

No. 616,277.

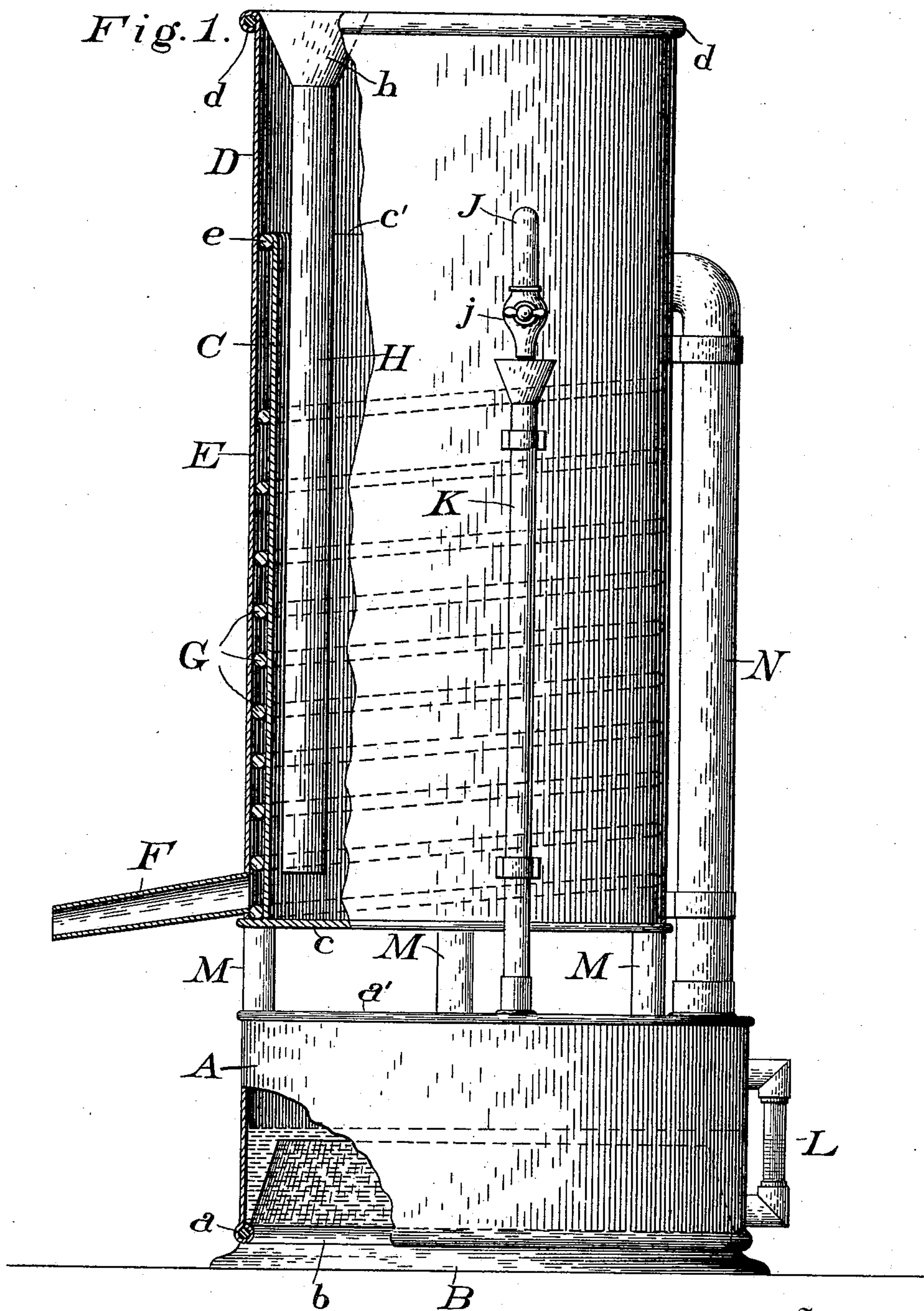
Patented Dec. 20, 1898.

J. A. TODD & H. G. SMITH.
FLUID DISTILLING APPARATUS.

(No Model.)

(Application filed Jan. 28, 1898.)

