

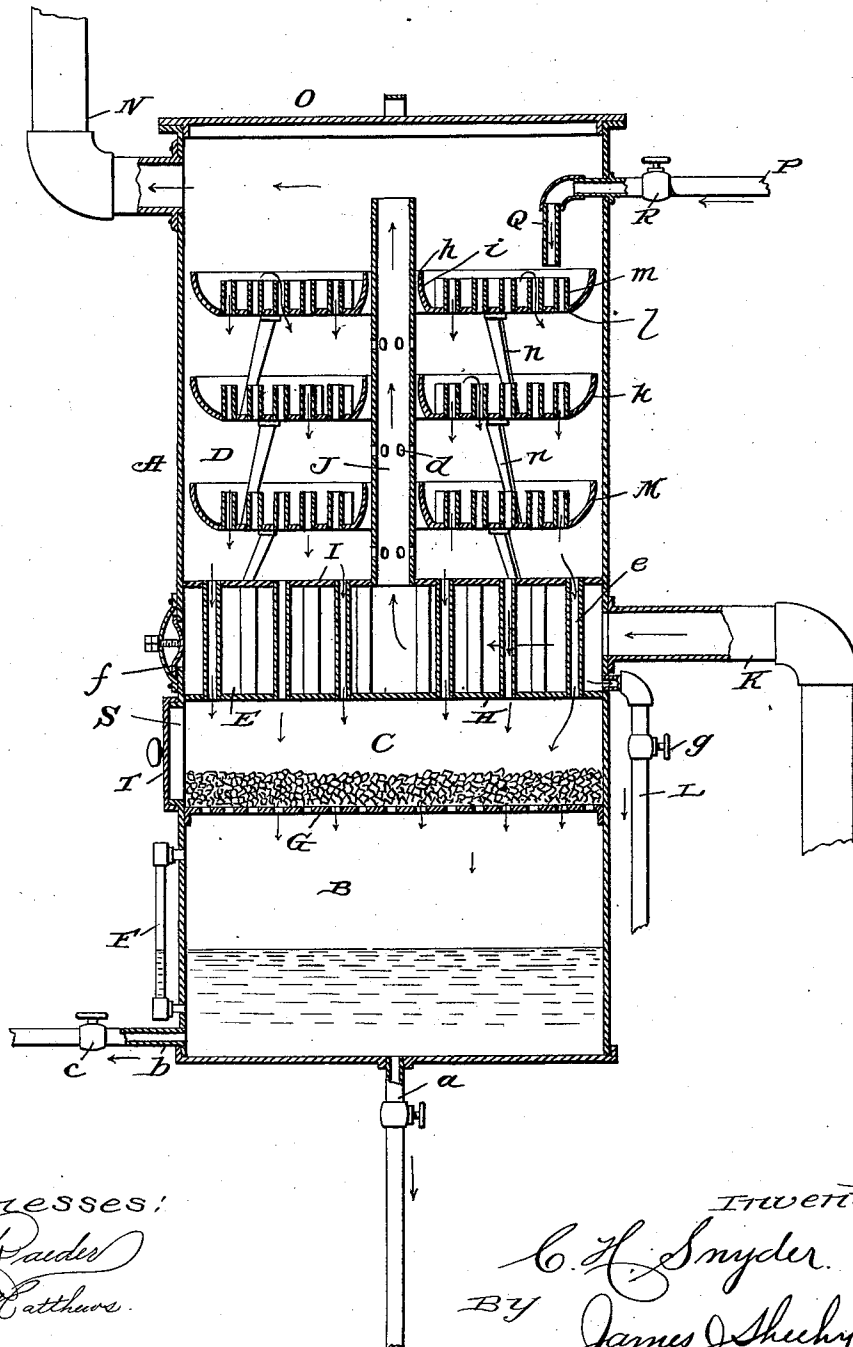
(No Model.)

C. H. SNYDER.

APPARATUS FOR PURIFYING AND FILTERING WATER.

No. 532,829.

Patented Jan. 22, 1895.



witnesses:

W. F. Matthews.

Inventor

C. H. Snyder.
BY James J. Shuchy
Attorney

UNITED STATES PATENT OFFICE.

CHARLES H. SNYDER, OF JACKSON, MICHIGAN, ASSIGNOR OF ONE-HALF TO
J. F. GALSTER, OF SAME PLACE.

APPARATUS FOR PURIFYING AND FILTERING WATER.

SPECIFICATION forming part of Letters Patent No. 532,829, dated January 22, 1895.

Application filed July 21, 1894. Serial No. 518,216. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SNYDER, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Apparatus for Purifying and Filtering Water; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an apparatus for purifying and filtering water, and the novelty will be fully understood from the following description and claims when taken in connection with the annexed drawing, in which the figure is a vertical, sectional view of my improved apparatus.

