



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
12.02.2014 Bulletin 2014/07

(51) Int Cl.:
B63B 17/04 (2006.01) **H05B 3/40** (2006.01)
E04G 5/14 (2006.01)

(21) Application number: **12767464.6**

(86) International application number:
PCT/KR2012/002143

(22) Date of filing: **23.03.2012**

(87) International publication number:
WO 2012/138072 (11.10.2012 Gazette 2012/41)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(72) Inventor: **BAEK, Cheol-Jin**
Geoje-si
Gyeongsangnam-do 656-933 (KR)

(30) Priority: **06.04.2011 KR 20110031738**

(74) Representative: **Lusuardi, Werther**
Dr. Lusuardi AG
Kreuzbühlstrasse 8
8008 Zürich (CH)

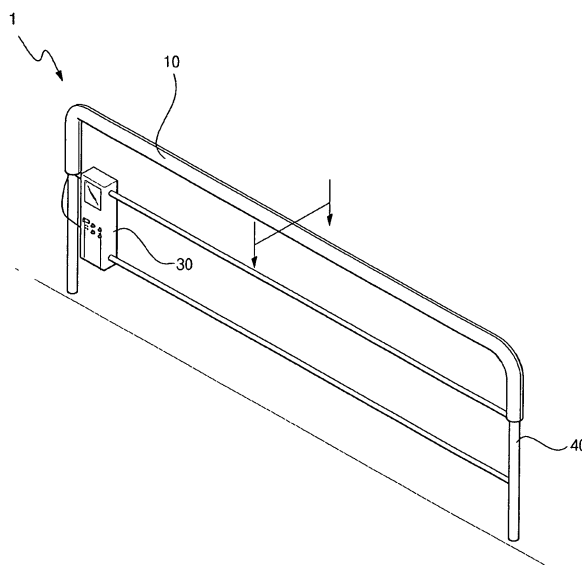
(71) Applicant: **Etec Inc.**
Gyeongsangnam-do 656-925 (KR)

(54) **HEATING DEVICE FOR A HANDRAIL**

(57) The present invention relates to an economical heating device for a handrail which is disposed to heat a handrail of a vessel to prevent falling accidents by allowing a user to grasp the heated device during normal conditions as well as in cold weather, thereby preventing accidents, and which is not built into the handrail, but detachably mounted on the outside of the handrail for easy maintenance and repair of the heating device and making the heating device easily applicable to existing

equipment. The heating device for a handrail according to a preferred embodiment of the present invention includes: a jacket member having a receiving space along a lengthwise direction thereof so that a handrail is received therein; a heating coil disposed on a side of the receiving space to heat the handrail when heat is generated; and a controller disposed on a side of the handrail, the controller being electrically connected to an end of the heating coil to successively supply power required for generating heat in the heating coil.

Fig. 1



Description**[Technical Field]**

[0001] The present invention relates to a heating device for a handrail, and more particularly, to a heating device for a handrail that can be heated on the handrail disposed to prevent falling accidents in ships in such a manner as to be easily grasped by a user's hand in cold weather as well as at normal times to prevent accidents in the safety, and that can be detachably mounted on the outer periphery of the handrail, while being not embedded in the handrail itself, thereby allowing the maintenance to be easily conducted and being applicable to existing facilities to provide economical advantages.

[Background Art]

[0002] Generally, a handrail is disposed along the edge of a ship so as to prevent falling accidents of the passengers, and since the handrail should be supported over a predetermined strength, it is normally made of a metal material.

[0003] By the way, since the handrail is made of the metal material, it has a low temperature in an area where the air temperature is low, and moreover, if there is the change of the weather, for example, if it is snowing, raining, or foggy, the handrail may be frozen. In this case, it is actually hard for the passengers to grasp the handrail with their bare hands.

[0004] So as to solve the above-mentioned problems, thus, there has been introduced a self-heating handrail that has heating coils in the interior thereof to heat the handrail itself, but when the heating coils are malfunctioned or broken, it is difficult to conduct their maintenance. Further, if it is desired to apply the conventional self-heating handrail to existing facilities, all of the handrails in the existing facilities should be exchanged, which undesirably increases the economical load.

[Disclosure]**[Technical Problem]**

[0005] Accordingly, the present invention has been made in view of the above-mentioned problems occurring in the prior art, and it is an object of the present invention to provide a heating device for a handrail that can be heated on the handrail disposed to prevent falling accidents in ships in such a manner as to be easily grasped by a user's hand in cold weather as well as at normal times to prevent accidents in the safety.

[0006] It is another object of the present invention to provide a heating device for a handrail that can be detachably mounted on the outer periphery of the handrail, while being not embedded in the handrail itself, thereby allowing the maintenance to be easily conducted and being applicable to existing facilities to provide economical

advantages.

[Technical Solution]

[0007] To accomplish the above objects, according to the present invention, there is provided a heating device for a handrail including: a jacket member having an accommodating space formed longitudinally at the inside thereof so as to accommodate the handrail therein; heating coils provided along one side of the accommodating space of the jacket member in such a manner as to be heated to heat the handrail; and a controller mounted at one side of the handrail in such a manner as to be connected electrically to the end portions of the heating coils and adapted to selectively supply the power for heating the heating coils.

