

【DESCRIPTION】**【Invention Title】**

GUARD RAIL FOR ABSORBING IMPACT

5 **【Technical Field】**

The present invention relates to a guard rail for absorbing impact and, particularly to, a guard rail for absorbing impact which can prevent a vehicle from climbing the guard rail when the vehicle collides therewith, since a
10 pair of rotating rollers are designed so that a diameter thereof respectively increases towards a top portion of an upper roller and a bottom portion of a lower roller from an interface where the rollers are brought into contact with each other.

15

【Background Art】

As automotive industry progresses, the number of vehicles is increasing, and the current trend is an increase in height of the vehicles, since the vehicles have become
20 bigger.

Guard rails are installed on a boundary between a roadway for vehicles and a sidewalk for pedestrians so as to protect people from the vehicles, or along a centerline of a road as a median barrier.

25 In addition, a guard rail is installed on a veering

road, such as a sharp curve, an underground passage or an overpass, to notify a driver of the state thereof, and researches are carrying out to make the driver drive safely, for example, by providing the guard rail with reflectors for
5 alerting the drivers of the danger.

For example, a traffic delineator for a guard rail is disclosed in Korean Utility Model No. 200227076 to inform a driver of a boundary of a road by calling a driver's attention, in which a pair of a post for supporting the guard
10 rail and a cover for the post forms one assembly, thereby performing easy installation and maintenance and properly improving visibility of the driver.

In particular, disclosed is a guard rail for absorbing impact generated when a vehicle collides with the guard rail,
15 and stopping the vehicle or keeping the vehicle in a normal driving direction.

For example, Korean Patent Application No. 10-2009-0136281, Korean Utility Model No. 0281819 and Korean Patent No. 1003368 disclose a guard rail for absorbing impact which
20 includes a plurality of rotating rollers.

The rotating rollers of the guard roller according to the related art have a problem in that since the rollers are integrally formed by foaming a urethane material, it is easily broken by collision.

25 Also, there is another problem in that the vehicle climbs the guard rail and thus strays into dangerous areas.

【Disclosure】**【Technical Problem】**

Accordingly, the present invention has been made in view
5 of the above-mentioned problems, and an object of the present
invention is to provide a guard rail for absorbing impact
which can prevent a vehicle from climbing the guard rail at
collision.

Another object of the present invention is to provide a
10 guard rail for absorbing impact which can prevent the guard
rail from being broken by vehicle collision and absorb the
impact applied from the collision.

【Technical Solution】

15 To accomplish the above-mentioned object, according to
one aspect of the present invention, there is provided a
guard rail for absorbing impact, including: embedded posts
configured to be installed under the ground at regular
intervals; a rail configured to be engaged to the embedded
20 posts in a horizontal direction; and rotating rollers
configured to be rotatably installed to the embedded post
which penetrates the rotating rollers, wherein a pair of
rotating rollers stacked in a vertical direction are
installed to the post, and the pair of rotating rollers
25 stacked in the vertical direction are designed so that a
diameter thereof respectively increases towards a top portion

of an upper roller and a bottom portion of a lower roller from an interface where the rollers are brought into contact with each other, thereby preventing a vehicle from climbing the guard rail.

5 Preferably, each of the rotating rollers has a sheath having a hollow inner portion, and a shock absorbing material filled in the inner portion of the sheath to absorb the impact at vehicle collision.

10 Preferably, the shock absorbing material is formed by foaming urethane in the inner portion of the sheath.

Preferably, the rail includes an upper rail and a lower rail provided parallel to each other, and the pair of rotating rollers are provided between the upper rail and the lower rail.

15 Preferably, a space between the upper rail and the lower rail is larger than a sum of heights of the pair of rotating rollers, so that the pair of rotating rollers is spaced apart from each other to absorb the impact and prevent the vehicle from climbing the guard rail, when the vehicle collides with
20 the guard rail.

Preferably, the guard rail for absorbing impact further includes at least one auxiliary post provided between the embedded posts and engaged to the upper rail and the lower rail, wherein the pair of rotating rollers is rotatably
25 installed to the auxiliary post which penetrates the rotating rollers.

