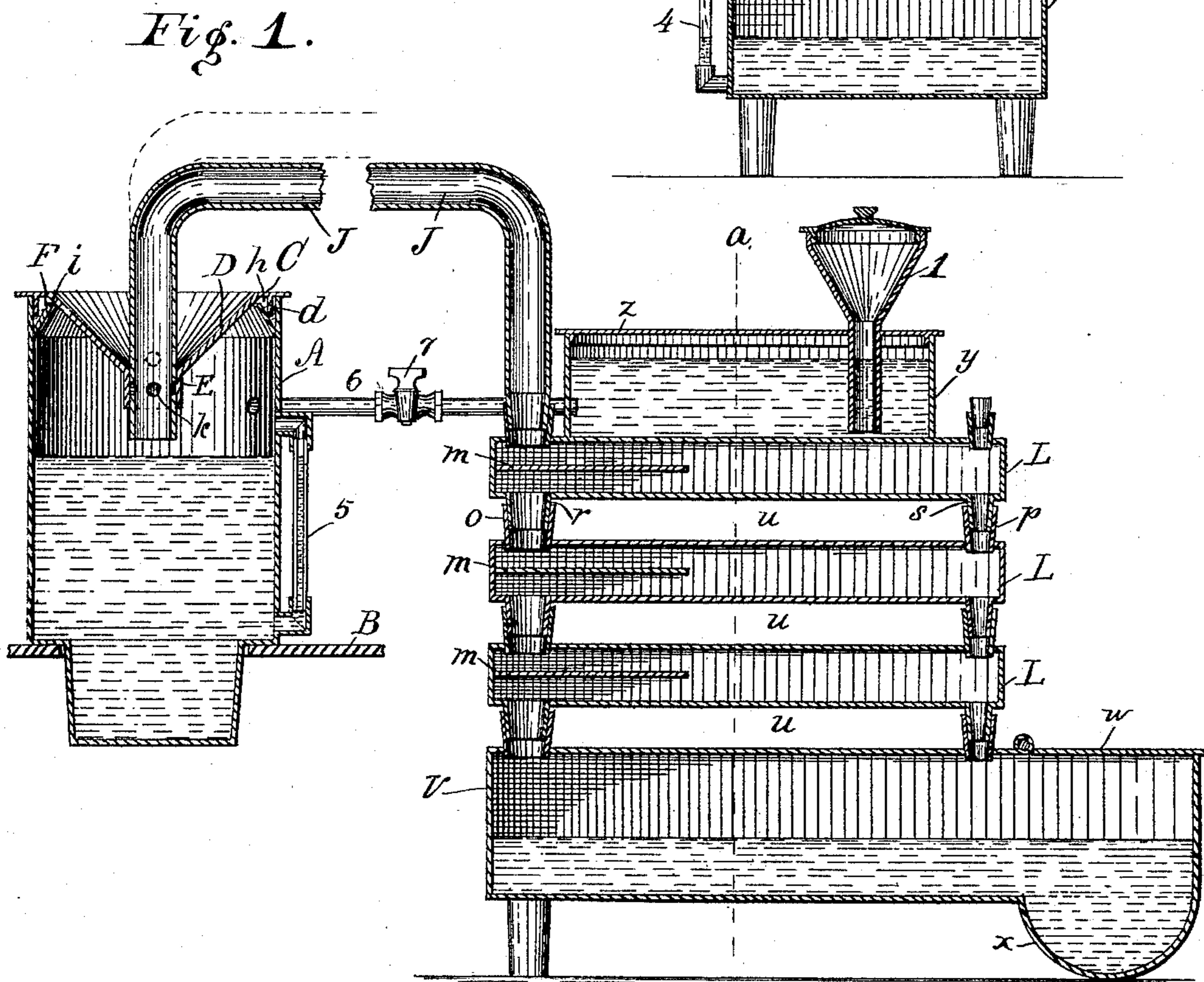
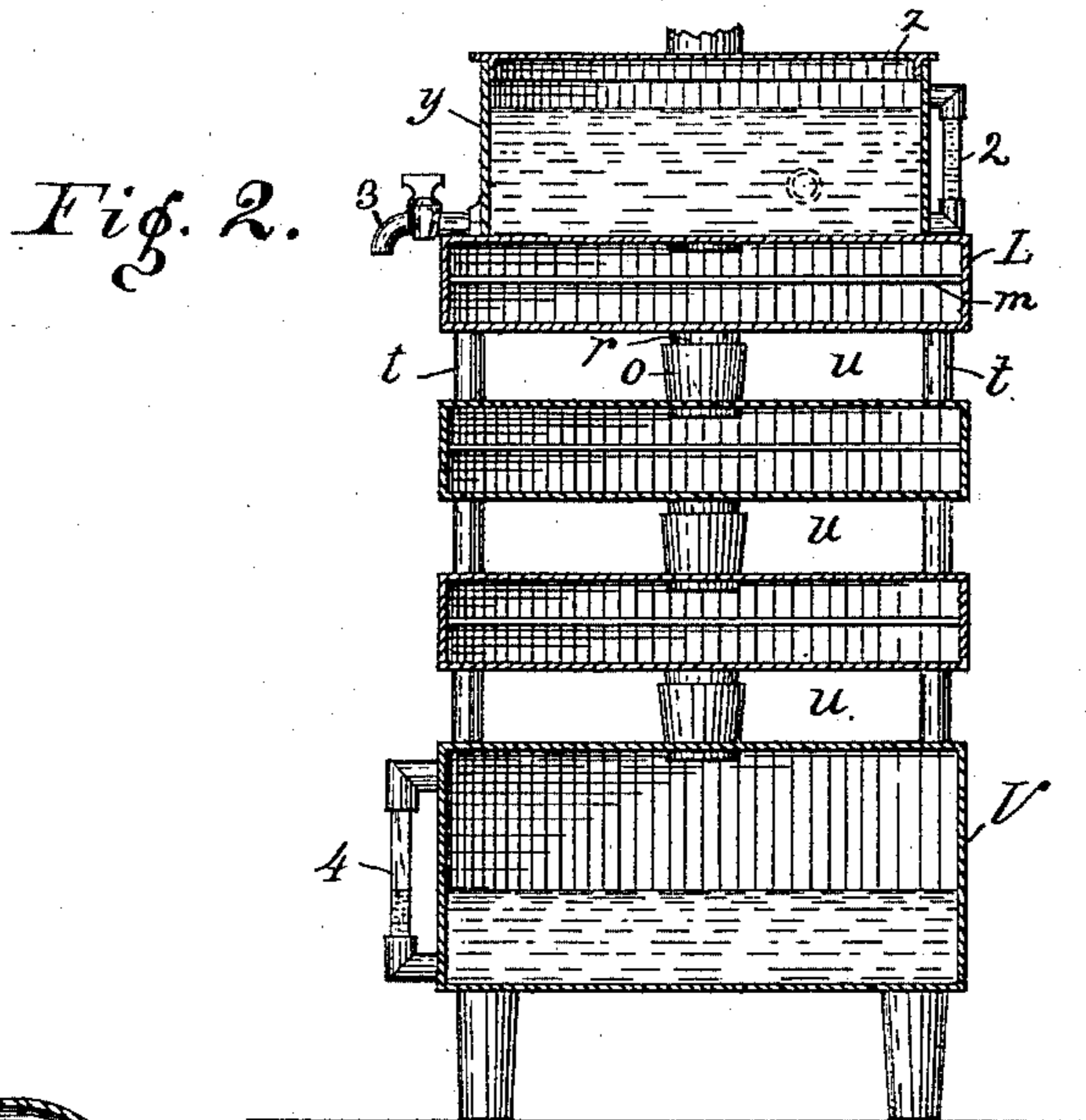


