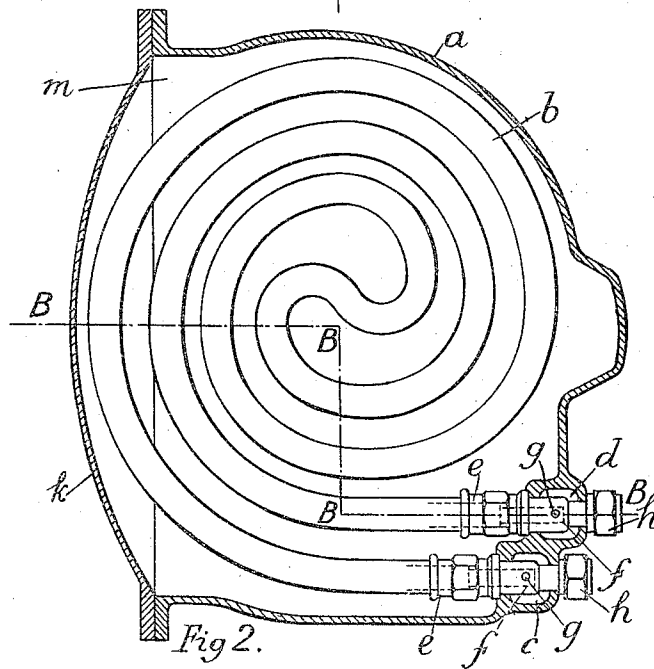
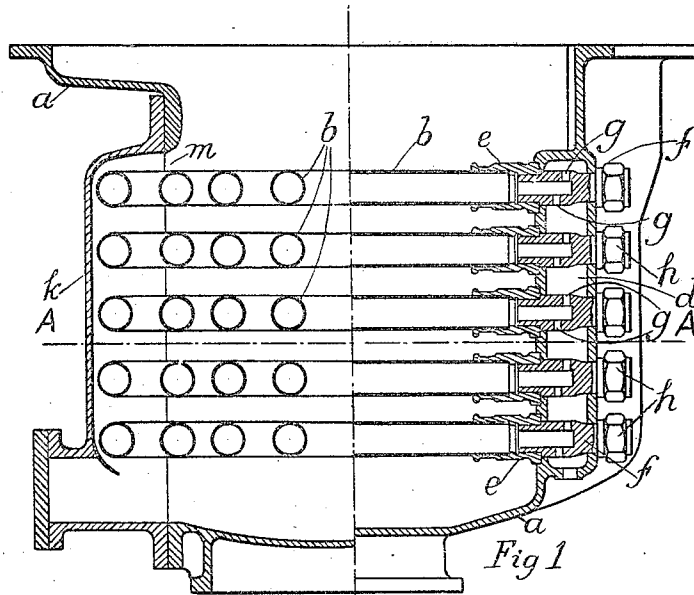


W. WEIR.
SEA WATER EVAPORATOR.
APPLICATION FILED JUNE 3, 1912.

1,049,014.

Patented Dec. 31, 1912.



Attest
H. L. Alden
H. M. Barrett

Inventor
William Weir
By Spear, Middleton, Donaldson & Co.,
ATTY

UNITED STATES PATENT OFFICE.

WILLIAM WEIR, OF CATHCART, GLASGOW, SCOTLAND.

SEA-WATER EVAPORATOR.

1,049,014.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed June 3, 1912. Serial No. 701,309.

To all whom it may concern:

Be it known that I, WILLIAM WEIR, a subject of the King of Great Britain and Ireland, residing at Cathcart Glasgow, Scotland, have invented certain new and useful Improvements in Sea-Water Evaporators, of which the following is a specification.

This invention relates to evaporators such as are commonly employed for the obtaining of fresh water from sea water on board ship, the sea water being heated and evaporated by means of steam coils located in the lower part of the shell of the evaporator. It is necessary to so design the evaporators as to allow of these coils being withdrawn.

