

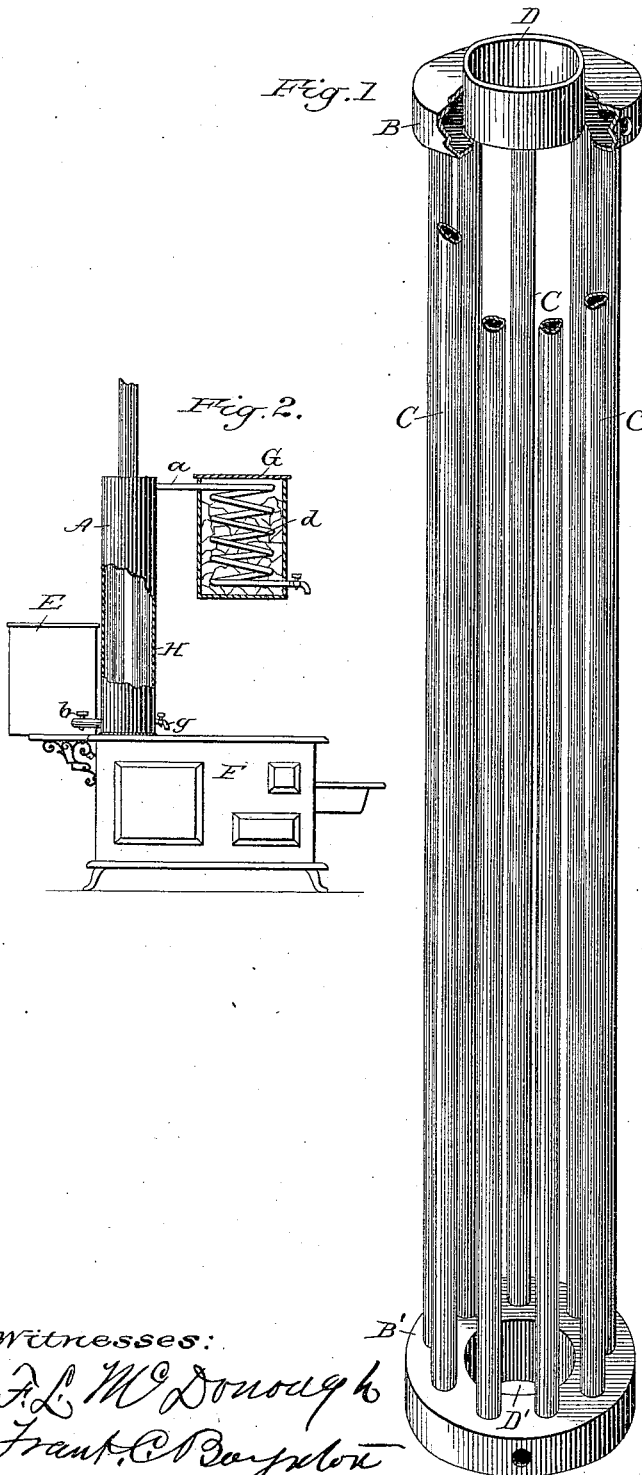
(No Model.)

O. SHANNON.

APPARATUS FOR PURIFYING HARD WATER.

No. 304,462.

Patented Sept. 2, 1884.



Witnesses:

F. L. McDonough
Frank C. Bayston

Oliver Shannon

Inventor:

Edw. M. Dunn & Co.
Atys.

UNITED STATES PATENT OFFICE

OLIVER SHANNON, OF ABERDEEN, DAKOTA TERRITORY.

APPARATUS FOR PURIFYING HARD WATER.

SPECIFICATION forming part of Letters Patent No. 304,462, dated September 2, 1884.

Application filed April 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, OLIVER SHANNON, a citizen of the United States, residing at Aberdeen, in the county of Brown and Territory of Dakota, have invented a new and useful Apparatus for Purifying Hard Water and Producing Soft Water by Process of Distillation; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others to make and use the same.

My invention is an improvement in apparatus for converting impure or unpalatable water into pure water.