(No Model.)

J. CAVEN.
DOMESTIC WATER PURIFIER.

No. 441,826.

Patented Dec. 2, 1890.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN CAVEN, OF INDIANAPOLIS, INDIANA.

DOMESTIC WATER-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 441,826, dated December 2, 1890.

Application filed May 17, 1890. Serial No. 352,117. (No model.)

To all whom it may concern:

Be it known that I, JOHN CAVEN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Domestic Water-Purifiers, of which the following is a specification.

My invention relates to an improved means for purifying water by distillation for domestic use.

The objects of my improvement are to provide a still which is adapted to furnish a continuous supply of hot and cold distilled water for domestic purposes, the still being so constructed that the retort or boiler may be conveniently refilled, the vaporized water quickly condensed, and the heat discharged from the vaporized water in the process of condensation may be utilized, all as hereinafter described.

The accompanying drawings illustrate my invention.

Figure 1 represents a vertical longitudinal section of the entire apparatus. Fig. 2 represents a vertical transverse section at *a*, Fig. 1.

The retort or boiler, into which well or cistern water is put for distillation, consists of a vessel A, preferably cylindrical, having an open top and a bottom adapted to fit into one of the openings in the top of an ordinary cooking-stove, (represented by the section B.) The top of vessel A is closed by a removable cover C, having on its under side a narrow annular flange *d*, which fits easily within the vessel, and having also a central depressed funnel-shaped portion D, which terminates in a cylindrical spout E, having parallel sides. The upper edge of vessel A is provided with an inwardly and upwardly projecting flange F, which forms, with the outside of the vessel, an annular space *h*, the arrangement being such that the flange *d* of the cover enters said annular space, and the top edge of flange F falls a little short of the under side of the cover, thus leaving a narrow space *i*, through which steam from the vessel passes into the space *h*, and condensing there automatically forms a water seal around the flange *d*.

