

(No Model.)

C. KING.
CONDENSER.

Patented Oct. 8, 1889.

No. 412,271.

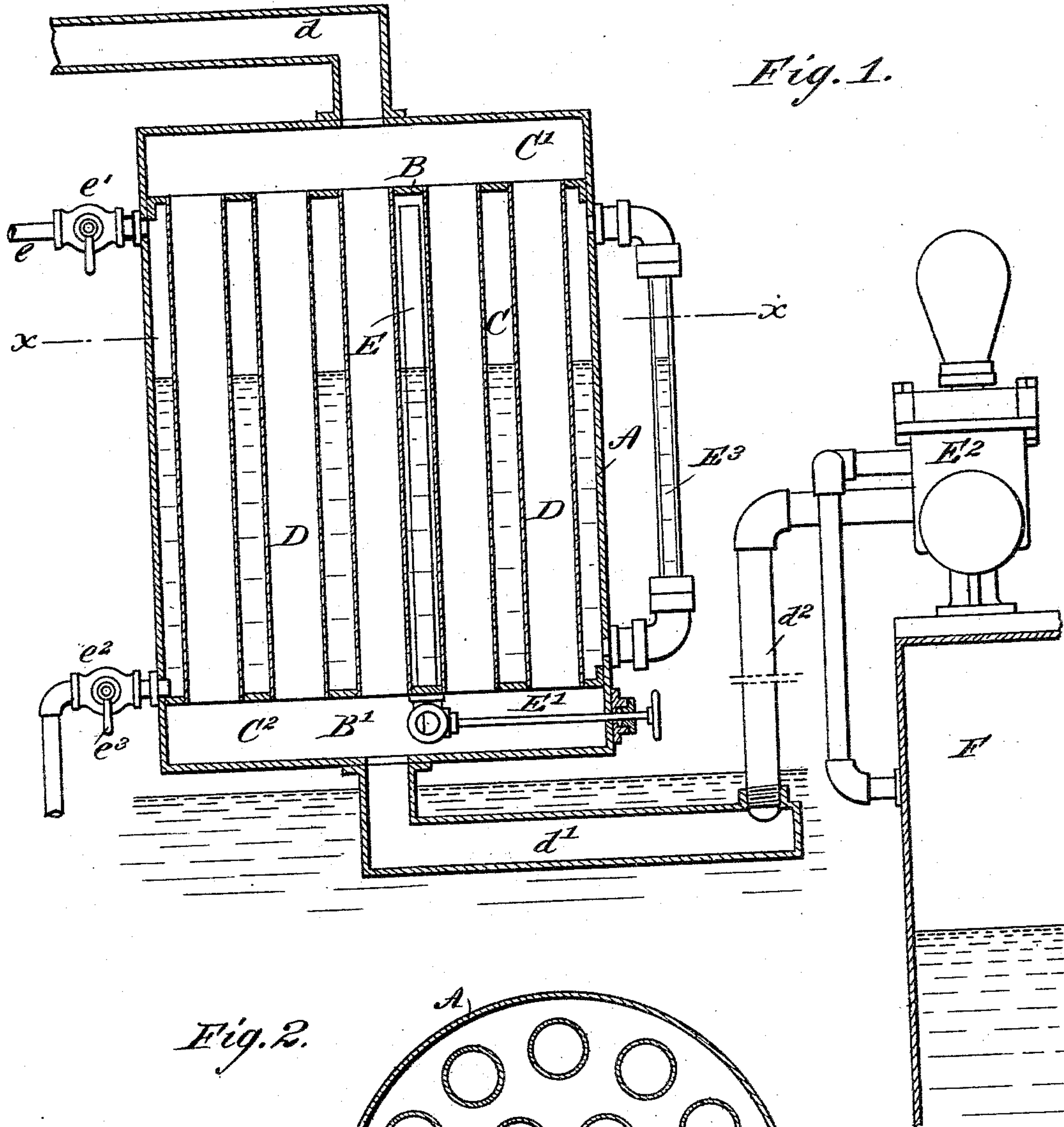
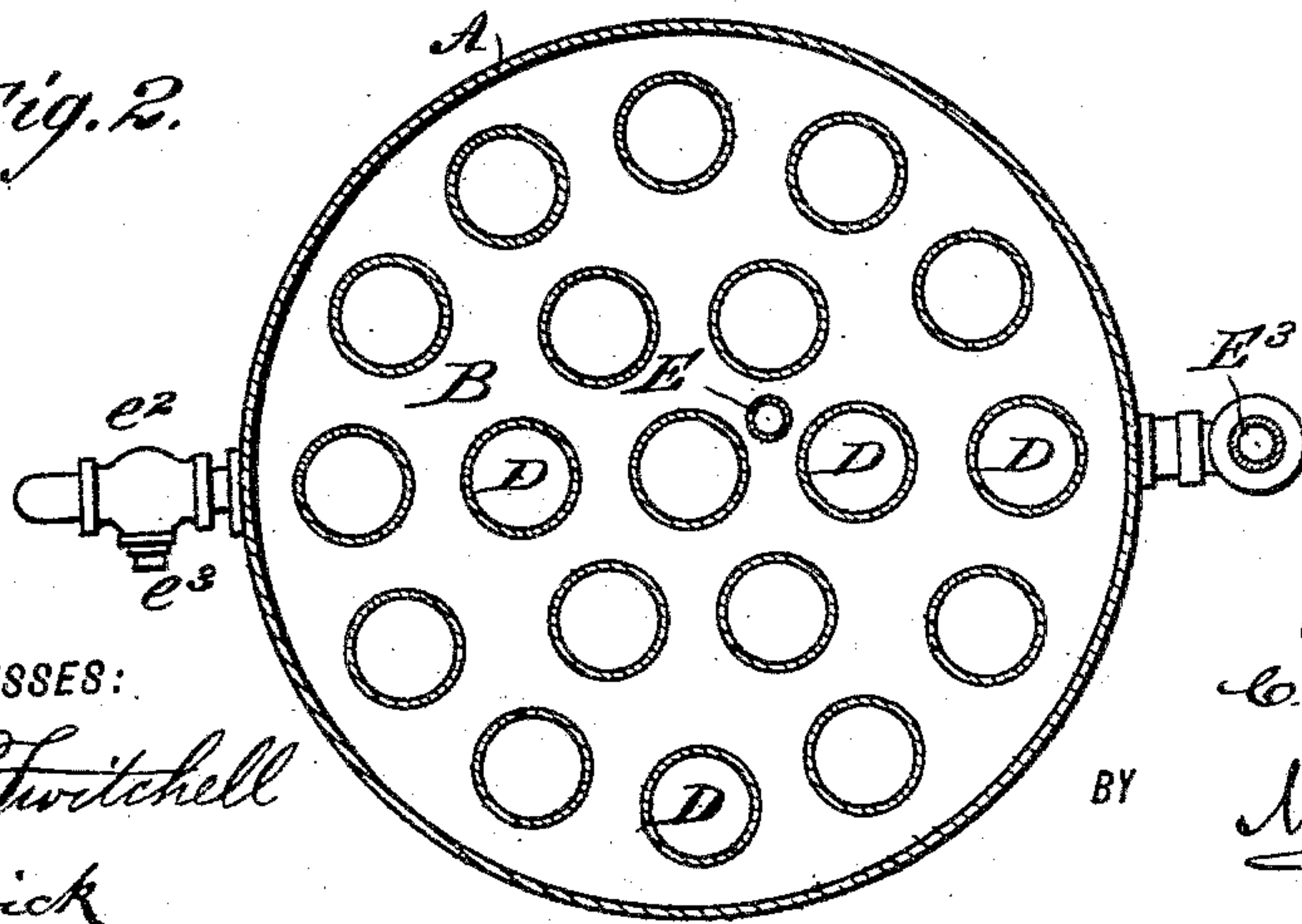