2 Sheets—Sheet 1.



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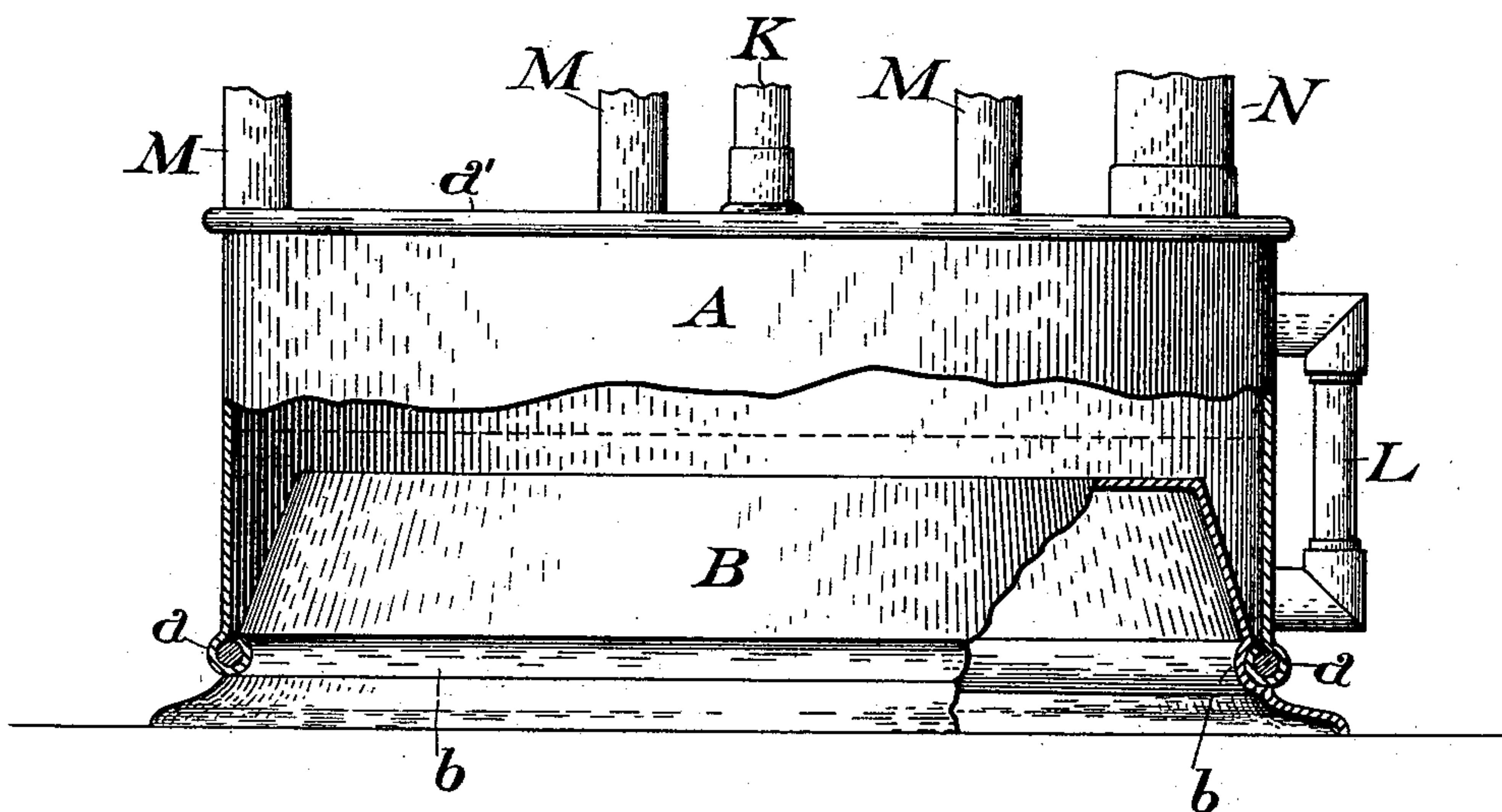
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2 Sheets—Sheet 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JARED A. TODD AND HARRY G. SMITH, OF TITUSVILLE, PENNSYLVANIA.

FLUID-DISTILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 616,277, dated December 20, 1898.

Application filed January 28, 1898. Serial No. 668,339. (No model.)

To all whom it may concern:

Be it known that we, JARED A. TODD and HARRY G. SMITH, citizens of the United States, residing at Titusville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Fluid-Distilling Apparatus; and we 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to fluid-distilling apparatus; and its object is to improve and simplify devices belonging to that class of stills wherein a body of the liquid to be distilled is made to act as the condensing fluid by means of which the vapor arising from a heater or generator is deprived of its heat and returned to a fluid condition.

Our invention consists of a heater or generator having a removable bottom and means for effecting a water-tight annular junction between the bottom and walls of the heater; a fluid reservoir or receptacle supported above, but protected from the heat from the generator, said reservoir having an inner and an outer wall or skin, leaving a cylindrical vapor-space between them, which is provided at the bottom with a suitable outlet and is divided by a helically-disposed wire into a spiral condensing-chamber acted upon interiorly by the cold body of the fluid awaiting condensation and exteriorly by the atmosphere. From the generator a pipe leads into the top of the condensing-spiral, and from the interior of the receptacle, near the top, a feed-pipe having a cut-off valve leads to and enters the heater. The fluid is supplied cold to the receptacle or reservoir by an inlet-pipe having an expanding mouthpiece and extending nearly to the bottom of the receptacle.

