Feb. 24, 1959 C. T. PIERSON, JR 2,875,315

HEATED DISH RINSING SINK

Filed June 23, 1958

3 Sheets-Sheet 1

FIG. 1

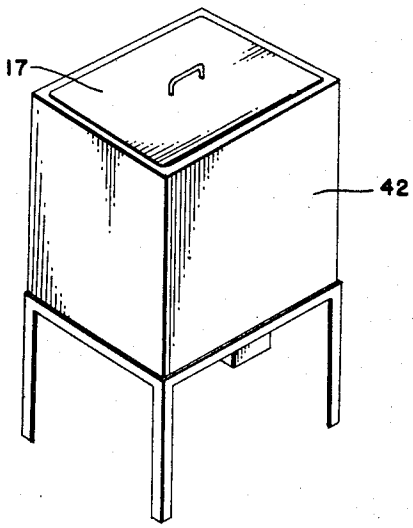


FIG. 2

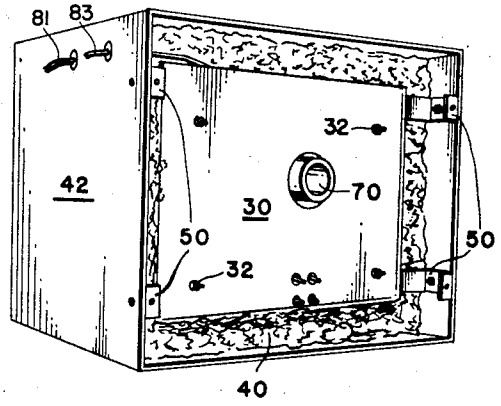


FIG. 3

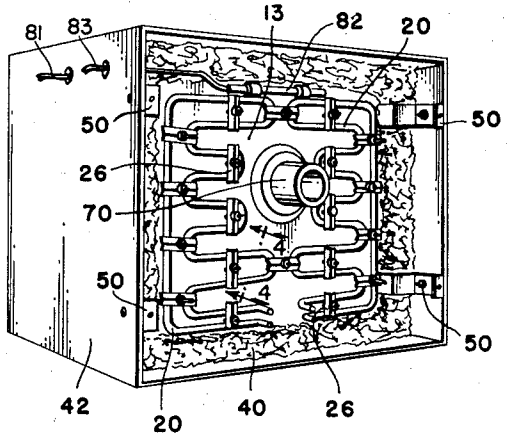
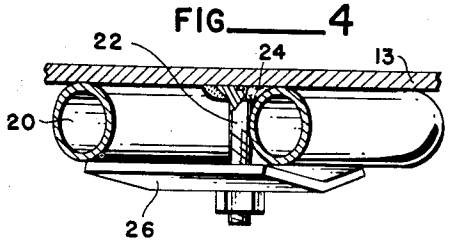


