

(No Model.)

W. ALLDERDICE.
APPARATUS FOR DISTILLING WATER.

No. 497,742.

Patented May 16, 1893.

Fig. 1.

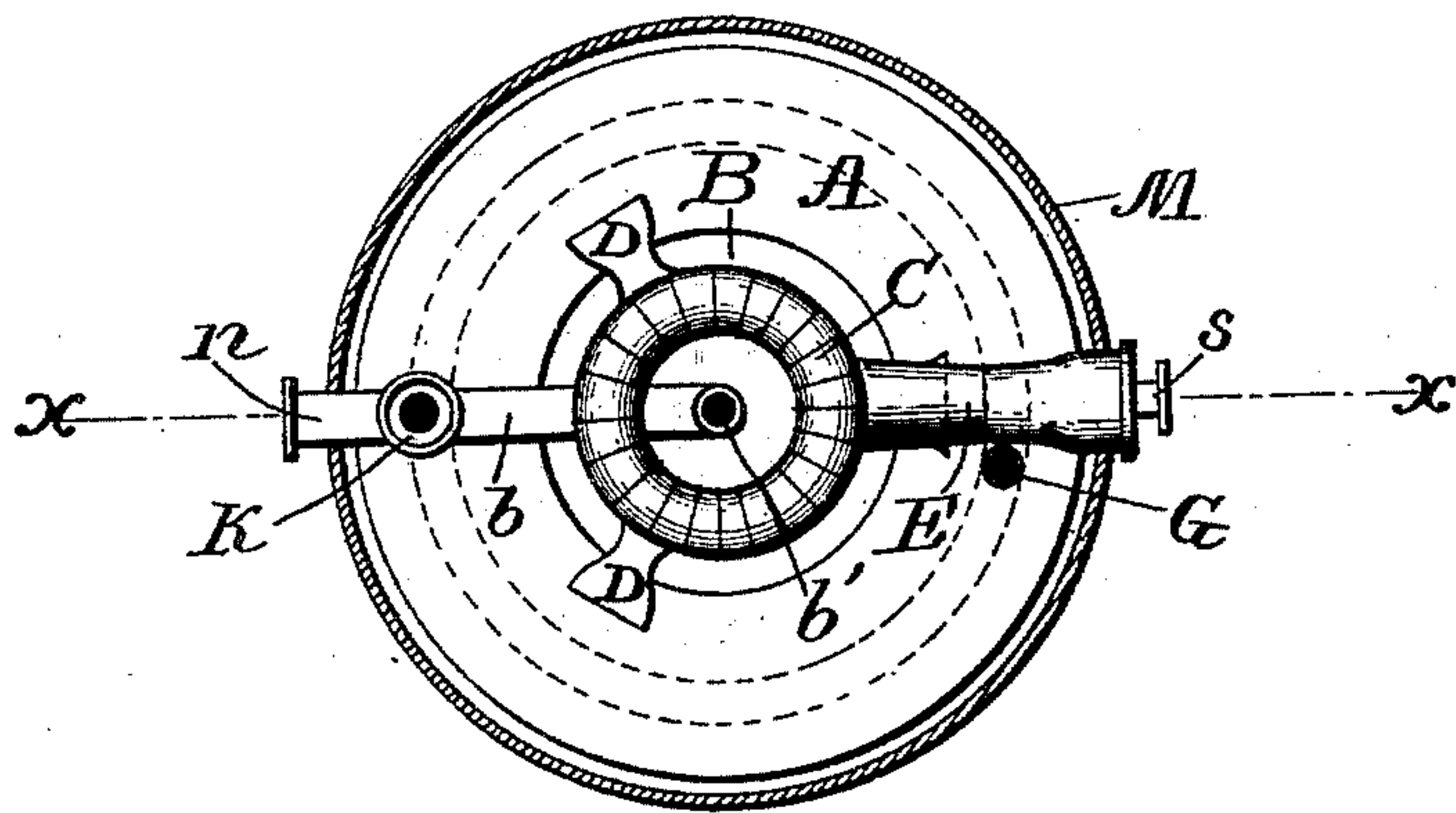
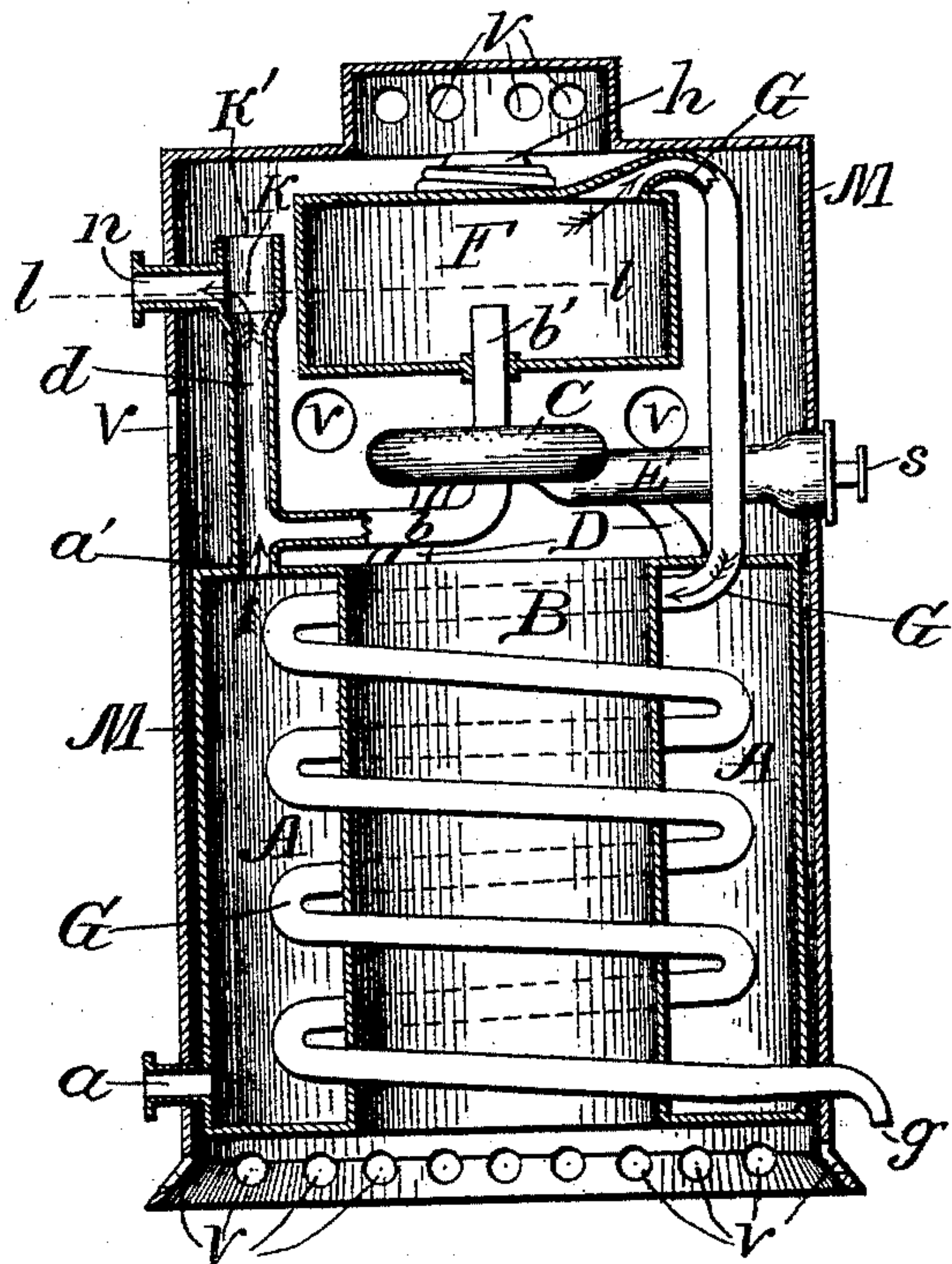