Fig. 2.



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CONDENSER.

SPECIFICATION forming part of Letters Patent No. 412,271, dated October 8, 1889.

Application filed October 3, 1888. Serial No. 287,098. (No model.)

To all whom it may concern:

Be it known that I, CHARLES KING, of the city, county, and State of New York, have invented a new and Improved Condenser, of which the following is a full, clear, and exact description.

My invention relates to an improved condenser, and has for its object to provide a simple, effective, and economical means of obtaining fresh from salt water, wherein a marine-boiler may be constantly supplied with fresh water.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a central vertical section through my device, and Fig. 2 is a horizontal section on line *xx* of Fig. 1.

In carrying out the invention a cylindrical body A is preferably employed, closed at each end and provided near the heads with inner horizontal partitions B and B', secured to the said body in any approved manner, whereby a large central chamber C and small end chambers C' and C² are formed. The chambers C' and C² are united by a series of vertical tubes D, secured in the partitions or diaphragms B B', the purpose of which tubes is to convey exhaust-steam from the chamber C' to the chamber C², heating in its passage the central chamber C. The steam is introduced into the upper chamber C' through a pipe *d*, screwed into or otherwise secured to the upper head, which pipe is connected with the exhaust of the engine. The condensed steam is carried from the lower chamber C² by means of a pipe *d'*, attached to the lower head, the said pipe being adapted for connection with a reservoir or receptacle F, suitably situated to supply water to the boiler.

In the upper portion of the central chamber C a pipe *e* is introduced, provided with a valve *e'*, adapted to supply live steam when necessary, and at or near the bottom of the

said central chamber a second pipe *e*² is inserted, which latter pipe is adapted to be emerged at its other end in the salt-water. If the condenser is employed upon a vessel, the pipe is projected through the hull or over the side in any suitable or approved manner. The pipe *e*² is provided with a valve *e*³ at a convenient point in its length. A tube E is perpendicularly located in chamber C, extending from a point near the top of said chamber through the bottom, at which point it is supplied with a valve E', the stem whereof extends outward through the body, as shown in Fig. 1.

From the lower chamber C² a pipe *d'* is projected, adapted to be surrounded by cool water, and the said pipe *d'* is connected with an air-pump E² by a branch pipe *d*². A well F is located near the pump, into which the products of condensation are fed, as best illustrated in Fig. 1. The condenser-body is preferably provided upon one side with a water-gage glass E³.

In operation the valves *e'* and *e*³ are closed and the pump started, producing a vacuum in the chamber C. The valve *e*³ is then opened and the salt-water is allowed to fill the said chamber to a given point determined from the glass, whereupon the valve *e*³ is closed. The exhaust-steam having been allowed to circulate in the tubes D, the chamber is comparatively hot, and as a vacuum is established by the pump in the space between the upper head and the water-line the water immediately upon entering the chamber C boils, and the vapor passing down through the tube E is condensed and delivered to the water-receptacle F through the condenser-tube *d'*, and as the steam is thus continuously condensed by reason of said condensation the vacuum in the chamber C is constantly maintained.

By means of the apparatus above set forth the salt-water is caused to boil at 90°. When a quantity of salt has accumulated in chamber C, the valve E' is closed and the valves *e'* and *e*³ opened, whereupon the live steam entering through the pipe *e* blows the salt out through pipe *e*³.

It will be understood that my invention

partakes somewhat of the character of a still, converting the salt-water into a vapor in the presence of a vacuum.

Having thus described my invention, I claim
5 as new and desire to secure by Letters Patent—

1. In a condenser, the combination, with an
air-pump, of a casing divided into a central
water-chamber and end chambers and having
the end chambers connected by tubes ex-
10 tending through the water-chamber, a water-
supply pipe leading into the water-chamber,
a tube extending from the lower end cham-
ber, up into the water-chamber, and a connec-
tion between the said lower end chamber and
15 the pump, substantially as herein shown and
described.

2. In a condenser, the combination, with an
air-pump, of a casing A, divided into a cen-
tral chamber C and end chambers C' C², and
20 having the end chambers connected by tubes
D, extending through the central chamber, a
water-supply pipe e², connected to the central

chamber, a tube E, extending from the lower
end chamber up into central chamber and pro-
vided with a valve E' in the said lower cham- 25
ber, and a pipe d', leading from the said lower
end chamber and connected with the pump,
substantially as herein shown and described.

3. In a condenser, the combination, with a
casing provided with horizontal partitions di- 30
viding the same into a central water-chamber
and end steam-chambers, and tubes projected
through the central chamber uniting the end
chambers, of a water-supply pipe leading into
the central chamber, a tube supported within 35
the same opening into one end chamber, a
tube connected to the condenser, and a pump
attached to said tube adapted to exhaust air
therefrom, substantially as and for the pur-
pose specified.

CHAS. KING.

Witnesses:

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C. SEDGWICK.