

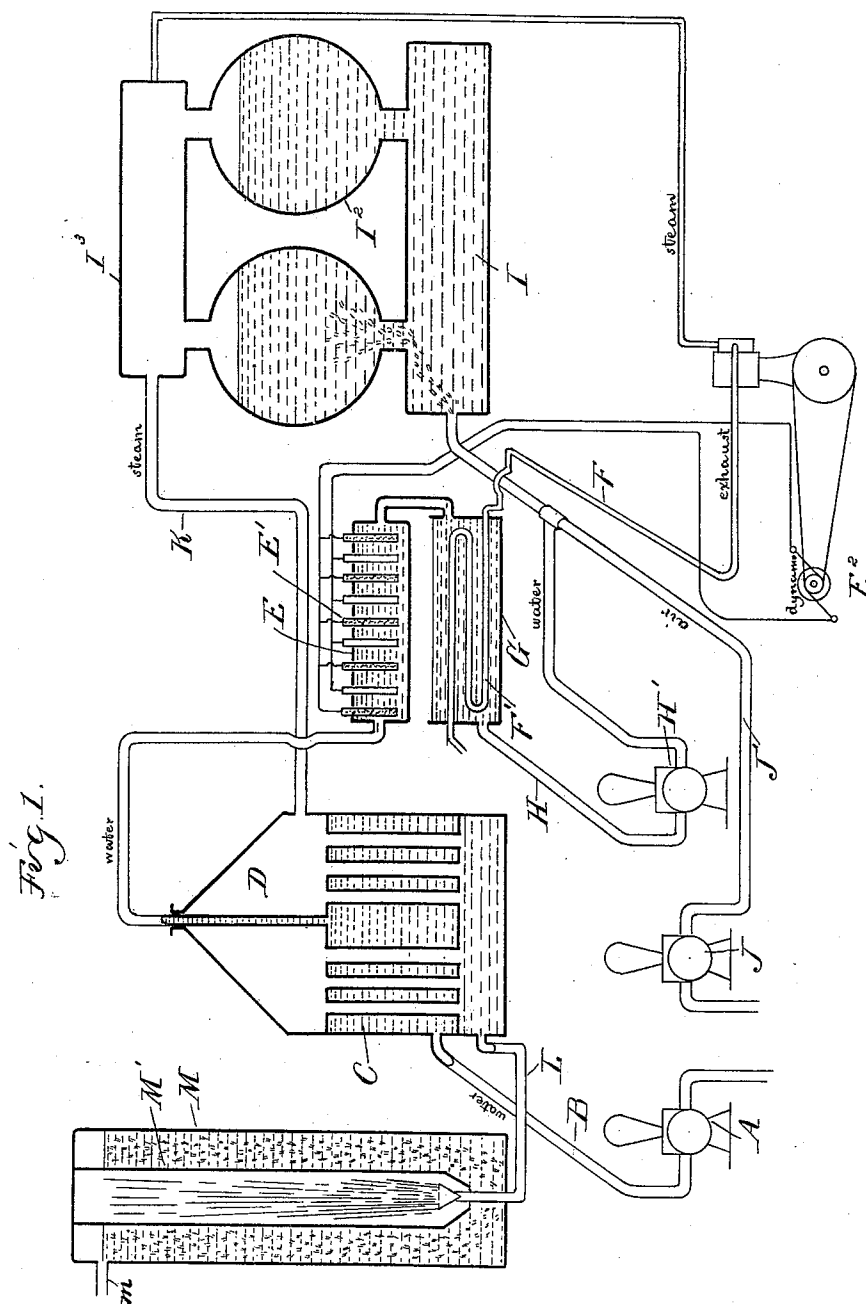
(No Model.)

3 Sheets—Sheet 1.

T. CRANEY.
APPARATUS FOR PURIFYING WATER.

No. 546,844.

Patented Sept. 24, 1895.



Witnesses
L. J. Whittemore
O. F. Barthel

Inventor
Thomas Craney
By M. E. Spangue Atty.