FIG. 4



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FIG. 5

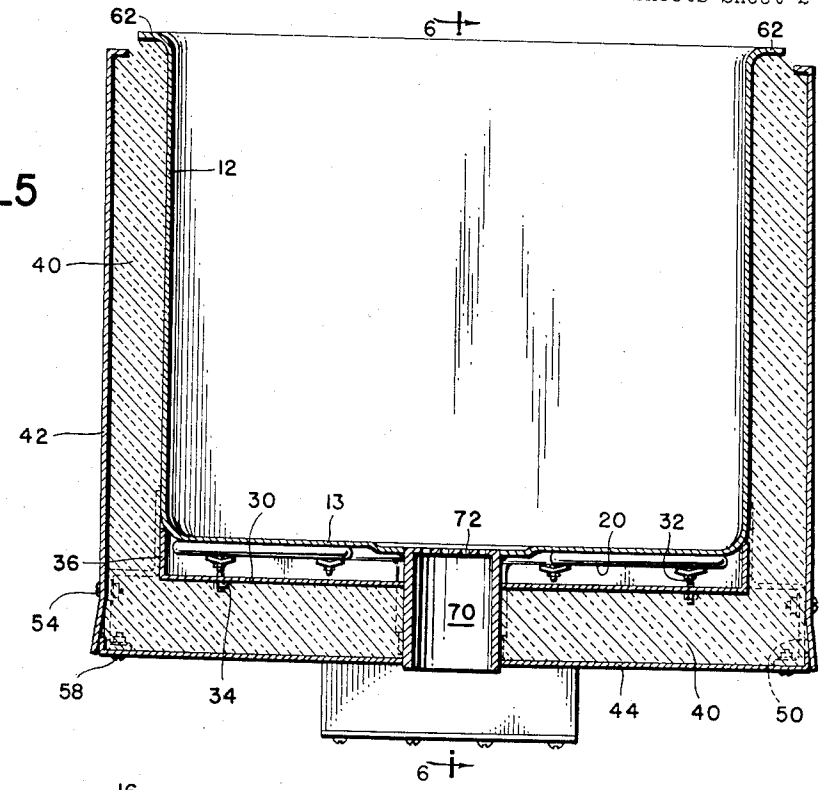
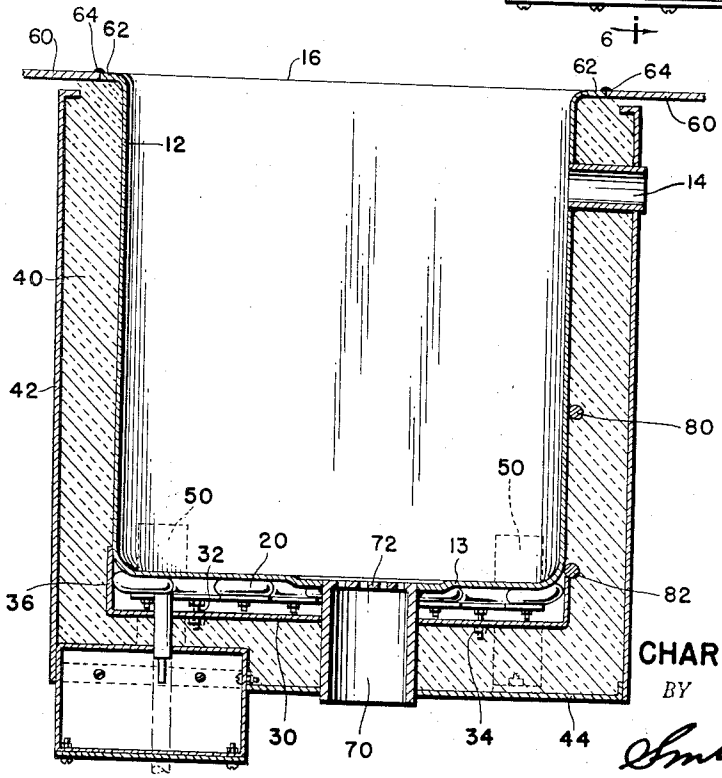


