(No Model.)

G. W. BAIRD.

STEAM GENERATOR OR EVAPORATOR.

No. 484,946. Patented Oct. 25, 1892.

FIG. 4

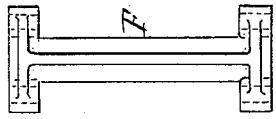


FIG. 5

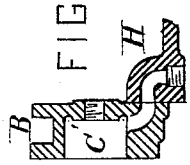


FIG. 6

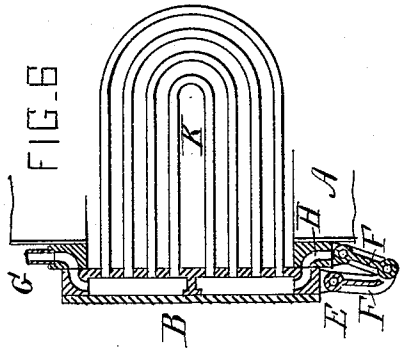


FIG. 2

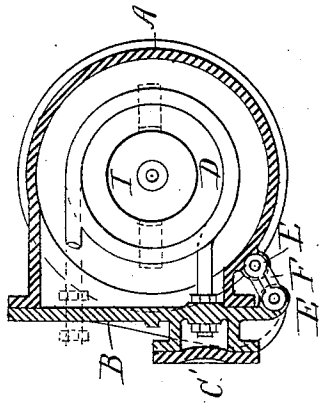


FIG. 3

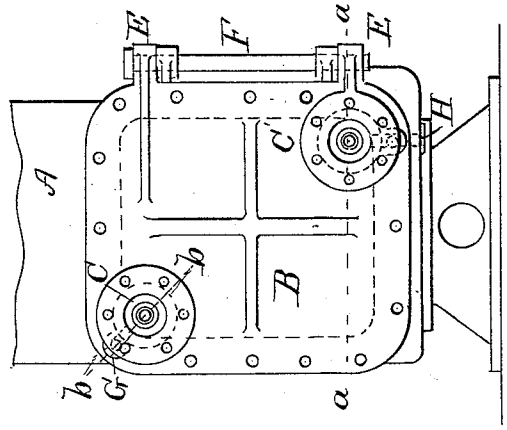
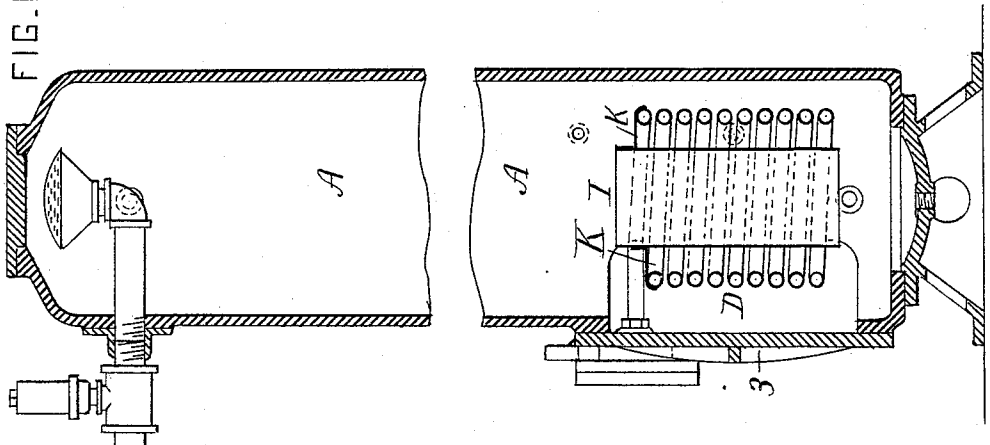


FIG. 1



WITNESSES

INVENTOR

G. W. Baird

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE W. BAIRD, OF THE UNITED STATES NAVY.

STEAM GENERATOR OR EVAPORATOR.

SPECIFICATION forming part of Letters Patent No. 484,946, dated October 25, 1892.

Application filed April 4, 1892. Serial No. 427,771. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BAIRD, an engineer and officer in the Navy of the United States, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful improvements in steam generators or evaporators for making pure water for feeding boilers, and for drinking, culinary, and other purposes, of which the following is a description.

My invention relates to that class of evaporators in which steam is generated from sea or other impure water by means of steam introduced into coils or nest of tubes within the generator. The steam-generator being connected to a condenser, the steam is condensed and drawn off to be applied to any of its many uses.

The object of my invention is to facilitate the removal, inspection, and cleaning of the tubes, and the replacing of the same by breaking one joint only.

The invention consists in connecting the steam-tubes to chambers in a manhole-plate or door that is swung on a link hinge, and in other details that will be hereafter described and claimed.

Referring to the drawings, Figure 1 is a vertical section of the evaporator. Fig. 2 is a horizontal section through *a a*. Fig. 3 is a front elevation of the door or manhole-plate. Fig. 4 is a view of the link for a hinge. Fig. 5 is a detail section through *b b*, Fig. 3, showing the steam-passage through the casing into the door, and Fig. 6 is a section through generators where U-shaped tubes are used.

A is the generator.

B is the door or manhole-plate.

C C′ are the chambers in the upper and lower part of the door, into which leads either end of the steam coil or coils D.

The chambers C C′ may extend across the upper and lower part of the door or manhole-plate when U-shaped pipes are used in place of coils, as shown in my patent, No. 450,361, of April 14, 1891, only the tubes are shortened to allow them to swing out of the evaporator. The door is flat and rests against a flange on the evaporator, and when in place is secured by means of bolts to resist any internal pressure, and also to make a tight joint. The door is also attached to the evaporator by hinges E E, which are connected by the solid link F. This hinge, which has two pivots, by means of its link connection will permit the tubes attached to the door to swing clear of the sides of the manhole when opening or closing the door.

G is a steam-port leading through the flange into the chamber C, and H is another port leading from the face of the flange to its outside, by which the water of condensation from the steam used to vaporize the water in the evaporator is carried off, the port G being for the admission of steam from the boiler into the chamber C. It will be seen in Fig. 5, where one of the passages or ports is used, both being alike, that only one joint between the door and flange is to be broken to remove the tubes for inspection or cleaning.

I is a circulating-cylinder, similar to that shown in my patent, No. 434,972, of August 26, 1890, which rested on the bottom of the evaporator; but in this specification the cylinder is supported on the coils by the lugs K and is removed with the coils.

I have shown in Fig. 6 U-shaped steam-tubes connected to the door or manhole in place of the coil. The hinge is at the bottom of the door and connected by a double link, which permits the door to move out in a straight line to the length of the links before swinging it open. The double links may also be used on the door to which the coil is attached.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a steam generator or evaporator, the combination of the chambered door and the tubes attached thereto with the linked hinge, whereby the tubes will be removed when the door is swung open, substantially as shown and described.

2. In a steam generator or evaporator, the combination of the chambered door and the tubes attached thereto with the ports leading through the flange into the chamber, substantially as shown and described.

3. In a steam generator or evaporator, the

combination of the chambered door and tubes attached thereto and the ports leading through the flange into the chamber with the linked hinge attaching the door to the generator, substantially as shown and described.

4. In a steam generator or evaporator, the combination of the chambered door, the tubes attached thereto with the circulating-cylinder supported on the tubes, and the linked hinge, substantially as shown and described.

GEORGE W. BAIRD.

Witnesses:
P. W. HOURIGAN,
G. H. RICHARDSON.