[0008] According to the present invention, desirably, the jacket member is separable into two parts fittedly coupled to each other in left and right directions of the handrail and is made of an aluminum material with high thermal conductivity.

[Advantageous Effect]

[0009] According to the present invention, the heating device for a handrail can be heated on the handrail disposed to prevent falling accidents in ships in such a manner as to be easily grasped by a user's hand in cold weather as well as at normal times to prevent accidents in the safety.

[0010] Additionally, the heating device for a handrail can be detachably mounted on the outer periphery of the handrail, while being not embedded in the handrail itself, thereby allowing the maintenance to be easily conducted and being applicable to existing facilities to provide economical advantages.

[Description of Drawings]

[0011]

FIG.1 is a perspective view showing the use state of a heating device for a handrail according to the present invention.

[0012] FIG.2 is a sectional view showing the heating device for a handrail according to the present invention.

[Mode for Invention]

[0012] Hereinafter, an explanation on a heating device for a handrail according to the present invention will be given with reference to the attached drawings.

[0013] FIG.1 is a perspective view showing the use state of a heating device for a handrail according to the present invention, and FIG.2 is a sectional view showing the heating device for a handrail according to the present invention.

[0014] According to the present invention, there is pro-

vided a heating device 1 for a handrail 40 that includes a jacket member 10 having an accommodating space 11 formed longitudinally at the inside thereof so as to accommodate the handrail 40 therein; heating coils 20 provided along one side of the accommodating space 11 of the jacket member 10 in such a manner as to be heated to heat the handrail 40; and a controller 30 mounted at one side of the handrail 40 in such a manner as to be connected electrically to the end portions of the heating coils 20 and adapted to selectively supply the power for heating the heating coils 20.

[0015] In this case, the jacket member 10 is provided along the outer periphery of the handrail 40 and has the accommodating space 11 formed longitudinally at the inside thereof so as to accommodate the handrail 40 therein, the accommodating space 11 serving to insert the heating coils 20 as will be discussed later thereinto.

[0016] The jacket member 10 is separable into two parts fittedly coupled to each other in left and right directions of the handrail 40 by means of fastening elements 13 formed on the top sides of the two parts in such a manner as to be engagedly fastened to each other and by means of a bolt 14 and a nut 15 mounted piercedly on the bottom sides thereof in such a manner as to be fastened to each other to fix the two parts being at the fixed state by means of the fastening elements 13.

[0017] Further, a plurality of accommodating recesses 12 are formed at one side of the accommodating space 11 in such a manner as to communicate with the accommodating space 11, thereby accommodating the heating coils 20 therein, and in the same manner as the accommodating space 11, each accommodating recess 12 is formed in the longitudinal direction of the jacket member 10. Desirably, the accommodating recesses 12 are formed on the upper side of the jacket member 10 grasped by a user's hand.

[0018] The jacket member 10 is made of the aluminum material with high thermal conductivity and further may be selectively made of metals with excellent thermal conductivity. Also, the jacket member 10 may be provided only on a horizontal frame of the handrail 40 having a shape of "Π" consisting of the vertical frames on both sides and the horizontal frame connecting the top ends of the vertical frames, on both of the vertical frames and the horizontal frame, and only on the selected one of the vertical frames and the horizontal frame.

[0019] On the other hand, each heating coil 20 is provided in each accommodating recess 12 in the accommodating space 11, and the heating coil 20 is heated itself with the power supplied from the controller 30 as will be discussed later, thereby serving to heat the jacket member 10.

[0020] The heating coil 20 has one side extended to the outside of the jacket member 10 in such a manner as to be connected to the controller 3, and since the heating coil 20 is the same as that in the conventional practices, a detailed explanation thereon will be avoided for

the brevity of the description.

[0021] The handrail 40 having the jacket member 10 and the heating coils 20 provided thereon has the controller 30 disposed at one side thereof, and the controller 30 is connected electrically to one side end portions of the heating coils 20, thereby serving to selectively supply the power for heating the heating coils 20.

[0022] That is, the controller 30 controls the power supplied from the outside or inside thereof to the heating coils 20 by means of an on/off switch (not shown), and the on/off switch is controlled directly through the handrail 40 or controlled remotely. So as to supply the power for heating the heating coils 20, further, the controller 30 is connected electrically to external power, and alternatively, it has charging batteries disposed at the inside thereof.

[0023] Hereinafter, the whole operating state of the heating device 1 for a handrail according to the present invention will be explained.

[0024] If it is expected that the handrail 40 has a low temperature or is frozen because of a low air temperature, first, power is supplied to the heating coils 20 by means of the on/off switch of the controller 30.

[0025] As a result, the heating coils 20 start to be heated, and the heat generated from the heating coils 20 is transferred to the jacket member 10 provided along the outer periphery of the handrail 40, thereby heating the jacket member 10. If the jacket member 10 is heated, the handrail 40 made of the metal material can be grasped easily by the passenger's hand, thereby appropriately preventing the accidents in the safety.

