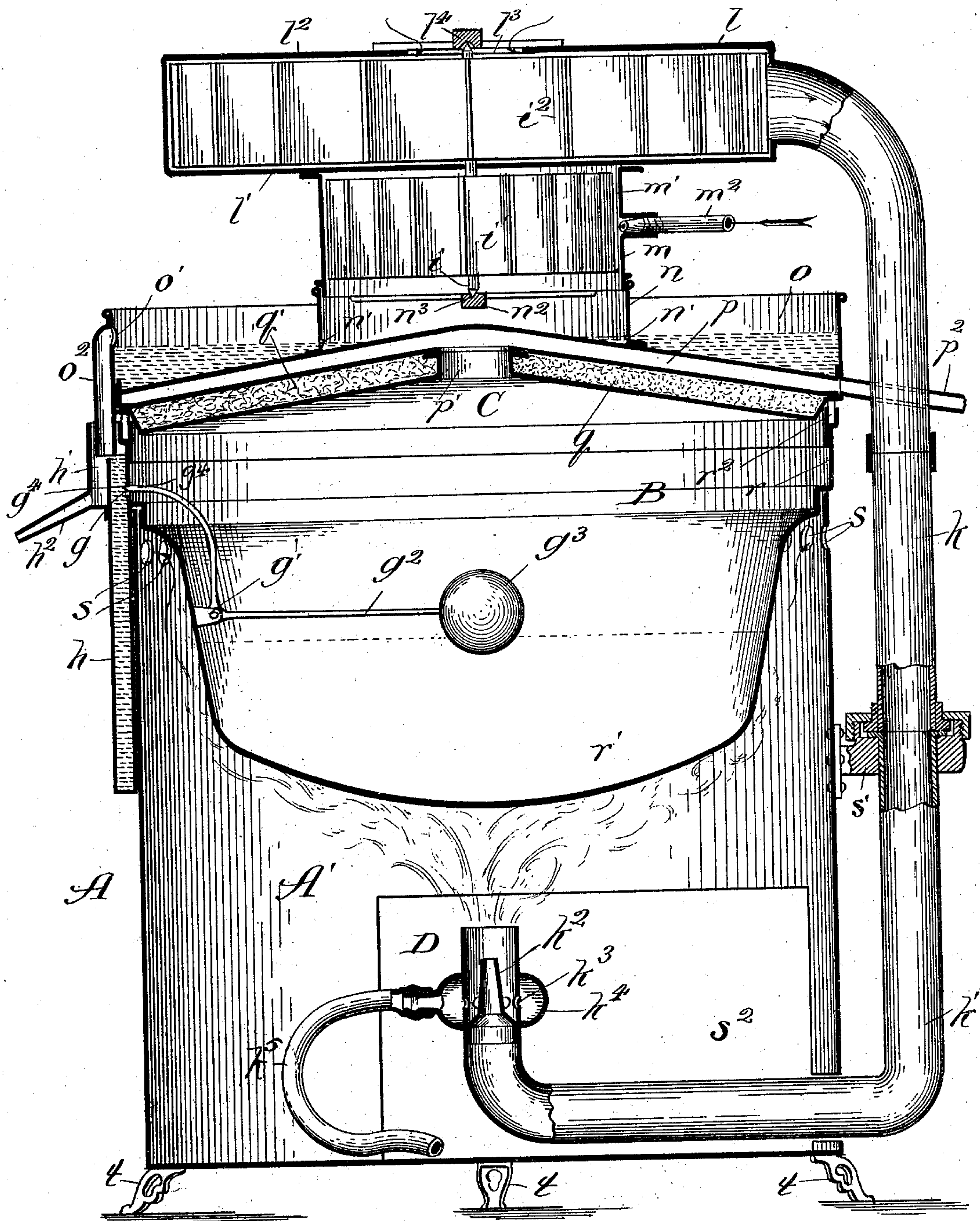


(No Model.)