FIG. 6



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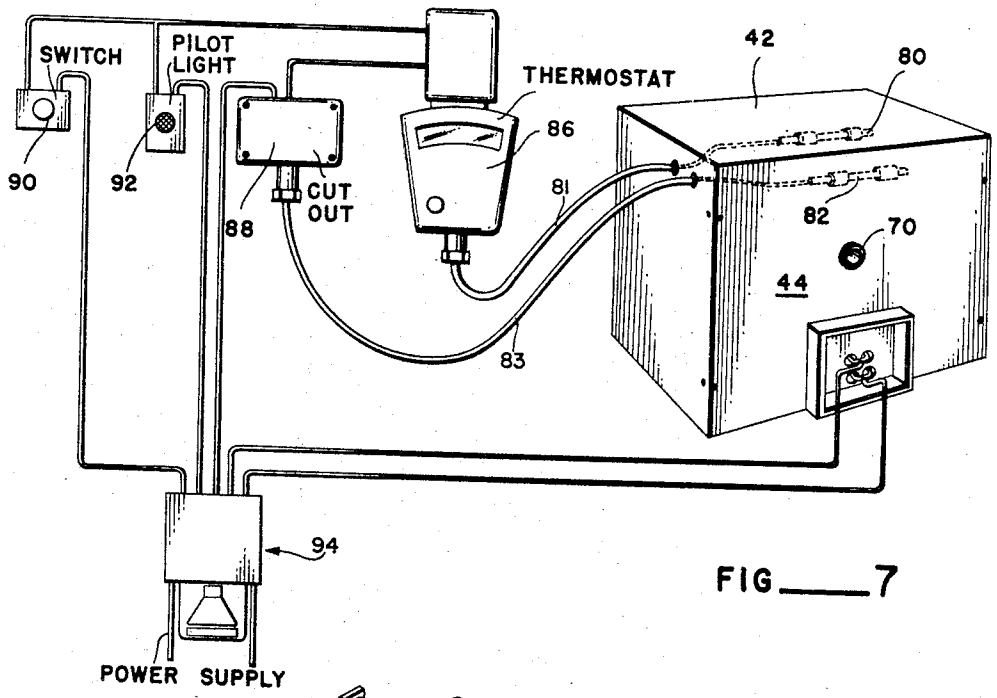


FIG. 7

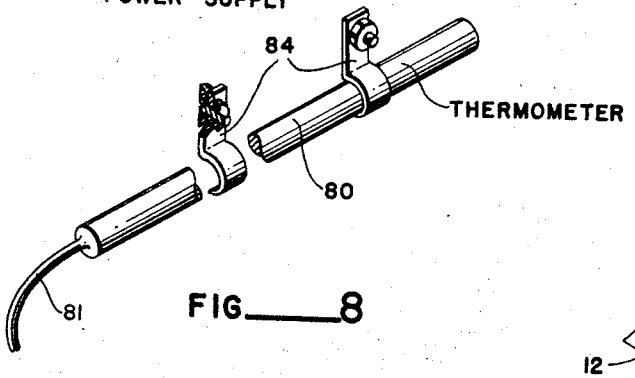
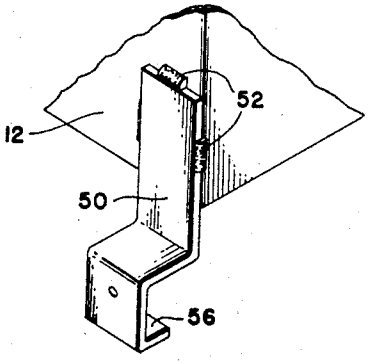


FIG. 8

FIG. 9



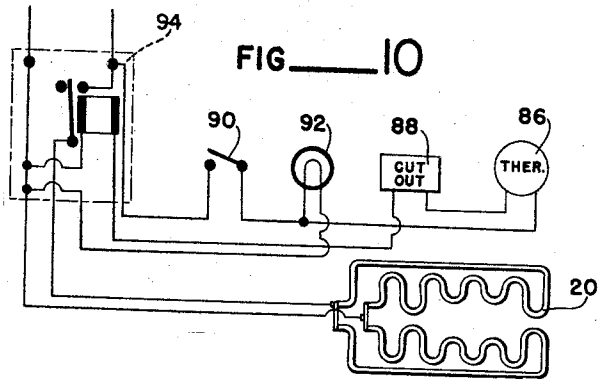


FIG. 10

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2,875,315

HEATED DISH RINSING SINK

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Application June 23, 1958, Serial No. 743,751

4 Claims. (Cl. 219—38)

This application relates to the general art of sinks intended for the rising of dishes and the like. This present invention, however, is characterized by combining a number of features with a metal sink having an open top, but of considerable depth, so that it is particularly useful for the purposes of rinsing cooking utensils, dishes and the like aboard ships. Further means are provided for heating the water in the sink and insuring that it is maintained at definite temperatures so that sterilization can be achieved within the limits required and still with a current consumption, by the electric heating elements, that is well within the allowable generating capacity of ships of moderate sizes and other uses where current consumption must be kept to a minimum.