【Advantageous Effects】

With the above configuration, the pair of rotating rollers stacked in the vertical direction are designed so that the diameter thereof respectively increases towards the top portion of the upper roller and the bottom portion of the lower roller from the interface where the rollers are brought into contact with each other, thereby preventing a vehicle from climbing the guard rail.

In addition, since the shock absorbing material of a soft material is formed in the sheath of a hard material by foaming, it can prevent the rollers from being broken and absorb the impact.

【Description of Drawings】

Figs. 1 to 3 are views illustrating an embodiment of the present invention.

Figs. 4 to 6 are vies illustrating major parts of the embodiment of the present invention in detail.

Fig. 7 is a view illustrating a use state of the present invention.

【Mode for Invention】

Hereinafter, the configuration and operation of a preferred embodiment of the present invention will now be

described in detail with reference to the accompanying drawings.

Referring to Figs. 1 to 3, a guard rail 1 for absorbing impact according to the present invention includes embedded
5 posts 1, rails 20 and rotating rollers 3.

The embedded posts are components to be installed under the ground at regular intervals. Also, a post cap 13 is engaged to a top surface of each embedded post 1.

The rails 2 are engaged to the embedded posts 1 in a
10 horizontal direction. In particular, it will be understood that an upper rail 21 and a lower rail 22 are engaged to the embedded posts, with one being parallel to the other. The upper rail 21 and the lower rail 22 are fastened to the embedded posts 1 by screws 11 and 12.

15 The rotating roller 3 is a component to be rotatably installed to the embedded post 1 which penetrates the rotating roller. The rotating roller 3 is designed to absorb impact applied when a vehicle collides with the guard rail and to keep the collided vehicle in a normal driving
20 direction. The rotating roller 3 is adhered by a reflective sheet S to attract driver's attention at night. A pair of rotating rollers 30 positioned in a vertical direction is installed to the post, which will be described later in detail.

25 Referring to Fig. 4, auxiliary posts 40 are provided between the embedded posts 10. The auxiliary post 40 is to

rotatably support the rotating rollers 30 between the embedded posts 10.

Specifically, the auxiliary post 40 is formed with fastening holes 41 and 43 at upper and lower portions thereof, and is fastened to the upper rail 21 and the lower rail 22 by inserting and screwing bolts 42 and 44 through the fastening holes 41 and 43. The pair of rotating rollers 30A and 30B is installed to the auxiliary post 40 in a stacked manner. Also, the upper portion of the auxiliary post 40 is covered by the post cap 13.

According to this embodiment, referring to Fig. 5, the rotating roller 30 has a sheath 31 made of a PE material and a shock absorbing material 32 (see Fig. 5b) formed by foaming urethane in a hollow inner portion of the sheath 31 (see Fig. 5a). The sheath 31 is formed with a groove 33 on an outer peripheral surface thereof, to which a reflective sheet is attached.

Specifically, the rotating roller 30 according to this embodiment is made of two different kinds of materials, that is, the sheath 31 and the shock absorbing material 32, so that the sheath 31 of relatively high hardness protects the roller from being broken when the vehicle collides with the guard rail, and the shock absorbing material 32 absorbs the impact applied from the collision to protect a driver and a vehicle.

In particular, according to this embodiment, the shock absorbing material 32 which is first formed by foaming the urethane is not inserted into the inner portion of the sheath 31, but the shock absorbing material 32 is integrally formed with the sheath 31 by foaming urethane in the inner portion of the sheath 31. If the shock absorbing material 32 is formed with the sheath 31 by foaming urethane in the inner portion of the sheath 31, the strength of the rotating roller is not only increased, but its production is easy.

Also, according to the present invention, two rotating rollers 30A and 30B are stacked in the vertical direction, and then are installed to the embedded post 10 or the auxiliary post 40, with the post penetrating the rotating rollers.

It would be noted that the rotating rollers 30A and 30B stacked in the vertical direction are designed so that a diameter thereof respectively increases towards the top portion of the upper roller and the bottom portion of the lower roller from an interface where the rollers are brought into contact with each other ($r_2 < r_1 = r_3$).