Each constituent element is described in detail and its individual office, together with the mode of operation of the whole, fully explained hereinbelow.

In the drawings, Figure 1 represents a side view of our invention, partly in section, cut to exhibit internal parts. Fig. 2 is a side

view of the generator element, the walls being partly broken away to show the form of the top and bottom portions.

Like letters designate like parts throughout.

Letter A marks the walls of the heater or generator, having secured around its lower interior edge a wire or equivalent boundary *a*. Usually the edge marked *a* is formed in the common manner by turning the sheet metal of walls A upwardly about a large-sized wire of suitable material bent into a circle of the proper diameter. This construction results in an evenly-rounded lower boundary to the walls A of practically constant cylindrical diameter and smoothly-finished exterior throughout. The top of the generator is denoted by *a'*.

Letter B designates the pan-shaped bottom of the generator, constructed to afford maximum heating-surface and adapted to be placed over an ordinary stove-opening, a lamp, or other convenient source of heat. It is our practice usually to flange or flare the lower edge of bottom B, and just above this edge is formed the encircling groove *b*, constructed to receive and detachably retain the wire-bound edge of the heater-walls. It will be understood that the elasticity of walls and pan-shaped bottom permit this method of joining the parts and aids their intimate contact. It is believed to be within the purview of our invention to insert a grooved ring of packing, if found necessary, in any instance.

Letter C marks the wall of the reservoir, *c* its bottom, and *c'* its upper edge.

Letter D designates the outer skin, which rises above edge *c'* and augments the reservoir-chamber. The topmost edge is a wire-bound rim *d*, as ordinarily fashioned, and the opening may or may not be closed by a lid.

Between reservoir-wall and skin D will be observed the cylindrical space E, closed at the top by a wire ring *e*, soldered in, or any effective expedient may be chosen to stop the open top of space E, which space is closed at the lower end by the extended bottom *c* of the reservoir.

F marks the outlet or spout from the space E, and G denotes the wire spiral by which space E is divided to constitute the worm of

the still. It is not essential that wire G be soldered or otherwise secured in place, as no material force acts to dislodge it.

H designates the water-supply pipe, extending from its funnel-form mouth *h*, which is secured to skin D, downward nearly to the bottom of the reservoir. Cold fluid to be distilled is thus served to the bottom of the reservoir without disturbing the relatively warmer portion, which has taken heat from the vapor in space E and, becoming lighter, has risen to the top. It is this warmer fluid that it is desired to serve gravitationally by pipe J, stop-cock *j*, and feed-pipe K to the generator for vaporization.

Letter L designates a water-gage, of any selected form, attached to the generator to show the level of its fluid contents.

Letter M marks suitable standards or blocks which support the reservoir above the generator, and the intervening space may contain a non-conducting mat to defend the reservoir-bottom from the heater. By thus placing the reservoir and still upon the removable top *a'* of the generator we utilize the weight of those parts, with their contents, in resisting any upward pressure of vapor within the generator and to firmly press the rounded edge *a* against the lower curving portion of groove *b*.

From the generator a pipe N delivers the vapor near the top of spiral chamber or worm E, where it is cooled by contact with the reservoir-walls, the entire contents of the reservoir being available for condensing purposes, and finds its way by gravity, growing cooler as it descends, finally dripping from spout F in condition for use.

It will be understood that we save heat

otherwise lost by serving the warmer portion of the contents of the reservoir from near the top of the generator, and any solid matter deposited within the generator can be readily removed from bottom B after it has been detached, as explained.

In manufacturing our invention we may prefer to form the spiral condensing-chamber by grooving the wall C of the reservoir correspondingly. We are aware that the helical wire and groove have each been used to form condensing-chambers for stills, and we do not claim either of those features.

Having thus described our invention, what we claim, and desire to protect by Letters Patent of the United States, is—

In a fluid-distilling apparatus, a still and reservoir in combination with a vapor-generator consisting of two separable portions, a top portion connected with and supporting said still and reservoir and having a rounded lower edge *a*, and an inverted-pan-shaped hollow bottom portion arranged to project upwardly within said top, said bottom having a peripheral groove near its lower edge corresponding in form and size to said rounded edge *a* of the top with which it forms a circular joint below the water-line of the generator, the weight of said still, reservoir and contents resting upon said joint, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JARED A. TODD.
HARRY G. SMITH.

Witnesses:

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SAML. THOMSON.