The galley or kitchen equipment and the dining facilities aboard military and naval craft and also aboard certain work boats of intermediate sizes has always posed a difficult problem. Normally on working ships only a relatively small area can be allocated for the ship's galley and dining facilities because the larger area of the ship must be devoted to the prime purpose of the ship. One of the biggest problems encountered in maintaining good health aboard the medium sized working ship is to maintain the cooking equipment and particularly the dishes in a sanitary condition. There is a great deal of history to support the contention that the medium sized working ship in the past has never been adequately equipped to take care of the good health of its crew and this has resulted many times in almost total incapacitation of the entire crew. Such wide spread illness is normally traced to the fact that the dishes particularly were not maintained in a sterile condition. It was also found that certain of the cooking vessels also were carriers of bacteria and the like and many times resulted in the crew losing a great portion of its strength because men were incapacitated for hours or sometimes days at a time.

This present equipment is believed to solve the adequate rinsing of kitchen ware and dining dishes and the like and this is obtained by providing deep sinks preferably made of stainless steel or similar noncorrosive materials and sometimes nonmagnetic materials which can be readily heated by exterior heating means. Such equipment is preferably heated by electricity so that the galley which is normally considerably removed from the power plant of the ship can be adequately equipped without the difficulties incidental to running steam lines to the same. Especially the newer ships, which are largely diesel powered in the intermediate sizes, can best supply its kitchen with electric current, which it can generate with a minimum of equipment and which can be easily distributed. With electric current as the heating element, means are provided to adequately insure the maximum utility of the heat generated by the electrical heating elements and to also confine this heat and insulate it from the balance of the ship particularly the rather cramped galley.

In order to insure that the water is maintained, at the optimum temperature, sensing thermometers are employed so that a predetermined water temperature can

be maintained at all times and this is probably the most essential requirement in equipment of this order because once the optimum temperature is determined by medical studies the sterilization temperature can be assured. All the dishes and the like will be subjected to this temperature in the rinsing operation without having to rely upon the care of the individual or supervision by individuals who are quite inclined to be careless particularly during periods of stress.

The principal object of this present invention, therefore, is to provide an electrically heated rinsing sink in which water at the preferred temperature can be automatically maintained for the rinsing operations.

A further object of this invention is the provision of means whereby all the heat supplied to the sink by electrical current can be utilized to the end of having it possible to quickly heat sink refills of water as may be required sequentially during the handling of a large number of dishes.

A further object of this invention is to provide a metal sink to which is applied external electric heating means which is so arranged with reflective materials and insulation that full utilization is made of the electric current supplied to the unit to the end that an adequate supply of electric current can be employed without an undue drain on the electrical system of a ship carrying the same.

Further objects, advantages and capabilities will be apparent from the description and disclosure in the drawings, or may be comprehended or are inherent in the device.

In the drawings:

Figure 1 is a perspective view illustrating the general proportions of my rinsing sink and illustrating one manner in which it may be supported for use.

Figure 2 is a perspective view of my sink lying on its side so the bottom structure may be more readily understood. In this instance the bottom enclosing plate has been removed to show the installation provision for the reflective cover member for the heating elements and illustrating the manner in which it is secured in place.

Figure 3 is a view similar to Figure 2 but in this instance the dual reflector and cover for the heating elements has been removed to illustrate more fully the arrangement of the heating elements.

Figure 4 is a fragmentary cross-sectional view taken along the line 4—4 of Figure 3 and illustrating the manner in which the heating element is held in close engagement with the lower wall or bottom of my sink.

Figure 5 is a vertical transverse section through my sink.

Figure 6 is a section as though taken along the line 6—6 of Figure 5 but further illustrating one manner in which the sink may be supported and also illustrating the overflow provision provided.