J is a pipe for conveying the steam to the condenser. Pipe J is nicely fitted, so as to

slide in spout E and stand at any point therein, and is perforated, as at *k*, near its lower end.

The condenser is constructed as follows: L L are a series of hollow plates, each having at one end a deflecting-partition *m* extending a part of the length and entirely across the width of the plate at one end and arranged centrally between the top and bottom. Each hollow plate is provided at opposite ends on the top with a pair of short inlet-pipes *o* and *p* and a pair of outlet-pipes *r* and *s* on the bottom arranged opposite pipes *o* and *p*. All of said pipes are slightly tapered, and the arrangement is such that the outlet-pipes *r* and *s* fit, respectively, into the inlet-pipes *o* and *p*, and each plate is also provided with short legs *t t*, so that when several of the plates are placed one above the other a series of broad shallow chambers is formed, said chambers being connected at each end by the pipes *o r* and *p s*, and having open spaces *u* between them, through which air may freely circulate. I have shown but three of the plates L; but it is intended to use ten or fifteen, or so many as may be necessary to sufficiently cool the water of condensation by the time it reaches the lower plate.

The series of hollow plates L is mounted on the top of and in communication with a reservoir V, one end of which projects beyond the plates, and is provided with a cover *w* and a depressed bottom *x*, so that all of the water collecting in the reservoir may be conveniently dipped therefrom. The upper plate of the series is connected with the retort A by the bent pipe J. For the purpose of utilizing a portion of the heat given off by the condensing steam I mount a water-reservoir *y* on the top plate of the series. Said reservoir is provided with a removable cover *z*, a funnel 1 to receive new supplies of water, a gage-glass 2, and a faucet 3, and is connected with the boiler A by a pipe 6, having a stop-cock 7. Reservoir V and vessel A are also provided with gage-glasses 4 and 5.

The operation of my device is as follows: Vessel A and reservoir *y* are each partly filled with water, and pipe J is arranged in the position shown in full lines, Fig. 1, connecting the vessel A and the upper plate L of the con-

denser, communication between vessel A and reservoir *y* through pipe 6 being cut off by closing stop-cock 7. Heat being applied under vessel A, the water is vaporized and passes
 5 over to and enters the upper plate L, where it strikes the deflector *m*, and is projected along the plate beneath the reservoir *y*, and then returning beneath the deflector *m* passes downward into the next plate through the out-
 10 let-pipe *r* and inlet-pipe *o* to the next plate, and so on through the series, or until the steam is all condensed. A portion of the vapor passes over the edge of flange F into the annular space *h*, and being there condensed
 15 forms a water seal to the cover. As the steam circulates its heat is rapidly taken up by the hollow plates and transmitted first to the water in reservoir *y* and then to the air circulating between and around the plates, so that
 20 a room might be heated thereby. The condensation of the steam is rapid and is complete before the reservoir V is reached. The water of condensation passes directly from plate to plate and to the reservoir V through
 25 the pipes *s* and *p* and does not interfere with the free circulation of the steam. When the device is fairly in operation, cold water may be dipped from reservoir V and hot water may be drawn from reservoir *y*. When it is nec-
 30 essary to replenish the water in vessel A, the stop-cock 7 is opened and a portion of the wa-

ter in reservoir *y* is allowed to flow into the boiler A, and the stop-cock being closed the reservoir is refilled with cold water. By this means a portion of the heat which passes from
 35 boiler A in the steam is returned to the boiler in the hot water drawn from reservoir *y*, and a considerable saving of fuel is thereby effected. When more water is needed in the boiler than can be supplied from reservoir *y*,
 40 the funnel D in cover C is filled with water, and pipe J is then raised to the position shown in dotted lines, thus bringing the perforations *k* above the spout E and establishing communication between funnel D and the interior
 45 of the boiler, so that the water flows into the boiler and all danger of scalding the operator by escaping steam is avoided.

I claim as my invention—

In a water-purifier, the combination of the
 50 series of hollow plates L, having their interiors connected at opposite ends and each provided at one end with the transverse partition *m*, and the reservoir V, arranged beneath and projecting beyond said series of
 55 plates, said projecting portion having the cover *w* and depressed bottom *x*, as and for the purpose set forth.

JOHN CAVEN.

Witnesses:

H. P. HOOD,
 V. M. HOOD.