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W. T. DEMPSEY

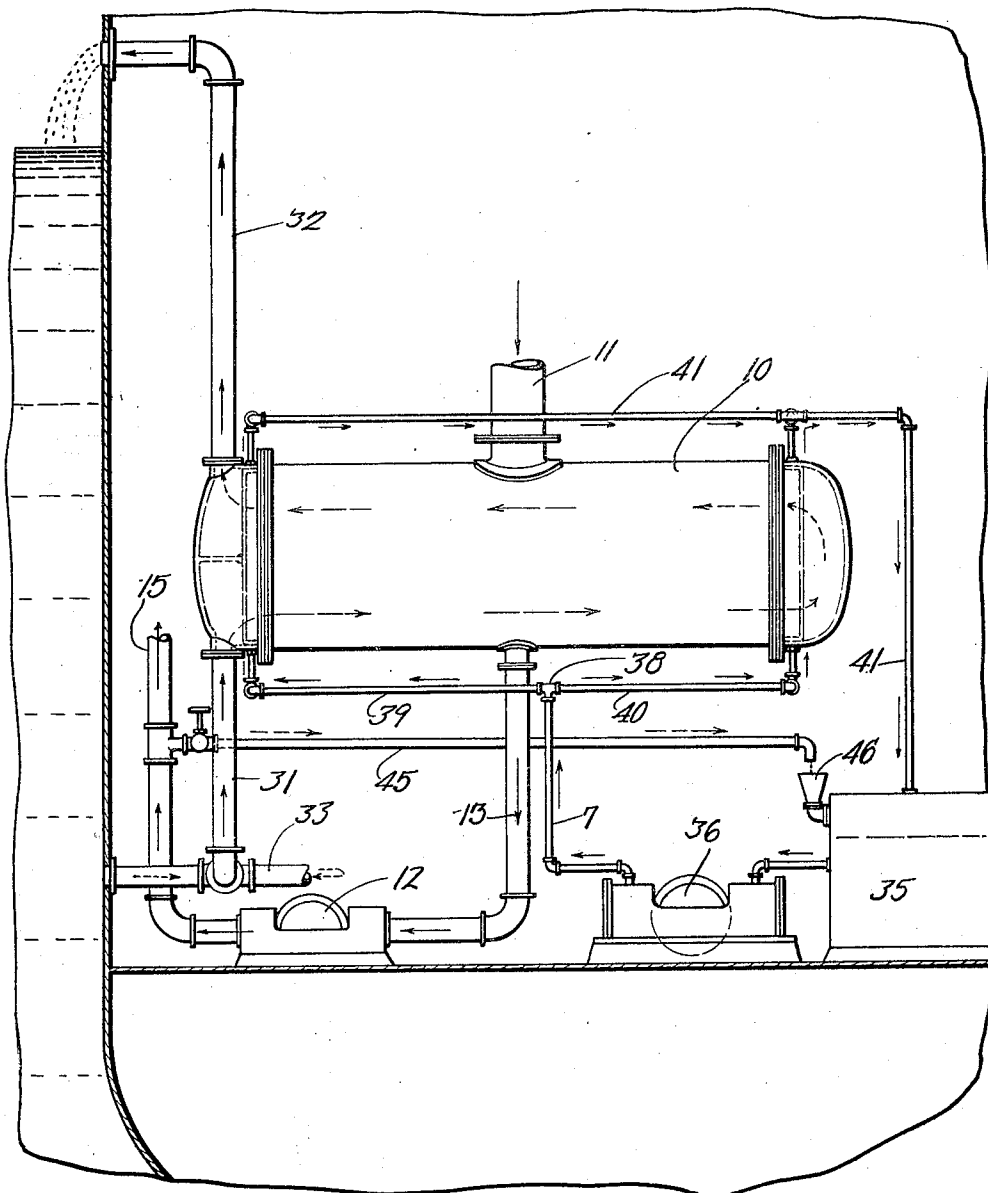
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STEAM CONDENSER FOR SHIPS

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2 Sheets-Sheet 1

Fig. 1.