Figure 7 illustrates in pictorial form, the general arrangement of the electrical control units employed in controlling water temperature in my sink. The sink, itself, lying on its side after the showing of Figures 2 and 3.

Figure 8 is a representation of the typical sensing thermometer installation.

Figure 9 is a fragmentary perspective view illustrating one of the four corner support members, which are welded to the inner sink portion and form a fixed supporting connection with the outer shell of the sink.

Figure 10 is an electrical wiring diagram showing how the various units are connected to the power source.

Referring more particularly to the disclosure in the drawings, throughout which like reference characters indicate like parts, 12 indicates the inner water holding vessel. This is formed preferably of noncorrosive ma-

terials such as stainless steel for instance particularly where nonmagnetic properties are required and of sufficient weight so that it cannot only support itself and the water with which it is filled up to the overflow outlet 14, but it also needs to also support a load of dishes and the various other portions of the device.

The preferred proportions for my sink are illustrated in Figures 5 and 6 in which it will be noted that the sink is very deep in proportion to its length and width and further that it has an overflow at 14 that is set well down from the upper margin 16 in order to accommodate baskets and the like of dishes which are immersed in the rinse water and which may displace a greater amount of water than can be accommodated quick enough by any reasonable sized discharge opening 14. Also there is danger of spilling water over the top of the sink and this in turn is largely prevented by the placement of the overflow 14 which normally controls the depth of water in the sink. This margin at the top of the sink also prevents spillage when the ship is operating in a seaway. A cover 17 may also be used.

In order that the electric heating element 20 can make a full transfer of its generated heat to tank 12 and its liquid contents, it is very desirable that the heating element, which is of the tubular enclosed electric heating element type, is pressed tightly against the bottom of vessel 12 as by the clamp bars 26 illustrated in Figures 3, 4 and 5. Referring to Figures 3 and 4 in which it will be noted that the main supporting means is a plurality of studs 22, which are secured as by welding at 24 to the bottom plate 13 of tank liner 12. Each of the various studs 22 is provided with a clamp bar 26, which is arranged after the showing of Figure 3 and by having a plurality of studs 22, the heating elements are held very snugly against the bottom plate 13.

Immediately below the heating elements 20 is a polished reflective plate and cover 30. This cover is held in place by having certain of the studs 22 extended in length as shown at 32. A second nut 34 is used on the extra length studs 32 so that the reflective cover 30 may be pressed up into engagement with liner 12 in order to seat the upturned margins 36 snugly against the outer surface of the liner 12 and thus provide in addition to a direct heat transfer, an enclosure for the heating element compartment thus keeping it free of any insulation, which might reduce the reflective properties of plate 30. This structure is believed quite well illustrated in Figures 5 and 6. This arrangement adds materially to the overall efficiency of the heating elements in that good metal to metal contact is had between the enclosing tubes of the heating element and the surface of sheet 13, which in turn is part of the enclosure for the water contained within the sink. Following the principles established for heat reflection, the cover plate 30 is spaced away from the actual heating coils so that its polished inner surface may be employed as an effective reflector, which will reflect the heat waves back onto plate 13.

Disposed around line 12 on its four sides and bottom is a generous sheathing of suitable insulation 40. This insulation is preferably of the looser fibrous type. It is held in place by an outer metal wall 42 which normally is wrapped entirely around the sink. The bottom of the outer sheathing is formed by plate 44, which is held in spaced relationship from line 12 by the bracket member 50 probably best illustrated in Figure 9. This bracket, one of which is used at each corner of the sink, is preferably welded as at 52 to the liner and is secured to the wrap around covering 42 by the bolts 54. The bottom closure 44 is secured to the inwardly directed shelf 56 of bracket 50 by a plurality of bolts 58. This arrangement makes a secure joining of the inner and outer walls of the sink and also gives supporting strength so that it may be used in the forms shown in Figure 1 or in the more common uses in which the ship's table top 60 will be cut out to permit the passage of liner 12 and its flange, which will butt against the cut out portion as at 62. The table top 60 and the upper rim 62 are preferably welded together as at 64. As will be noted in the various views, a liberal sized discharge pipe was provided in the bottom of the sink and indicated at 70.

