

wall and the secondary insulating wall 20 is tightly welded to the insulating wall fixing device 10 to be closely mounted on the secondary insulating wall 20.

[14] The secondary insulating wall 20 is attached to a hull through an adhesive such as mastic and is thus affected by motion of the hull. Here, the motion of the hull is also transmitted to the insulating wall fixing device 10 mounted on the secondary insulating wall 20, thereby inducing translational and rotational motion of the insulating wall fixing device 10.

[15] The translational and rotational motion of the insulating wall fixing device 10 induced by the motion of the hull acts as a direct load on welds between the insulating wall fixing device 10 and the secondary sealing wall 30, causing stress concentration on the welds.

【Disclosure】

【Technical Problem】

[16] It is an aspect of the present invention to provide an insulating wall fixing device for LNG storage tanks, which can flexibly cope with deformation of a secondary insulating wall due to hull motion, thereby reducing load applied to welds between the insulating wall fixing device and the secondary sealing wall.

【Technical Solution】

[17] In accordance with one aspect of the present invention, there is provided an insulating wall fixing device for LNG storage tanks, characterized in that the insulating wall fixing device mutually couples a primary insulating wall and a secondary insulating wall of a liquefied natural gas storage tank, the primary insulating wall being placed on top of the secondary insulating wall, the insulating wall fixing device including: a base socket; and a securing stud inserted into the base socket, wherein the base socket includes an insertion hole~~is~~ formed on an upper surface of the base socket ~~thereof with an insertion hole~~ through which the securing stud is inserted into the base socket and has an interior space in which one end of the securing stud is settled, the securing stud includes an insertion portion inserted into the interior space of the base socket through the insertion hole and a fastening portion

protruding from the insertion portion outwardly of the base socket, and a disk-shaped seated portion outwardly protruding along a circumference of the fastening portion, wherein the insertion portion having a spherical shape and comprising multiple leg members divided by a groove formed from one end of the insertion portion to the other end of the insertion portion, ~~and~~ the multiple leg members of the insertion portion are retracted toward the groove to enter

the insertion hole upon inserting the securing stud into the base socket; and wherein the disk-shaped seated portion is seated on an upper surface of the base socket and is welded to a secondary sealing wall provided between the primary insulating wall and secondary insulating wall.

[18] When the insertion portion is completely settled in the interior space of the base socket, the multiple leg members may be returned to an original shape thereof such that the insertion portion can be prevented from escaping from the interior space of the base socket by interference of an outer diameter of the insertion hole of the base socket.

[19] The interior space of the base socket may be provided in the form of a spherical space having a larger outer diameter than the insertion portion.

[20] The insertion hole may have a slope formed along a circumference thereof and downwardly inclined toward a center of the insertion hole.

[21] The groove may have a cross shape such that four leg members are formed at the one end of the insertion portion.

[22] In accordance with another aspect of the present invention, there is provided an insulating wall fixing device for LNG storage tanks, characterized in that the insulating wall fixing device mutually couples primary and secondary insulating walls of a liquefied natural gas storage tank, the primary insulating wall being placed on top of the secondary insulating wall, the insulating wall fixing device including: a securing stud, one end of which has a spherical shape; and a base socket having an interior space receiving the one end of the securing stud therein, wherein the interior space of the base socket has a spherical shape such that the securing stud is rotatable with the one end of the securing stud received in the base socket, the base socket ~~is formed~~includes an insertion hole formed on an upper surface of the base socket ~~with an insertion hole~~ through which the securing stud is inserted into the base socket, the insertion hole having a smaller diameter than the one end of the securing stud, ~~and~~ the securing stud is formed at the one end thereof with a cross-shaped groove such that the one end of the securing stud is retracted to enter the insertion hole upon inserting the securing stud into the base socket; and when the securing stud is settled in the interior space of the base socket, a seated portion of the securing stud, outwardly

protruding along a circumference of a fastening portion protruding from an insertion portion with the cross-shaped groove, is seated on the upper surface of the base socket, then the seated portion is welded to a secondary sealing wall provided between the primary insulating wall and secondary insulating wall.

