this configuration, as in the type of fastening an image board to the wheel frame **210** of a car, a specific coupling plate (not illustrated) may be provided to more strongly fit the bearing **150** on the rotary shaft **211** or more strongly fit the bearing **150** in the base plate **110**.

Further, as illustrated in FIGS. **8** and **9**, the base plate **110** may be vertically disposed inside the wheel frame **210**, whereby the image board **100** can be protected from the outside by the spoke **215** without protruding to the outside and the external appearance can be improved.

To this end, the bearing **150** may be laterally fitted on the horizontal rotary shaft **211** of the wheel frame **210** by the hole therein and the base plate **110** may be fitted on the bearing **150** and vertically disposed inside the wheel frame **210** such that it can be rotated independently from the wheel frame **210** by the bearing **150**.

The main weight **120**, which is a part applying load to the lower portion of the base plate **110** so that the image I on the image board **100** can be displayed always at a fixed position even though the wheel frame **210** is rotated, as illustrated in FIGS. **3** and **4**, is fixed at an eccentric lower portion on the base plate **110** with the image I vertically disposed to be displayed to the outside and applies load to the lower portion of the base plate **110**.

Herein, although the main weight **120** is exemplified as a smooth curved bar in the drawings, the present invention is not limited thereto and the shape is not limited as long as it can minimize friction with external air while applying load to the lower portion of the base plate **110** such as a disc or a sphere.

Further, as illustrated in FIGS. **10** and **11**, the main weight **120** may be an impeller **120** that is rotated in the opposite direction to the wheel frame **210** by driving wind that comes when the vehicle **1** runs.

The impeller **120** generates torque F**2** (see FIG. **11**) in the opposite direction to offset the torque F**1** generated by rotation of the wheel frame **210** to display the image I always at a fixed position on the base plate **110** even though the wheel frame **210** is rotated at a high speed.

In more detail, an end of a rotary shaft **121** of the impeller **120** is fixed to the lower portion of the base plate **110** and a plurality of blades **122** that is curved or inclined to be rotated in the opposite direction to the wheel frame **210** by the driving wind from the front is arranged around the rotary shaft **121**. Accordingly, as the blades **122** are rotated about the rotary shaft **121** by driving wind, the torque F**2** is generated.

As described above, since the impeller **120** that is rotated in the opposite direction to the wheel frame **210** by driving wind that comes when the vehicle **1** runs is mounted at the lower portion of the base plate **110**, the torque F**1** generated by the wheel frame **210** rotating when the vehicle **1** runs is offset by inertial force F**2** generated by rotation of the impeller **120** and friction force F**2** on the blades **122**, whereby it is possible to display the image I at a fixed position regardless of the rotation of the wheel frame **210**. Herein, the inertia force F**2** generated in the opposite direction to the rotational direction of the wheel frame **210** when the blades **122** are rotated is caused by a gyro phenomenon.

On the other hand, the image board may further include an expansion plate **113** that is relatively larger in diameter than the base plate **110**, is vertically disposed on a side or around the edge of the base plate **110**, and has a predetermined image I on one or both sides.

In more detail, as illustrated in FIG. **7**, the expansion plate **113** is a large-diameter disc covering a side of the base plate **110** and, may be fastened to the base plate **110** at the center of the inner side and may have the image I on the outer side.

Further, as illustrated in FIGS. **12** and **13**, the expansion plate **113** may be formed in a ring shape to be fitted around the base plate **110** and may have an image I, which relates to or is independent from the image on the base plate **110**, on the outer side. Herein, as illustrated in the figures, a step **116** for supporting a side around the inner edge of the expansion plate **113** is formed around the edge of the base plate **110** and the expansion plate **113** is thread-fastened firmly to the base plate **110** with the side around the inner

edge supported on the step **116** and the other side around the inner edge pressed by a fastening ring.

Herein, as illustrated in FIG. **12**, when the expansion plate **113** is mounted on the base plate **110**, the main weight **120** applying load to the lower portion may be mounted at an eccentric lower portion of the expansion plate **113**. Accordingly, the main weight **120** is further spaced from the rotational axis L as compared with the main weight disposed at a lower portion of the chamber **112**, the torque F**2** generated in the base plate **110** is increased.

Further, when the expansion plate **113** is formed in a ring shape and fitted around the base plate, as illustrated in FIG. **13**, it is preferable that the expansion plate **113** is made of a flexible material and has a slit **115** formed in the width direction at a predetermined position so that it can be fitted inside the spokes **215** through the slit **115** to be detachably coupled to the base plate **110**.

The compensating weight **130** is disposed in the space **111** and, applies load to return the main weight **120** to the original position by moving in the space **111** when the main weight **120** is rotated in any directions together with the base plate **110**.

Herein, as illustrated in FIGS. **3** and **4**, the compensating weight **130** may be fluid **130** that is injected in the space **111** by a predetermined amount to apply load to the base plate **110** so that the main weight **120** can return to the original position, by moving to be leveled by its load when the main weight **120** is rotated.