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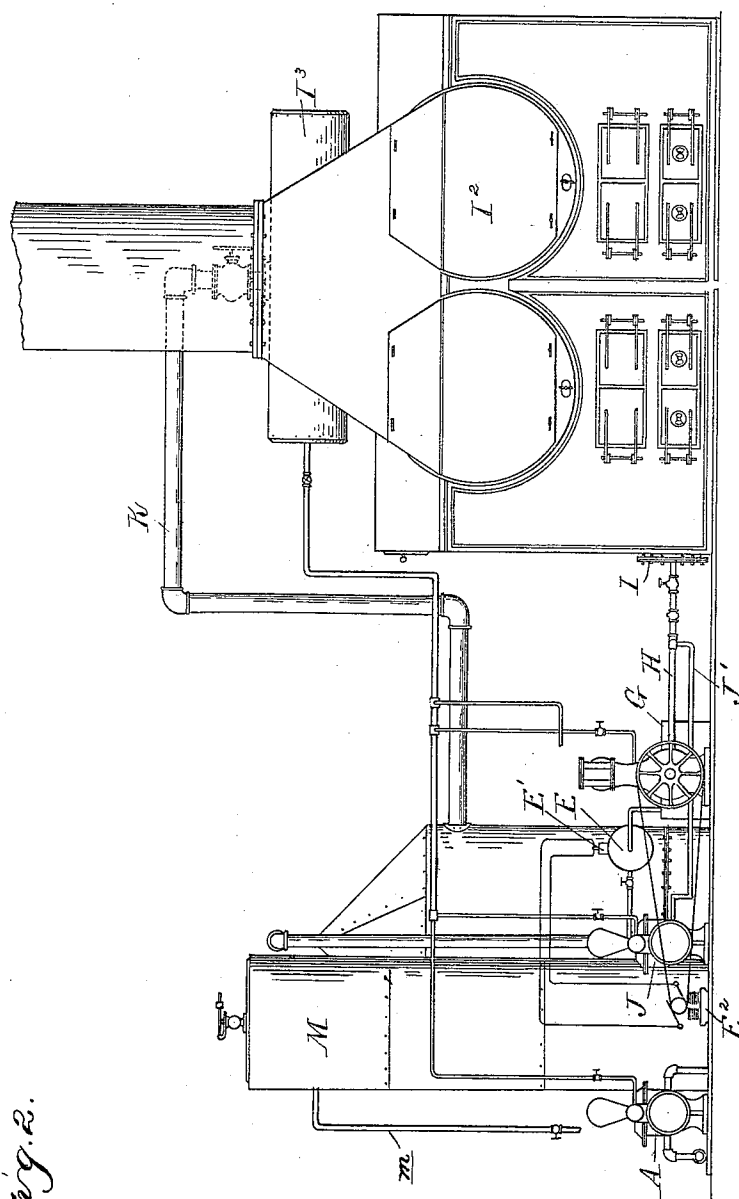


Fig. 2.