[23] After insertion of the one end of the securing stud into the interior space of the base socket, the retracted one end of the securing stud is returned to an original shape thereof to be prevented from escaping from the interior space of the base socket by interference of an outer diameter of the insertion hole.

【Advantageous Effects】

[24] The insulating wall fixing device for LNG storage tanks according to the present invention has a structure in which a securing stud is coupled to a base socket

【CLAIMS】

【Claim 1】

An insulating wall fixing device for liquefied natural gas storage tanks, characterized in that the insulating wall fixing device mutually couples a primary insulating wall and a secondary insulating wall of a liquefied natural gas storage tank, the primary insulating wall being placed on top of the secondary insulating wall, the insulating wall fixing device comprising:

a base socket; and

a securing stud inserted into the base socket,

wherein the base socket includes an insertion hole ~~is~~ formed on an upper surface of the base socket ~~thereof with an insertion hole~~ through which the securing stud is inserted into the base socket and has an interior space in which one end of the securing stud is settled;

the securing stud comprises an insertion portion inserted into the interior space of the base socket through the insertion hole and a fastening portion protruding from the insertion portion outwardly of the base socket, and a disk-shaped seated portion outwardly protruding along a circumference of the fastening portion, wherein the insertion portion having a spherical shape and comprising multiple leg members divided by a groove formed from one end of the insertion portion to the other end of the insertion portion; ~~and~~

the multiple leg members of the insertion portion are retracted toward the groove to enter the insertion hole upon inserting the securing stud into the base socket; and

wherein the disk-shaped seated portion is seated on an upper surface of the base socket and is welded to a secondary sealing wall provided between the primary insulating wall and secondary insulating wall.

【Claim 2】

The insulating wall fixing device according to claim 1, wherein, when the insertion portion is completely settled in the interior space of the base socket, the

multiple leg members are returned to an original shape thereof such that the insertion portion is prevented from escaping from the interior space of the base socket by interference of an outer diameter of the insertion hole of the base socket.

【Claim 3】

The insulating wall fixing device according to claim 2, wherein the interior space of the base socket is provided in the form of a spherical space having a larger outer diameter than the insertion portion.

【Claim 4】

The insulating wall fixing device according to claim 2, wherein the insertion hole has a slope formed along a circumference thereof and downwardly inclined toward a center of the insertion hole.

【Claim 5】

The insulating wall fixing device according to claim 4, wherein the groove has a cross shape such that four leg members are formed at the one end of the insertion portion.

【Claim 6】

An insulating wall fixing device for liquefied natural gas storage tanks, characterized in that the insulating wall fixing device mutually couples primary and secondary insulating walls of a liquefied natural gas storage tank, the primary insulating wall being placed on top of the secondary insulating wall, the insulating wall fixing device comprising:

a securing stud, one end of which has a spherical shape; and

a base socket having an interior space receiving the one end of the securing stud therein,

wherein the interior space of the base socket has a spherical shape such that the securing stud is rotatable with the one end of the securing stud received in the base

socket;

the base socket ~~includes an insertion hole~~^{is} formed on an upper surface of the base socket~~with an insertion hole~~ through which the securing stud is inserted into the base socket, the insertion hole having a smaller diameter than the one end of the securing stud; ~~and~~

the securing stud is formed at the one end thereof with a cross-shaped groove such that the one end of the securing stud is retracted to enter the insertion hole upon inserting the securing stud into the base socket; ~~and~~

when the securing stud is settled in the interior space of the base socket, a seated portion of the securing stud, outwardly protruding along a circumference of a fastening portion protruding from an insertion portion with the cross-shaped groove, is seated on the upper surface of the base socket, then the seated portion is welded to a secondary sealing wall provided between the primary insulating wall and secondary insulating wall.

【Claim 7】

The insulating wall fixing device according to claim 6, wherein, after insertion of the one end of the securing stud into the interior space of the base socket, the retracted one end of the securing stud is returned to an original shape thereof to be prevented from escaping from the interior space of the base socket by interference of an outer diameter of the insertion hole.