Fig. 2.

Witnesses

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APPARATUS FOR DISTILLING WATER.

SPECIFICATION forming part of Letters Patent No. 497,742, dated May 16, 1893.

Application filed November 4, 1892. Serial No. 451,019. (No model.)

To all whom it may concern:

Be it known that I, WINSLOW ALLDERDICE, a citizen of the United States, residing at Warren, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Apparatus for Distilling Water, of which the following is a specification.

My invention relates to improvements in boilers for evaporating water and afterward condensing the resultant steam, thereby obtaining pure water; in feeding water automatically by the force of gravitation into the boiler to replace that evaporated and expelled in the form of steam: and the main object of my invention is to provide a convenient, constant and certain means for obtaining pure water. I attain this object by the device illustrated in the accompanying drawings, in which—

Figure 1, is a vertical section through the casing on the line xx of Fig. 2, the coil being shown in elevation, and Fig. 2, a plan view; in the latter, the boiler is removed.

In the figures similar letters refer to similar parts.

A tank, which is conveniently made in the form of a cylindrical jacket or condensing tank, A inclosing a hollow space, B, is fitted with four openings, two of which accommodate the ends of a pipe, preferably arranged in the form of a coil, G; the other two, a , a' , being for the purpose of passing a current of water through the tank in contact with the outer surface of the condensing coil G; a being the ingress and a' the egress. The egress tube a' is divided into two branches, one branch, d , leading up to a receptacle, K, having an atmospheric connection, K', and a waste pipe connection, n ; the other branch, b , is introduced within the lower portion of the boiler, F, and terminates with an open end, b' , the height of which is below the level of the waste outlet, n , of the branch d . Upon the admission of water into the tank, A, through the opening a with sufficient head to enable it to rise to the waste pipe n the boiler, F, will be filled with water to the level, l , of the overflow in the waste pipe, n . On top of the tank A and immediately under the boiler F is placed a heating appliance, here shown as a circular

gas burner C with supports D, gas connection, s , and mixer, E. The boiler feed water pipe, $b b'$, is shown as passing through the ring of the burner, C. The upper end of the coil pipe G is connected to the steam space of the boiler F and forms the means for the escape of steam from the boiler: the lower end of the coil pipe G terminates with an open end g at a point without the tank A. The boiler F is provided with a removable cap h for the removal of scale or impurities within. The whole may be inclosed in a casing M with openings to connections at a , n , s , and g , and sufficient ventilating apertures V to insure desirable combustion of the fuel applied, though this casing M is simply ornamental and in no sense essential to the effective working of the invention.

The operation of my invention is as follows:—The opening, a is connected to a water supply having sufficient gravity head to cause it to rise to the level l and overflow through the waste pipe n which is also suitably connected to a drain, or otherwise. Gas is supplied through s to the burner C. Upon the admission of water through a , the tank A, branch pipes b , b' , d , boiler F, and receptacle K, fill to the level l of the overflow through the waste pipe n . The current being constant the level l is also constant in the boiler F, the water in the boiler being "slack water" as regards the current. Upon the application of heat from the burner, C, steam forms in the boiler F, escapes through the coil pipe G, becomes condensed into water by contact with the cool surface of the coil G within the tank A and emerges at the lower end, g , in the form of pure water. The supply of water in the boiler F is maintained constant as steam forms and escapes, through the law of gravitation acting from the current, entering at a and emerging at n , upon the slack water in the branch pipe $b b'$ and boiler F. The atmospheric connection K' is essential, as, were none provided the waste pipe n would act as a siphon and draw the water out of the boiler F. The heat of the condensed steam is taken up by the circulating water so that upon entering the branch pipe $b b'$ its temperature is increased which is still further augmented by the close proximity of the branch $b b'$ to the

source of heat, C, so that heat energy is economized in the production of steam within the boiler.

I am aware that the method and practice of obtaining pure water by evaporation and condensation of the steam is not novel, also that economizing fuel by heating boiler feed water is well known and in use.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for distilling water, the combination of a main casing, provided with an annular condensing tank in the lower part thereof; a boiler in the upper part of said casing and a condensing coil leading from said boiler through said annular tank, a pipe opening into said condensing tank near the base thereof for supplying water thereto, an overflow pipe opening upward to the atmosphere and connected to the upper part of said condensing tank, and a feed pipe connecting the upper part of said tank with said boiler terminating below the level of the overflow open-

ing and means for heating said boiler, substantially as and for the purposes described. 25

2. In an apparatus for distilling water, the combination of a main casing, provided with an annular condensing tank in the lower part thereof; a boiler in the upper part of said casing and a condensing coil leading from said boiler through said annular tank, a pipe opening into said condensing tank near the base thereof for supplying water thereto, an overflow pipe opening upward to the atmosphere and connected to the upper part of said condensing tank, and a feed pipe connecting the upper part of said tank with said boiler terminating below the level of the overflow opening, and an annular gas burner beneath said boiler and surrounding said feed pipe, with means for supplying the same with gas, substantially as and for the purposes described. 35 40

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Witnesses:

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