Japanese Patent Application Publication No. 2008-213886 discloses the floating roof tank. However, in the floating roof tank, a gap may present between a floating roof and a side wall of a tank body, to cause an electrical contact to be lost between the two members. Therefore, in a case where the two members are not in contact with each other, a spark may be generated therebetween due to static electricity or the like. To avoid this problem, it is conceived that the floating roof is electrically connected with the tank body with an elongated electric conductor that is freely pulled out and pulled in from/to a casing based on the height of the floating roof.

[0004]

However, the floating roof may not necessarily drop gradually in accordance with decrease of oil in the tank body, and in a case where the floating roof is caught on the side wall of the tank body, the floating roof may suddenly be released from that state and may drop sharply. In addition, an earthquake may cause severe sloshing. Accordingly, the elongated electric conductor may be broken due to the reasons mentioned above and it is desired that such a situation can be detected immediately.

Therefore, embodiments of the present invention ~~is~~ seek to provide a grounding device for floating roof tank that can detect that an electric conductor is broken.

## SUMMARY OF THE INVENTION

[0005]

~~The~~Embodiments of the present invention ~~is~~ are developed to solve the above-described problem, and ~~one~~according to an aspect of the present invention, there is provided a grounding device for floating roof tank comprising: an elongated electric conductor that electrically connects a container body of a floating roof tank with a floating roof in the floating roof tank; a drum that is rotatably supported in a circumferential direction and around which the electric conductor is wound; a

biasing member that is arranged in an inner periphery of the drum and biases the drum toward a direction on which the electric conductor is wound; and a detection unit that detects the electric conductor being broken. ~~includes an elongated electric conductor that electrically connects a floating roof with a container body of a floating roof tank, and a detection unit that detects that the electric conductor is broken.~~

[0006]

According to embodiments of the present invention, a grounding device for floating roof tank is provided which can detect that the electric conductor is broken.

Objectives, structures and effects other than those mentioned above will be disclosed in a description of an embodiment hereinbelow.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

FIG. 1 is an explanatory view showing an example in which a grounding device for floating roof tank according to an embodiment of the present invention is installed on a floating roof tank;

FIG. 2 is a side view of the grounding device for floating roof tank according to the embodiment of the present invention;

FIG. 3 is a perspective view of the grounding device for floating roof tank according to the embodiment of the present invention;

FIG. 4 is an exploded perspective view of the grounding device for floating roof tank according to the embodiment of the present invention;

FIG. 5 is an enlarged longitudinal cross sectional view of a slot for an electric conductor of the grounding device for floating roof tank according to the embodiment of the present invention;

FIG. 6 is a perspective view of a detection unit of the grounding device for floating roof tank according to the embodiment of the present invention;

FIG. 7 is an explanatory view to illustrate motion of the grounding device for floating roof tank according to the embodiment of the present invention;

FIGS. 8A and 8B are explanatory views to illustrate motion of the grounding device for floating roof tank according to the embodiment of the present invention, in which FIG. 8A