W. ROCHLITZ.  
WATER DISTILLING APPARATUS.

No. 505,641.

Patented Sept. 26, 1893.



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# UNITED STATES PATENT OFFICE.

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## WATER-DISTILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 505,641, dated September 26, 1893.

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*To all whom it may concern:*

Be it known that I, WILLIAM ROCHLITZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Distilling Apparatus, of which the following is a specification.

The drawing is a vertical central sectional view of a water distilling furnace employing my improvements and more especially adapted for laboratory use; certain parts of the structure being in elevation with portions broken away to expose details which would otherwise be hidden.

A is a drum, affording a chamber A', mounted upon legs *t* and provided near its upper edge with a series of openings *s*.

B is a bowl-shaped receptacle provided with a circumferential rim *r*, at which it rests upon the upper edge of the drum A. The body portion *r'* of the receptacle B extends downward into the drum out of contact with the latter, as shown, to leave a free annular passage, from the lower part of the chamber A' around the body of the receptacle to the openings *s*. Fitting a socket around the upper edge of the rim *r* is a preferably rubber gasket *r*<sup>2</sup>.

C is a cover for the receptacle B, formed with an annular chamber or compartment C, a chamber or compartment *p*, and a basin *o*. The cover rests near its circumference upon the gasket *r*<sup>2</sup>. That portion of the cover affording the compartments *q*, *p*, is of conical shape, and the compartment *q* is around an opening *p'* which extends from the receptacle B to the compartment *p*. On the cover C is a ring *n*, concentric with the rim of the basin *o*, and provided around it close to the cover with a series of openings *n'*. Fitting upon the ring *n* is a drum *m* affording a circular chamber *m'*. Extending to the chamber *m'*, at one side and about midway of its height, is a water supply pipe *m*<sup>2</sup>. Mounted upon the chamber *m* is a circular chamber *l*, having the base *l'* and top *l*<sup>2</sup>. At the center of the top *l*<sup>2</sup> is an opening *l*<sup>3</sup>. Extending from the chamber *l* down one side of the device is a pipe *k*, to the lower end of which is swiveled a pipe *k'*, the pipes being held together at a bracket *s'* on the side of the drum A. The

pipe *k'* is bent to the form shown, and is provided near its end with an internal nozzle *k*<sup>2</sup> surrounded by perforations *k*<sup>3</sup> in the pipe. Around the perforations *k*<sup>3</sup> is a chamber *k*<sup>4</sup>, 55 on the pipe, which communicates through a hose *k*<sup>5</sup> with a hydro-carbon gas supply. In the side of the chamber A' is an opening *s*<sup>2</sup> through which the pipe *k'* may be swung on its pivot at *s'* in the horizontal plane out of and into the chamber, to the center of the latter. Extending across the ring *n* is a bar *n*<sup>2</sup>, affording at its center a bearing *n*<sup>3</sup> for a vertical shaft *i*. The shaft *i* extends through an opening in the base *l'* of the chamber *l* 65 to a bearing, at its upper end, in a cross-bar *l*<sup>4</sup> at the top of the chamber *l*. On the shaft *i* in the chamber *m* is a turbine wheel *i'*, and in the chamber *l* the shaft *i* carries a fan-wheel *i*<sup>2</sup>. Near the top of the basin *o* is an overflow opening *o'*, communicating with a spout *o*<sup>2</sup>. On one side of the drum A below the spout *o*<sup>2</sup> is a feed water chamber *h*; and at the outer side of the upper end-portion of the chamber *h* is a chamber *h'* having an outlet spout *h*<sup>2</sup>. In the side of the receptacle B 75 is a port *g* extending to the chamber *h*. Pivoted to a lug *g'* in the receptacle B is a bell-crank lever *g*<sup>2</sup>, carrying at one end a float *g*<sup>3</sup>, and at its opposite end affording a valve *g*<sup>4</sup> to open and close the port *g*. 80