In designs of evaporator heretofore in use, as far as I am aware, it is necessary, prior to withdrawing the coils from the shell, to move the coils laterally within the shell in a direction at right angles to the subsequent motion of withdrawal. This double motion makes it necessary to have the shell considerably larger in horizontal section than is requisite to contain the coils. Now, considerations of space and weight—which are of special importance in warships—render it desirable that the evaporators used on board ship should be, as far as possible, of small and light construction.

My invention consists in a construction and combination of elements which will be described in the following specification and more particularly set forth in the annexed claims and which allow of a substantial reduction being effected in the bulk and weight of an evaporator.

Referring to the accompanying drawing:—Figure 1 is a vertical section of the lower portion of an evaporator, that is, the portion which contains the heating coils, the section being taken on the line B—B of Fig. 2. Fig. 2 is a horizontal section on the line A—A of Fig. 1.

Several fittings, flanges, and connections have been omitted from one or both of the views as being unnecessary to illustrate the present invention.

a is the shell of the evaporator and *b, b*, are the heating coils. Any number of heating coils may be employed. In the design of evaporator illustrated five coils are shown, each being independent of the others and having its two ends connected respectively to a live steam inlet chamber *c* and an exhaust or drain chamber *d*. These

chambers are arranged vertically in the evaporator shell, and the coils are connected to them by means of couplings each consisting of a brazing-metal hollow coupling piece *e* and a mild-steel hollow tail piece *f*, the latter being perforated at *g, g*, in order to place the interiors of the coils in communication with the interiors of the inlet and exhaust chambers. The axes of all the couplings are parallel to each other, and the couplings are inserted into the chambers from the inside of the shell by a straight-line movement parallel to the axes of the couplings and are secured by nuts *h, h*, which are screwed on to the ends of the tail pieces from the outside of the shell.

A port or doorway *m* is provided for the insertion and withdrawal of the coils and is situated on the side of the shell opposite the steam inlet and exhaust chambers. A door *k* covers this doorway. The axes of the couplings are arranged parallel to the line of motion of the coils when being inserted and withdrawn through the doorway. Therefore, when the nuts *h, h* have been removed, the coils can be withdrawn from connection with the shell and through the doorway by a single straight-line movement, and consequently the horizontal section of the coil-containing portion of the shell need be no greater than is necessary to contain the coils.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In an evaporator, in combination, a shell, a plurality of coils adapted for heating and evaporating sea water within the lower portion of said shell, said coils being arranged in a vertical tier, a vertical steam inlet chamber located in the said shell, a vertical exhaust chamber located in the said shell, a plurality of couplings arranged vertically one above the other and adapted to connect the one end of each coil to the said steam inlet chamber, a plurality of couplings similarly arranged and adapted to connect the other end of each coil to the said exhaust chamber, said couplings being adapted to be disengaged from said shell by a straight-line movement parallel to their axes, a doorway located in the shell on the side opposite to the said steam inlet and exhaust chambers and adapted for the admission and withdrawal of said coils by the

same straight-line movement as disengages the said couplings from the said shell, and a door adapted to cover said doorway.

2. In an evaporator, in combination, a
5 shell, a plurality of coils adapted for heating and evaporating sea water within the lower portion of said shell, said coils being arranged in a vertical tier, a vertical steam inlet chamber located in the said shell, a
10 vertical exhaust chamber located in the said shell, a plurality of couplings arranged vertically one above the other and adapted to connect the one end of each coil to the said steam inlet chamber, a plurality of couplings similarly arranged and adapted to
15 connect the other end of each coil to the said exhaust chamber, said couplings being adapted to be disengaged from said shell by

a straight-line movement parallel to their axes, nuts adapted to secure said couplings to said shell and to be operated from the outside of the shell, a doorway located in the shell on the side opposite to the said steam inlet and exhaust chambers and adapted for the admission and withdrawal
20 of said coils by the same straight-line movement as disengages the said couplings from the said shell, and a door adapted to cover said doorway. 25

In testimony whereof, I affix my signature in presence of two witnesses. 30

WILLIAM WEIR.

Witnesses:

ROBERT MORRISON NEILSON,
DAVID WATT PAGE.