[0026] While the present invention has been described with reference to the particular illustrative embodiments, 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]

[0027] The present invention is to provide a heating device for a handrail that can be heated on the handrail disposed to prevent falling accidents in ships in such a manner as to be easily grasped by a user's hand in cold weather as well as at normal times to prevent accidents in the safety.

Claims

1. A heating device for a handrail comprising:

a jacket member having an accommodating space formed longitudinally at the inside thereof so as to accommodate the handrail therein; heating coils provided along one side of the accommodating space of the jacket member in such a manner as to be heated to heat the hand-

rail; and

a controller mounted at one side of the handrail
in such a manner as to be connected electrically
to the end portions of the heating coils and
adapted to selectively supply the power for heat-
ing the heating coils. 5

2. The heating device for a handrail according to claim
1, wherein the jacket member is separable into two
parts fittedly coupled to each other in left and right
directions of the handrail and is made of an aluminum
material with high thermal conductivity. 10

15

20

25

30

35

40

45

50

55

Fig. 1

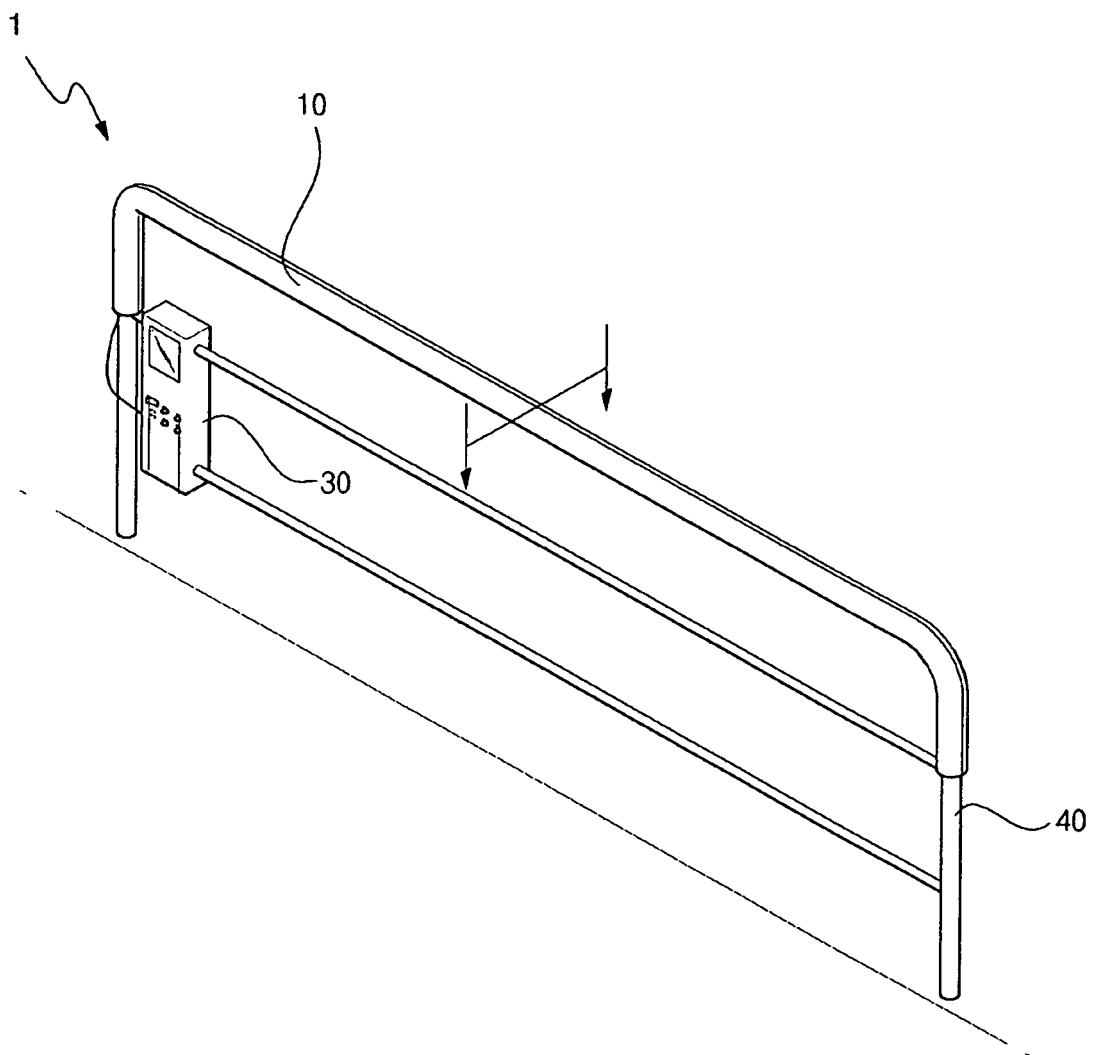


Fig. 2