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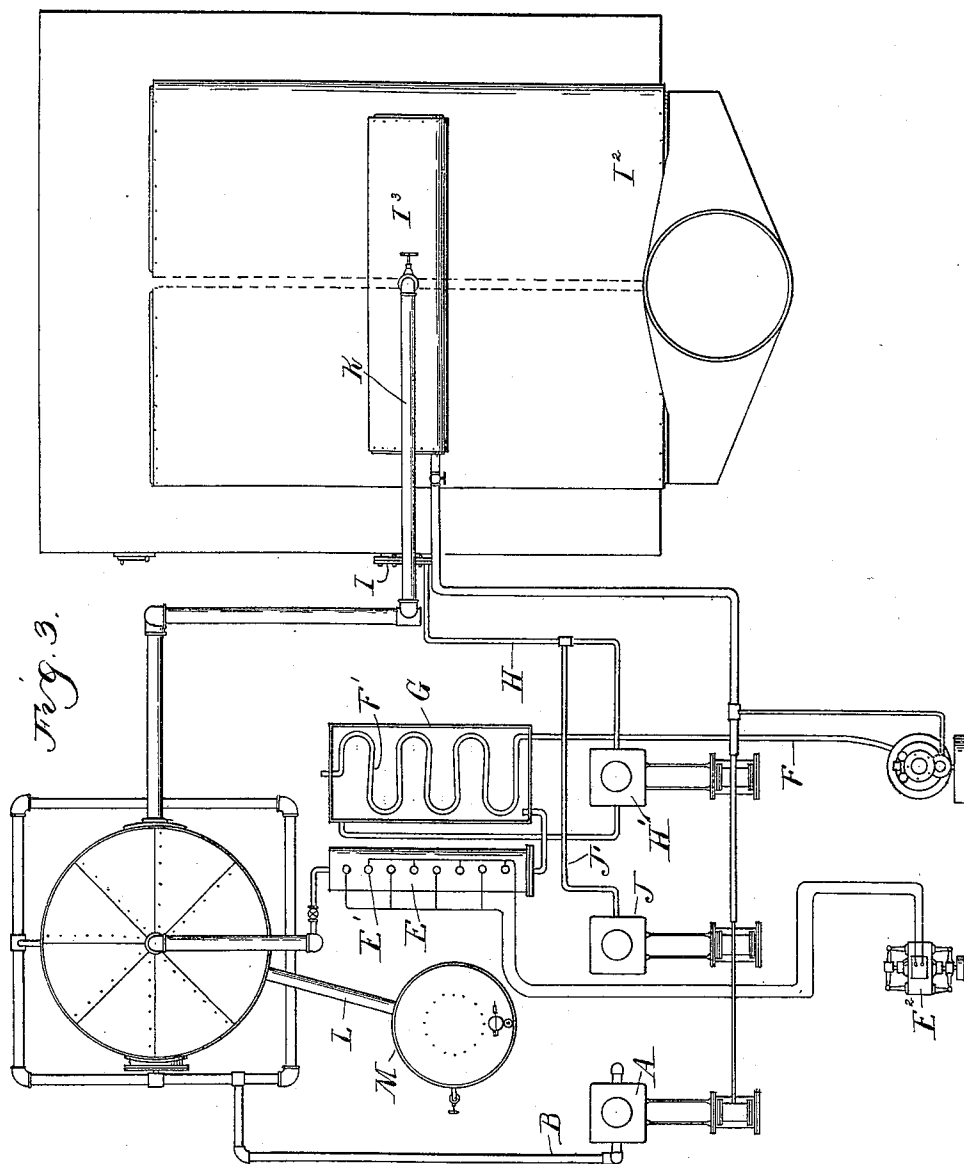
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UNITED STATES PATENT OFFICE.

THOMAS CRANEY, OF BAY CITY, MICHIGAN.

APPARATUS FOR PURIFYING WATER.

SPECIFICATION forming part of Letters Patent No. 546,844, dated September 24, 1895.

Application filed December 8, 1894. Serial No. 531,223. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CRANEY, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Apparatus for Purifying Water, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the peculiar construction and organization of an apparatus for transforming impure water into palatable drinking-water, and particularly in the construction of such an apparatus embodying a feed-water heater, an electrolytic vat through which the water passes from the feed-water heater, an evaporating apparatus in which the air is sterilized, and a condenser, and, if desired, an aerator and carbonator.

The invention further consists in the peculiar construction, arrangement, and combination of the various parts, whereby the apparatus is simplified, cheapened, and its results improved.

In the drawings, Figure 1 is a diagram section of my apparatus. Fig. 2 is a front elevation, and Fig. 3 is a top plan view thereof.

A is a feed-pump for supplying water from any source to my purifying apparatus.

The discharge, pipe B from the pump preferably discharges into the water-chamber C of a condenser, of which D is the condensing-chamber.

E is an electrolytic pan or vat into and through which the water flows from the water-chamber C.