In operation water under pressure enters at the pipe *m*<sup>2</sup> which is contracted at its end, as shown, to reduce the incoming stream of water and increase its force. The water 85 plays against the blades of the turbine wheel *i'* causing the latter to rotate and turn the fan wheel *i*<sup>2</sup>. Gas is turned into the hose *k*<sup>5</sup>, and filling the chamber *k*<sup>4</sup> it escapes through the openings *k*<sup>3</sup> and rises around the nozzle *k*<sup>2</sup> where it is ignited. The rotating fan *i*<sup>2</sup> sucks air into the chamber *l* through the opening *l*<sup>3</sup> and discharges it through the pipe *k*, *k'* and nozzle *k*<sup>2</sup>. The nozzle *k*<sup>2</sup> with the adjacent parts of the pipe *k'* afford a gas burner, D. The force 95 of the air from the nozzle creates a very hot flame at the burner, and forces it upward against the bottom of the receptacle, B, whence the hot products of combustion rise around the receptacle to the outlets *s*. The water after striking the turbine wheel falls 100 into the ring *n* and escapes through the



openings  $n'$  to the basin  $o$ . When the water in the basin rises to the outlet  $o'$  it escapes through the spout  $o^2$ . The lower end of the spout  $o^2$  opens into the chambers  $h, h'$ , so  
 5 that part of the water flowing from that spout will enter the chamber  $h$ , and the balance will enter the chamber  $h'$  and escape at the spout  $h^2$ . The chamber  $h$  is heated by contact with the side of the drum A, so that the  
 10 water in the chamber  $h$  will become heated. When the chamber  $h$  is filled with water to the port  $g$ , the water will run into the receptacle B, until the rise of the float  $g^3$  closes the valve  $g^4$ . The limited quantity of water thus  
 15 admitted to the receptacle B is soon raised to the boiling point by the heat from the burner D, and the vapor rises through the opening  $p'$  to the chamber  $p$ . The chamber  $q$  is filled with asbestos or other non-heat conducting material  $q'$ , to shield the chamber  $p$  from the heat of  
 20 the receptacle B. The water in the basin  $o$  overlying the top of the chamber  $p$ , tends to maintain the latter cool, so that vapor rising through the opening  $p'$  is quickly condensed  
 25 in the chamber  $p$ , whence it escapes at a pipe  $p^2$  to a suitable receptacle not shown for storing the distilled water.

As stated the device shown is intended more especially for laboratory use. When it is not  
 30 desired to employ the device for distilling water, the pipe  $k'$  may be swung out of the chamber A', and the burner used for furnishing heat for other purposes. The heat from the burner is rendered very intense by the  
 35 action of the blower, so that when the burner is swung out of the chamber A' and the water is turned on to rotate the turbine wheel, the burner may be employed in melting metals

or for other laboratory work where great heat is required.

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

1. A water distilling device comprising in combination a vessel to receive the water to be heated, having a cover provided with a  
 45 downwardly inclined passage constituting a condensing chamber, said cover provided on its upper side with a cold water receiving basin, a drum supporting the water heater, a burner furnishing heat to vaporize the water,  
 50 an overflow pipe communicating with the basin, a feed water heating receptacle receiving its supply from the overflow, a port affording communication between the feed water heater and the water heating vessel, and a  
 55 valve for opening and closing said port, controlled by a float, substantially as described.

2. In a water distilling apparatus, the combination of a water heating vessel, a burner below the vessel, a condensing chamber communicating with the vessel, a cold water receptacle adjacent to the condensing chamber, a water-pipe communicating with a cold water supply and conveying water to said cold water receptacle, a water supply conduit extending from the cold water receptacle to the  
 60 said vessel, and means for supplying air under pressure to the burner, in the line of motion of the water from the said water-pipe, and actuated by the moving water, substantially as and for the purpose set forth.

WILLIAM ROCHLITZ.

In presence of—

M. J. FROST,  
 B. M. TAUSIG.