15 In carrying out my invention I employ a vessel which I term a "generator," constructed of metal or other suitable material, formed with annular chambers provided with central openings, and connect the said chambers 20 with tubes of any required number, fitted to the said chambers with proper steam-tight joints. One of the chambers mentioned is provided with an opening for a water-supply pipe, and the other with an opening for steam-connections. The generator is inclosed by a jacket, 25 which connects the outer rims of the said annular chambers. The opening in the center of the lower generator is adapted to fit over the pipe-collar of a domestic stove, either a cook or heater, and the complete retort is intended to take the place of one or more joints of the ordinary stove-pipe. At a convenient point to the heater I provide a water-reservoir, which I connect to the lower annular 30 chamber of the retort with a pipe fitted with water or steam tight joints. This water-reservoir may be of any size; but it is my intention to have the supply of water to the retort so regulated as that the said retort will not at any time be more than half full of water. At 40 a convenient point near the generator I locate a condensing apparatus, and connect the same to the upper annular chamber of the said generator by a suitable pipe, which passes in the form of a worm or coil through a box terminating with a discharge-cock. The coil in practice is surrounded with an ice or cooling chamber, somewhat similar to that used in a 45 distilling apparatus.

50 In my drawings, which form a part of this specification, Figure 1 is a perspective view

of the generator, showing the jacket broken away. Fig. 2 is a view partly in elevation and partly in section, showing the practical application of the generator with its several 55 connections.

-Similar letters of reference indicate like parts in all of the figures.

Referring to the drawings, A is the generator, having a lower annular chamber, B', and 60 an upper one, B, provided with central openings, D and D', for the reception and discharge of the products of combustion and heat from the stove.

C C C, &c., are tubes which connect the chambers B B' and conduct the water from the water-supply and the generated steam toward the 65 condenser.

E is the reservoir for water, which in the drawings I have shown located upon a shelf 70 connected to the stove. Said reservoir is connected to the retort by a water-supply pipe, b, provided with a suitable cock.

G is the condenser, composed of a vessel filled with ice, which latter surrounds a coil 75 or worm, d, which is a continuation of the pipe a, connected with the chamber B of the generator. A suitable cock in the pipe a is provided outside of the vessel G, whence pure water is drawn from time to time. 80

The pipe a, if necessary, may be provided with a safety-valve at its highest point, to prevent a possible accident by bursting the retort or pipes connected therewith by a too rapid generation of steam. Heat from the 85 stove-pipe hole of the heater passes into the generator and circulates about the tubes C C C, &c., being confined by the jacket H, the said tubes being partly filled with water supplied from the reservoir E. From the peculiar construction of the generator A it is obvious that a large heating-surface is presented to the products of combustion for the rapid conversion of the water in the chamber B' and connecting-tubes into steam. The heat from the stove 95 and products of combustion, after circulating about the radiating-surfaces of the generator, find their way into a suitable flue by way of the stove-pipe above the retort. The steam generated in the generator-tubes and chamber 100 B rises to a high point, and then comes in contact with the chilled pipe-coil d, where it is

rapidly converted into pure cold water, ready for domestic and other use. Any sediment or other impurities gravitate and settle into the lower annular chamber, from which they may be removed, when necessary, through a suitable aperture, as cock *g*.

My apparatus, which consists, essentially, in the utilization of the ordinary household heater or cook, and combining the same with a retort and a condenser, furnishes an ever-ready, simple, and inexpensive means of converting undesirable water into a pure fresh article.

Where families are supplied with water from water-works, the supply-pipes may be attached directly to the generator, and in such a case one of the tubes *C* may be provided with the simple and well-known indicator to exhibit through a transparent tube the proper height of the water.

I am fully aware of the patents cited as references in official letter of May 13, 1884; but as these show condensing and distilling apparatus in several forms of application not conflicting with my application, to such I make

no claim; nor do I broadly claim a retort for converting impure water into steam, as such I know to be old.

What I claim as new, and desire to secure by Letters Patent, is—

1. The generator composed of annular chambers *B B'*, provided with openings *D D'*, connecting-tubes *C*, and jacket *H*, said chambers being provided with suitable openings for the connection of steam and water pipes, all arranged substantially as and for the purpose set forth.

2. In an apparatus for converting impure water into pure water for domestic use, the heater *F* and water-reservoir *E*, in combination with the generator *A* and the condensing apparatus composed of coil *d*, incased in a suitable cooler and provided with suitable cocks, as and for the purpose set forth.

OLIVER SHANNON.

Witnesses:

FRANK C. BOYNTON,
JAMES FLYNN.