The discharge pipe is preferably provided with a pierced metal screen 72, which may be closed by any suitable closure member such as a pipe valve not illustrated on discharge pipe 70. As the effectiveness of this rinse sink is depended upon having the dishes or other immersibles subjected to water of a temperature that has been found to be satisfactory to sterilize them, it is desirable to use this temperature but not to hold the water at a higher temperature which might be dangerous to personnel using the equipment. Particularly aboard ship where electric current is a critical item, it is very desirable that no excess heating is permitted. To assure following these requirements my sink is provided with two sensing thermometers of the type shown in Figure 8. One of these thermometers is in engagement with the inner vertical wall of liner 12 as shown at 80 and the other one is positioned against the bottom surface as indicated at 82. One convenient method of installing this equipment is by the hook clamp members 84 illustrated in Figure 8. The sensing thermometers 80 and 82 have in addition to the problem of maintaining the optimum selected temperature, the added requirement of protecting the sink against having the heating elements turned on, for instance after the sink itself had been drained. The mercury column is led by tube 81 of water thermometer 80, led to a thermostat 86, which for this purpose should have a scale up to approximately 212 degrees Fahrenheit. The second thermometer as 82, which is employed in close proximity to the heating coils, has its mercury column led by tube 83 to a cut out type current interrupter 88, which will serve to disconnect the heating element if for any reason dangerous temperatures should occur.

Refering to Figure 7, the various electrical control devices are shown in the general arrangement employed and the sink itself has been shown in perspective arrangement similar to the showings of Figure 3 in which the sink is laying on its side to expose the bottom surface thereof. In addition to the elements previously noted, this figure shows the arrangement of the electrical switch 90 and the pilot light 92 which normally will show when the electric element is on. Switch 90 is employed to manually control the heating element, but it is also subject to the superimposed controls from either the thermostat 86 or the automatic cut out 88.

Figure 10 shows a simplified electrical diagram and indicates a conventional remote switching means at 94 of the type employing magnetic relays.

It is believed that it will be clearly apparent from the above description and the disclosure in the drawings that the invention comprehends a novel construction of a heated dish rinsing sink.

Having thus disclosed the invention, I claim:

1. A heated dish rinsing sink, for ship's use, comprising: a water holding inner liner, having sufficient structural strength to be self supporting, when filled and supported only from its top margin; an insulated electric heating element, bent to form spaced coils disposed below said liner and in contact with the outside of the bottom plate of said liner for heating in said liner; a plurality of clamp bars spanning adjacent coils of said heating element and supported from the bottom plate of said liner by studs secured to said bottom plate; a reflective cover plate enclosing said heating coil and disposed below the same; said reflective cover plate supported in spaced relationship from said bottom plate by extended studs secured to said bottom plate; said reflective plate having upturned margins, engaging said inner liner, and completing the enclosure of said heating coils; an outer wall forming an enclosing cover for said liner on all sides and a separate bottom plate all spaced from said liner to form a con-

tainer for an insulating covering for said liner except for its top; a water overflow outlet disposed below the upper margin of said liner to prevent slopping over said upper margin during normal movement of the ship on which the sink is installed; a water discharge pipe having a shutoff valve, secured to the bottom plate of said liner; a pair of sensing thermometers secured to the outer wall surface of the inner liner, one positioned substantially midway up the water container wall, to sense water temperatures and the other positioned near the heating element to sense dangerous high temperature of the liner adjacent the heating element; a thermostat and a cutout switch, connected in series, the thermostat connected to the water temperature sensing thermometer and the cutout switch connected to the heating element temperature sensing thermometer; and electric control means for controlling the application of electric current to said heating coil in accordance with the action of said thermostat and said cutout switch.