Accordingly, as illustrated in FIG. **14**, when the main weight **120** is rotated clockwise with rotation of the base plate **110**, the right part of the fluid **130** moves down and the left part moves up in the space **111**, so the load of the fluid **130** acts down to the base plate **110**, whereby the main weight **120** returns counterclockwise to the original position and accordingly the image I on the base plate **110** can keep the position.

On the contrary, when the main weight **120** is rotated counterclockwise, the left part of the fluid **130** moves down and the right part moves up in the space **111**, so the weight of the fluid **130** acts down to the base plate **110**, whereby the main weight **120** returns clockwise to the original position and accordingly the image I on the base plate **110** can keep the position.

Further, using antifreezing liquid having a low freezing temperature relative to common liquid such as water makes it possible to normally operate the image board **100** without the fluid **130** freezing in a coldest season such as winter or in an intensively cold area such as Russia.

As described above, when the fluid **130** injected by a predetermined amount in the space **111** of the chamber **112** is used as the compensating weight **130**, the liquid instantaneously moves to be leveled in the space **111** when the main weight **120** rotates, so it is possible to maximize the response speed for applying load to return the main weight **120** to the original position.

On the other hand, as illustrated in FIGS. **16** and **17**, the compensating weight **130** may be a disc or a sphere to apply load to a wheel cover **140** so that the main weight **120** returns to the original position, by rolling on the inner side of the space **111** to move down in the space **111** when the main weight **120** rotates.

Further, it may be possible to adjust the size of the disc or the sphere or it may be possible to provide a plurality of compensating weights in the space **111**, depending on the magnitude of the load for returning the main weight **120** to the original position.

It will be apparent to those skilled in the art that the foregoing present invention is not limited by the foregoing embodiments and the accompanying drawings, and various modifications and changes may be made without departing from the scope and spirit of the invention.

The invention claimed is:

1. An image board configured to be mounted on a rotary wheel of a vehicle and to display an image at a stationary position regardless of rotation of the rotary wheel, the image board comprising:

a base plate disposed on an outer side or an inner side of a rim of the rotary wheel in a rotatable manner independently from the rim, having a predetermined image on at least one side thereof, and including a chamber having a space circumferentially extending around a rotational axis;

a first weight configured to be arranged at a lower portion of the base plate and to apply a load to the lower portion of the base plate; and

a second weight configured to be arranged in the space,

wherein the first weight includes an impeller configured to rotate in an opposite direction to a rotation direction of the rotary wheel by a driving wind power generated when the vehicle runs.

2. The image board according to claim **1**, wherein the second weight includes fluid.

3. The image board according to claim **2**, wherein the fluid includes water or antifreeze.

4. The image board according to claim **1**, wherein the second weight includes at least one disc member or at least one sphere member.

5. The image board according to claim **1**, further comprising an expansion plate formed in a plate shape having a size larger than that of the base plate, arranged on a side or around an edge of the base plate, and having a predetermined image on at least one side.

6. The image board according to claim **5**, wherein

the expansion plate is formed in a disc shape covering the base plate,

a center portion of a first side of the expansion plate is coupled to the base plate, and

a second side of the expansion plate has the predetermined image.

7. The image board according to claim **5**, wherein

the expansion plate is formed in a ring shape with an inner circumference thereof mounted on an outer circumference of the base plate, and

the predetermined image on the expansion plate is related to or independent from the predetermined image on the base plate.

8. The image board according to claim **7**, wherein the expansion plate includes a slit formed in a width direction at a predetermined position thereof.

9. A rotary wheel, comprising the image board according to claim **1**.

10. A vehicle, comprising the rotary wheel according to claim **9**.

11. An image board configured to be mounted on a rotary wheel of a vehicle and to display an image at a stationary position regardless of rotation of the rotary wheel, the image board comprising:

a base plate disposed on an outer side or an inner side of a rim of the rotary wheel in a rotatable manner independently from the rim, having a predetermined image on at least one side thereof, and including a chamber having a space circumferentially extending around a rotational axis;

an expansion plate formed in a plate shape having a diameter larger than that of the base plate, arranged on a side or around an edge of the base plate, and having a predetermined image on at least one side;

a first weight configured to be arranged at a lower portion of the expansion plate and to apply a load to the lower portion of the base plate; and

a second weight configured to be arranged in the space,

wherein the first weight includes an impeller configured to rotate in an opposite direction to a rotation direction of the rotary wheel by a driving wind power generated when the vehicle runs.

12. The image board according to claim **11**, wherein the second weight includes fluid.

13. The image board according to claim **12**, wherein the fluid includes water or antifreeze.

14. The image board according to claim **11**, wherein the second weight includes at least one disc member or at least one sphere member.

15. The image board according to claim **11**, wherein

the expansion plate is formed in a disc shape covering the base plate,

a center portion of a first side of the expansion plate is coupled to the base plate, and

a second side of the expansion plate has the predetermined image.

16. The image board according to claim **11**, wherein

the expansion plate is formed in a ring shape with an inner circumference thereof mounted on an outer circumference of the base plate, and

the predetermined image on the expansion plate is related to or independent from the predetermined image on the base plate.

17. The image board according to claim **16**, wherein the expansion plate includes a slit formed in a width direction at a predetermined position thereof.

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