Referring by letter to said drawing: A, indicates a jacket or casing for inclosing the various parts of the apparatus. This casing is preferably of a circular form in cross section and made of sheet metal, although it is obvious that it may be of an angular or other form and composed of any suitable material, and it may be arranged upon a support, or otherwise fixed in position. In the bottom of the casing or jacket is the clear water chamber B. Above this chamber is the filtering chamber C, and in the upper portion is the purifying chamber D, between which and the filtering chamber is a chamber E. Leading from the bottom of the clear water chamber is a pipe, carrying a suitable blow off cock, for the purpose of cleaning out said chamber. On one side of this chamber B, is a pipe *b*, carrying a cock or valve *c*, and this pipe is designed to draw off the pure and clear water from the apparatus, and it may have attached to it a pump for forcing the water to any suitable point for drinking or dispensing purposes. Above this draw off pipe is a gage glass F, which may be of the ordinary construction employed in such devices. The top of the clear water chamber is covered by a perforated diaphragm G, and above this diaphragm is placed the filtering material, as shown, and the filtering chamber is in turn covered by a perforated diaphragm or partition H, which diaphragm forms a base or floor of the chamber E, and which chamber has a similar cock

I, the chamber E, being designed to receive the steam as it first enters the apparatus. Rising from this steam chamber E, is a vertical, centrally-disposed pipe J, which is of a suitable height within the casing, and is designed to receive the steam as it leaves the chamber E. This pipe is provided at suitable points in its length with a series of lateral apertures *d*, for the discharge of the steam in its passage up the pipe.

Passing through the steam chamber E, and the top and bottom walls thereof, are vertical tubes *e*, which are designed to communicate the purifying chamber D, with the filtering chamber C, and these tubes are excluded from communication with said steam chamber. The steam chamber is provided with a hand hole *f*, covered by a suitable cap so that access may be readily had for cleaning out purposes, and tapping this chamber is an inlet steam pipe K, which may be that of exhaust steam from an engine or other suitable source.

L, indicates an oil pipe which taps the steam chamber at or adjacent to its bottom wall and is designed to carry off such oil or grease as may be carried with the steam from the movable parts of the engine into the steam chamber E, and this pipe is provided with a suitable cock or valve *g*, for opening and closing the same.

M, indicates pans; there being three shown in the present illustration although it is obvious that more or less may be used. These pans are of a peculiar construction, and arranged horizontally one above another, having a central, vertical aperture *h*, surrounded by a high, vertical flange *i*, which receives the vertical pipe J. These pans are also provided with vertical, marginal flanges *k*, of a height about the same as the central, vertical flanges, and the bottom is provided with numerous holes or apertures *l*, from which holes rise vertical tubes *m*, which are of a less height than the flanges of the pans so that as water enters the pans, it will surround the tube and continue to remain until it rises above the top of the tube therein, after which the water will drip or pass gradually down according to the quantity of supply, into the next succeeding pan beneath, and so on, until it falls into the filtering chamber, after having passed

through the tubes in the steam chamber. Each pan is provided with three, more or less, legs *n*, and the first one is supported upon the top of the steam chamber *E*, while the following ones are supported upon each other; the apertures in the pipe *J*, being placed at a point between every set of pans, so that the steam will be thrown out in a spray between each pan and below the same, and across the path of the dripping or falling water. By this means it will be seen that the water as it drips or falls gradually from one pan to another will be subjected to currents of steam which will effectively destroy any living organic matter which may be therein, and after being thus subjected to the steam currents or sprays, will be further subjected to the external heat of the steam upon the tubes *e*, in the steam chamber just before entering the filtering chamber.

N, indicates a pipe for the outlet of the steam. This pipe is arranged in the casing at or near the top and the said casing is closed by a suitable cover *O*.

P, indicates the water supply pipe. This pipe passes through one of the side walls of the casing, at a sufficient distance above the upper pan, and it may be provided on its inner end with an elbow, carrying a depending discharge tube *Q*, so that the water may be properly directed into the first pan. This supply pipe is also provided with a suitable valve or cock *R*, for regulating the supply, and the filtering chamber may be provided with an aperture *S*, covered by a suitable cap *T*, for affording access to the filtering material.

From the construction described it will be seen that I have a very durable and effective apparatus for purifying and filtering water, and one which may be constructed at a comparatively small expense, and may be quickly cleaned, and the parts removed and readily replaced without altering the construction, and I have found by experience that with an apparatus of this character, the operation can be carried on continuously and that the water drawn off will be pure and clear.

Having described my invention, what I claim is—

1. A water purifier and filter, comprising a suitable casing, having a clear water chamber in its bottom, a filtering chamber with perforated top and bottom walls arranged above the clear water chamber, a steam chamber arranged above the filtering chamber, a purifying chamber arranged above the steam chamber, a vertical pipe having lateral perforations rising from the steam chamber, tubes passing through the steam chamber and connecting the purifying chamber with the filtering chamber, and pans surrounding the vertical pipe and having holes in their bottoms, and short tubes rising from the holes, and a suitable steam inlet and steam exhaust and a water supply, all combined and adapted to operate, substantially as specified.

2. In a water purifier and filter, the combination with a suitable casing having a clear water chamber in its bottom, a filter chamber above the same, a purifying chamber above the filter chamber, a steam chamber interposed between the purifying chamber and the filter chamber, tubes connecting the filter chamber with the purifying chamber, and a perforated pipe leading from the top of the steam chamber for distributing the steam through the purifying chamber substantially as specified.

3. The casing having the pure water chamber in its bottom, the filter chamber above the same, the steam chamber, having the vertically disposed tubes passing through the same, and also having the oil outlet, the steam pipe entering the steam chamber, the vertical pipe having the lateral apertures, the pans having the vertical, central apertures surrounded by a flange, and also having the short vertical tubes leading from holes in the bottom and of a less height than the vertical walls of the pan, and a water supply and steam discharge, substantially as specified.

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

CHARLES H. SNYDER.

Witnesses:

EDWIN ABBEY,
EGBERT E. ALLIGER.