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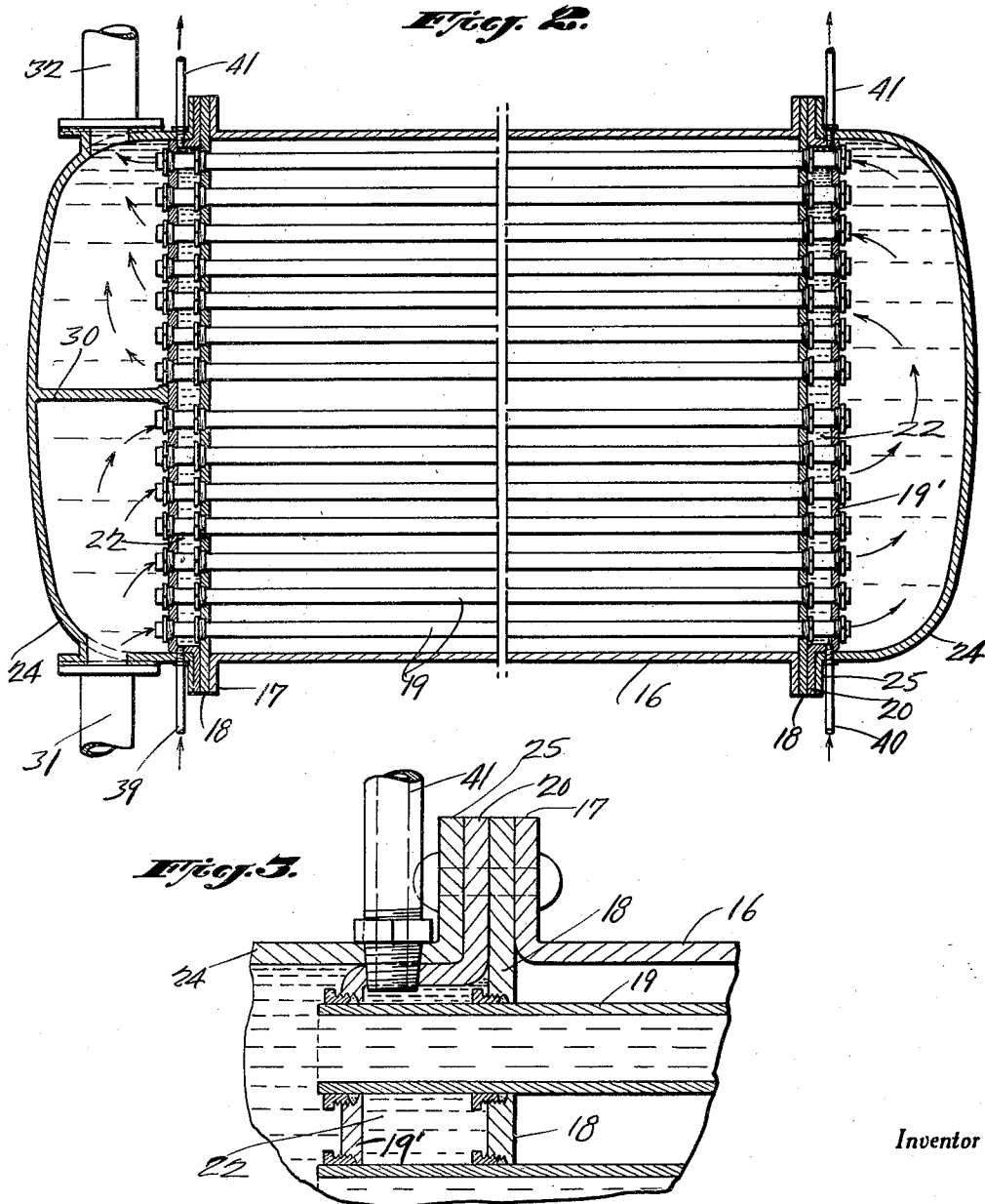
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STEAM CONDENSER FOR SHIPS

Application filed May 3, 1931. Serial No. 539,608.

This invention relates to new and useful improvements in steam condensers, and more particularly it pertains to steam condensers as employed in ships and the like.

5 In the construction of steam condensers as generally employed for condensing the steam of the engines of ships, great difficulty is experienced with contamination of the boiler water by the leakage of salt water around 10 the various joints of the condenser and a consequent seepage of salt water into the boiler water which is sweet or fresh water thus contaminating the latter.

15 It is one of the objects of the present invention so to construct a steam condenser that even though a leakage around the joints occurs, salt water cannot seep through the leaking joints to the interior of the condenser and contaminate the boiler water.

20 It is a further object of the invention to provide a new and novel construction of steam condenser for use in ships in which certain joints which lead directly to the interior of the condensing receptacle or chamber are protected against contact with salt 25 water, and thus the damaging effects of the salt water upon said joints is eliminated.