2. A heated dish rinsing sink, for ship's use, comprising: a water holding inner liner, having an outwardly extending flange around its top margin; a tube enclosed electric heating element of flat coil form disposed below said liner and in contact with the outside of the bottom plate of said liner for heating water in said liner; a plurality of clamp bars spanning adjacent coils of said heating element and supported from the bottom plate of said liner by studs welded to said bottom plate; a reflective cover plate enclosing said heating coil and disposed below the same; said reflective cover plate supported in spaced relationship from said bottom plate by extended studs welded to said bottom plate; said reflective plate having upturned margins, engaging said inner liner, and completing the enclosure of said heating coils; an outer wall forming an enclosing cover for said liner on all sides and spaced therefrom to form a container for an insulating covering for said liner except for its top; a separate bottom plate for said outer wall; a plurality of bracket members welded to said liner bent outwardly and downwardly parallel to the side wall of said liner to form spacers and drilled for securing means for said outer wall and then bent inwardly parallel to said separate bottom plate and drilled for securing means for said separate bottom plate; water flow outlet disposed below the upper margin of said liner to prevent slopping over said upper margin during normal movement of the ship on which the sink is installed; a water discharge in the bottom plate of said liner; a plurality of sensing thermometers secured to the outer wall surface of the inner liner to sense water temperatures and dangerous high temperature of the liner adjacent the heating element; and electric control means for controlling the application of electric current to said heating element in accordance with the demands indicated by said sensing thermometers.

3. A heated dish rinsing sink, for ship's use, comprising: a water holding metal inner liner, having sufficient structural strength to be self supporting, when filled and supported only from its top margin; an insulated electric heating element of return bend coil form, disposed below said liner and in contact with the outside of the

bottom plate of said liner; for heating water in said liner; a plurality of clamp bars spanning adjacent coils of said heating element and supported from the bottom plate of said liner by studs welded to said bottom plate; a reflective cover plate enclosing said heating coil and disposed below the same; said reflective plate having upturned margins, engaging said inner liner, and completing the enclosure of said heating coils; an outer wall forming an enclosing cover for said liner on all sides and bottom and spaced therefrom to form a container for an insulating covering for said liner except for its top; a water overflow outlet disposed below the upper margin of said liner to prevent slopping over said upper margin during normal movement of the ship on which the sink is installed; a water discharge, having a shutoff valve, in the bottom plate of said liner; two sensing thermometers secured to the outer wall surface of the inner liner, one to sense water temperatures and the other to sense dangerous high temperature of the liner adjacent the heating element as might be caused from lack of water in said liner and an electric control means for controlling the application of electric current to said heating coil in accordance with the demands indicated by said sensing thermometers.

4. A heated dish rinsing sink for ship's use comprising: a water holding inner liner, of nonmagnetic metal, having sufficient structural strength to be self supporting, when filled and supported only from its top margin; tube enclosed electric heating elements disposed below said liner and in contact with the outside of the bottom plate of said liner; a plurality of clamp bars spanning adjacent coils of said heating element and supported from the bottom plate of said liner by studs welded to said bottom plate; a reflective cover plate enclosing said heating coil and disposed below the same; said reflective cover plate supported in spaced relationship from said bottom plate by extended studs welded to said bottom plate; said reflective plate having upturned margins, engaging said inner liner, and completing the enclosure of said heaitng coils; an outer wall of nonmagnetic metal, forming an enclosing cover for said liner on all sides and bottom and spaced therefrom to form a container for an insulating covering for said liner except for its top; a water over-flow outlet disposed below the upper margin of said liner to prevent slopping over said upper margin during normal movement of the ship on which the sink is installed; a water discharge in the bottom plate of said liner; a plurality of sensing thermometers, secured to the outer wall surface of the inner liner, to sense water temperatures and dangerous high temperature of the liner adjacent the heating element and an electric control means for controlling the application of electric current to said heating coil in accordance with the demands indicated by said sensing thermometers.

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