Specifically, the rotating rollers 30A and 30B have an inclined surface 34 along a cross-sectional surface thereof on the whole or partial sidewall thereof to form a section of which the diameter is decreased.

When the pair of the rotating rollers 30A and 30B is stacked in the vertical direction, the sections with the

decreased diameter are brought into contact with each other, and then the rotating rollers are installed to the embedded post 10 or the auxiliary post 40. Accordingly, the pair of the rotating rollers 30A and 30B is similar to a double-headed drum with a narrow waist in the middle in the installed state. It can effectively prevent the vehicle from climbing the guard rail, since the center diameter (r_2) is the narrowest point, and the diameters (r_1 and r_3) are increased toward the top and bottom portions.

Referring to Fig. 6, the guard rail for absorbing the impact according to the present invention includes the pair of rotating rollers 30A and 30B provided between the upper rail 21 and the lower rail 22. It would be noted that an interval (space t_3) between the upper rail 21 and the lower rail 22 is larger than the sum (t_1) of the heights of the pair of rotating rollers 30A and 30B ($t_3 > t_1$). Specifically, in the state in which the pair of rotating rollers 30A and 30B are stacked and installed, a desired space (t_2) is provided between the top surface of the rotating rollers 30A and 30B and the upper rail 21.

Referring to Fig. 7, when the vehicle collides with the guard rail, the rotating roller 30A stacked on the lower rotating roller moves up until the rotating roller 30A comes into contact with the upper rail 21 by the external force. In this instance, a desired gap G is formed between the pair of rotating rollers 30A and 30B, thereby absorbing a part of

the impact applied from the vehicle collision. Also, if the rotating roller 30A stacked on the lower rotating roller moves up by the above operation, the height of the barrier increases as a result, thereby preventing the vehicle from climbing the guard rail when the vehicle collides with the guard rail.

While the present invention has been described with reference to the particular illustrative embodiment, it is not to be restricted by the embodiments but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and spirit of the present invention.

Industrial Applicability

The present invention can prevent the vehicle from climbing the guard rail and absorbing the impact.

【CLAIMS】**【Claim 1】**

A guard rail for absorbing impact, comprising:

embedded posts configured to be installed under the
5 ground at regular intervals;

a rail configured to be engaged to the embedded posts in
a horizontal direction; and

rotating rollers configured to be rotatably installed to
the embedded post which penetrates the rotating rollers,

10 wherein a pair of rotating rollers stacked in a vertical
direction are installed to the post, and the pair of rotating
rollers stacked in the vertical direction are designed so
that a diameter thereof respectively increases towards a top
portion of an upper roller and a bottom portion of a lower
15 roller from an interface where the rollers are brought into
contact with each other, thereby preventing a vehicle from
climbing the guard rail.

【Claim 2】

20 The guard rail for absorbing impact according to claim 1,
wherein each of the rotating rollers has a sheath having a
hollow inner portion, and a shock absorbing material filled
in the inner portion of the sheath to absorb the impact at
vehicle collision.

【Claim 3】

The guard rail for absorbing impact according to claim 2, wherein the shock absorbing material is formed by foaming urethane in the inner portion of the sheath.

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【Claim 4】

The guard rail for absorbing impact according to claim 1, wherein the rail includes an upper rail and a lower rail provided parallel to each other, and the pair of rotating
10 rollers are provided between the upper rail and the lower rail.

【Claim 5】

The guard rail for absorbing impact according to claim 4,
15 wherein a space between the upper rail and the lower rail is larger than a sum of heights of the pair of rotating rollers, so that the pair of rotating rollers is spaced apart from each other to absorb the impact and prevent the vehicle from climbing the guard rail, when the vehicle collides with the
20 guard rail.

【Claim 6】

The guard rail for absorbing impact according to claim 4, further comprising at least one auxiliary post provided
25 between the embedded posts and engaged to the upper rail and

the lower rail, wherein the pair of rotating rollers is rotatably installed to the auxiliary post which penetrates the rotating rollers.