30 With the above and other objects in view, reference is had to the accompanying drawings, wherein:

35 Figure 1 is a detail fragmentary sectional view of a ship showing a condenser constructed in accordance with the present invention located therein, and the several circulating systems incidental to the operation of a condenser constructed in accordance with the present invention,

40 Figure 2 is a longitudinal sectional view partly broken away of a condenser constructed in accordance with the present invention, and;

45 Figure 3 is an enlarged detail sectional view illustrating a construction employed in connection with the condenser.

reference character 10 designates the condenser, and steam to be condensed is led thereto by means of a suitable pipe connection 11. Water of condensation is carried from the condenser 10 by means of a pump 12 which 50 connects with the interior of the condenser by a suitable pipe line 13. From the pump 12 the water is carried to the feed water supply by means of a pipe line such as 15.

55 By reference to Figure 2 it will be noted that the condenser 10 comprises a condensing receptacle 16 the ends of which are flanged as at 17. The ends of the condensing receptacle are closed by means of plates 18, and extending through the condenser receptacle and 60 through the plates 18, there are condensing fluid tubes 19. Spaced with respect to each of the plates 18, there is a plate 19', and this plate 19' is provided with a flange 20 which is offset with relation to the plate body, thus 65 providing a space such as 22 between the plates. The reference character 24 designates end members which are of bulged formation, and these end members are also flanged as indicated at 25 to abut the flanges of the plates 70 19'. Bolts or rivets passing through these abutting flanges form the means by which the several parts of the condenser are secured together.

75 It is to be understood that the condensing fluid tubes 19 extend through both of the plates at each end of the condenser, and that they are secured therein by means of ferrules, nuts or in any conventional manner.

80 In Figure 2, the header member 24 at the left hand side of said figure is illustrated as having a partition or wall 30 extending thereacross, and as also illustrated in this figure, the chamber formed by this header member 85 24 is provided with a suitable inlet pipe 31 and an outlet pipe 32. By reference to Figure 1 it will be noted that the outlet pipe 31 is connected as at 33 with a suitable circulating pump, and that the outlet 32 passes 90

through the side of the ship and discharges overboard.

By this construction it will be apparent that the salt water or other water is pumped in through the side of the ship, is passed by way of the inlet pipe 31 to the space below the wall 30 to the opposite end of the condenser from whence it passes through the upper portion of the condenser to the space upon the upper side of the wall 30 and thence overboard by way of the discharge pipe 32.

To prevent this circulating condensing fluid from entering the condensing chamber of the condenser, and thus polluting the water of condensation, I circulate through the spaces between the plates 18 and 20, fresh water and this fresh water as illustrated in Figure 1, is supplied by means of a tank 35 and is circulated by means of a pump 36 through a pump 37 which branches as at 38 into tube feed lines 39 and 40 which communicate with their respective ends of the condenser 10 and the fresh water is returned by means of a pipe line or the like 41. Water may be supplied to the supply tank 35, by means of a pipe 45 which leads from the pipe 15 to a location adjacent the supply tank 35 and is discharged thereinto as illustrated at 46 in Figure 1.

By reference to Figure 2 it will be noted that in the case of salt water forming the condensing fluids, should a leak occur between the pipe 19 and either of the plates 20, the pressure under which the fluid is circulated between said plates will prevent the entrance of salt water through said leak. If, however, the pressure of salt water were greater than the pressure of the water between the plates, such salt water as would seep through the ruptured portion and into the space between the plates 18 and 20, would not or could not enter the condensing chamber 16 and contaminate the water of condensation therein which is to be later used in the ship's boiler.

From the foregoing, therefore, it will be apparent that the present invention provides a new and novel condenser construction which prevents the pollution of boiler water by condensing fluids becoming mixed therewith. In the present device, this is excluded by means of a wall of circulating water which is interposed between the cooling fluid and the interior of the condenser.

While the invention has been herein illustrated in a preferred form, it is to be understood that the invention is not to be limited to the specific construction herein illustrated, and that it may be carried out in other forms which rightfully fall within the scope of the appended claim.

Having thus described the invention, what is claimed as new and what it is desired to secure by Letters-Patent of the United States, is:

In a steam condenser for ships, a condens-

ing receptacle having flanged ends, a plate adapted for engagement with the flange at each end of the receptacle, a plate having an off-set flange adapted for engagement with said first mentioned plate to form a space at each end of the condensing receptacle, a header at each end of the condensing chamber, single means for securing together, all of said elements, and means for maintaining a circulation of fluid through the space between each end plate and its respective spaced plate.

In testimony whereof I affix my signature.
WILLIAM T. DEMPSEY.