E' represents the anodes of the electrolytic apparatus, which are supplied with current from a suitable dynamo E², having a suitable supply-pipe and an exhaust-pipe F which leads into a coil F' in an open tank G. This tank is connected with the outflow-pipe of the electrolytic pan, and is provided with the discharge-pipe H, which forms the suction-pipe of the pump H', which is adapted to deliver the water into the mud-drum I of an evaporating apparatus comprising the boilers I² and steam-dome I³, the boilers being provided with suitable furnaces for heating, as shown in Fig. 2.

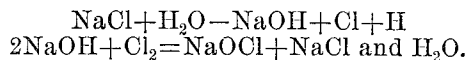
J is an air-pump, having its discharge-pipe J' connecting into the discharge-pipe of the

water-feed pump H', so that the air passes into the mud-drum with the water.

K is the discharge-pipe from the steam-dome I³ for the vapors, which are conducted into the chamber D of the condenser and then condensed.

L is a discharge-pipe from the bottom of the condenser, leading to an aerator M, of any desired construction, that which I have shown consisting of an inner chamber M', in the lower end of which is a nozzle supplied from the pipe L. This inner chamber communicates through a reduced exit into the outer chamber, which is supplied with a suitable exit-pipe m.

The parts being thus constructed, they are intended to operate as follows: Water from any source containing impurities is forced by the pump A into the condenser, where it is slightly heated by the steam in the steam-chamber of the condenser, thus utilizing the heat which would otherwise be wasted. From thence the water passes into the electrolyte-pan E, whence the chlorides which may exist in water, such as the chlorides of calcium, sodium, &c., are decomposed. The chlorine being separated from the element with which it is in combination will again combine with the element, but in the form of a hypochlorite which will act to absolutely destroy any germs that may be in the water. The decomposition and recombination is illustrated by the formula:



The water then passes into the open tank G, where it is heated sufficiently to free it from its ammoniacal gases. It is then discharged into the mud-drum of the boiler by the pump H', together with air from the pump J', as before described. All germs being killed, together with most of the solid matters will remain in the mud-drum, and the water which comes to the evaporator will be freed of its ammoniacal gases. The air entering with the water is thoroughly washed in going to the top, and is sterilized by the heat to which it is subjected, and passes off with the steam to the condenser and from thence to the aerator, if one is required; but it will be seen that the steam and sterilized air are intimately

commingled in the steam-dome and in the condenser, so that further aeration is not necessary, although it makes the water more sparkling and less flat.

5 What I claim as my invention is—

1. In an apparatus for purifying water, the combination of a water supply pipe, an electrolytic pan into which the pipe leads and into and through which the water is fed, an
10 open tank communicating with the pan and into which the water passes from the pan, means for heating the water in the tank, an evaporator and condenser and pipe connection between the same and the evaporator and
15 tank, combined for the purpose set forth.

2. In an apparatus for purifying water, the combination of a water supply pipe, an electrolytic pan into which the pipe leads and through which the water is fed, an open tank
20 communicating with the pan and into which the water passes after leaving the pan means for heating the water in the tank, an evaporator communicating with the tank and into the bottom of which the heated water is fed,
25 an air pump having its discharge communicating with the evaporator for delivering air into the evaporator with the water, a condenser and a pipe connection between the evaporator and condenser, combined for the
30 purpose set forth.

3. In an apparatus for purifying water, the combination of the water supply pipe, a condenser into which the pipe leads and through which the fresh water passes, an electrolytic
35 pan having a pipe connection with the condenser and through which the water passes after leaving the condenser, an open heated tank communicating with the pan and into which the water passes after leaving the pan,
40 an evaporating apparatus a pipe connection between the same and tank, and a steam pipe from the evaporating apparatus to the steam chamber of the condenser.

4. The combination of the feed pump, the condenser, electrolytic tank, open heated
45 tank, and evaporating apparatus and pipes connecting the same and through which the water passes successively in the order named, a steam pipe from the evaporating apparatus to the condenser, a dynamo connected to the
50 anode of the electrolytic apparatus, the engine for driving the dynamo, and an exhaust pipe from the engine leading to a heating coil in the open heating pipe.

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

THOMAS CRANEY.

Witnesses:

M. B. O'DOHERTY,

L. J. WHITEMORE.