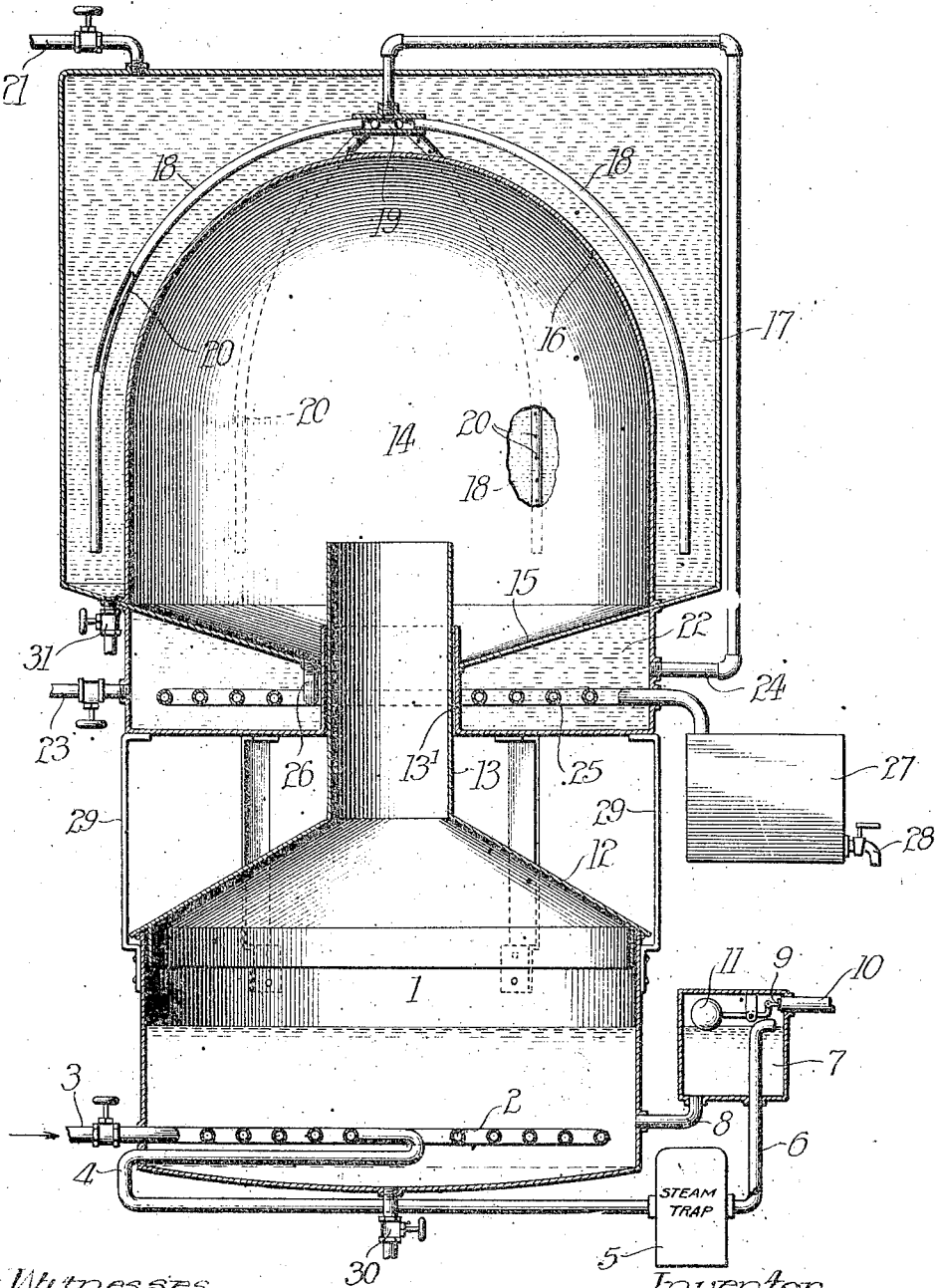


H. C. DUENSING.
DISTILLING APPARATUS.
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1,043,305.

Patented Nov. 5, 1912.



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UNITED STATES PATENT OFFICE.

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DISTILLING APPARATUS.

1,043,305.

Specification of Letters Patent.

Patented Nov. 5, 1912.

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To all whom it may concern:

Be it known that I, HENRY C. DUENSING, a citizen of the United States of America, and a resident of Chicago Heights, county of Cook, State of Illinois, have invented certain new and useful Improvements in Distilling Apparatus, of which the following is a specification.

The main objects of this invention are to provide an improved form of distilling apparatus having improved means for cooling the distilled liquid as it passes from the condensing chamber; to provide improved means for cooling the walls of the condensing chamber; and to provide an improved construction permitting convenient access to the steam generating compartment without disturbing other parts of the device.

A specific embodiment of this invention is shown in sectional elevation in the accompanying drawing.

In the construction shown, the apparatus comprises a steam generating chamber or receptacle 1 which is adapted to contain a quantity of liquid, from which steam is to be generated. The liquid is heated by a steam coil 2 immersed therein, and connected to an inlet pipe 3 and an outlet pipe 4. The steam outlet pipe 4 connects with a steam trap 5, which in turn is connected by the pipe 6 to the tank 7, through which the condensed vapor will pass from the trap 5 into the tank 7. The tank 7 supplies the receptacle 1 with liquid through the pipe 8, the supply of liquid to the tank being controlled by a valve 9 in the inlet pipe 10, connected so as to be operated by the float 11. The valve 9 is closed by the float 11 whenever the liquid in the receptacle 1 reaches the desired level. The receptacle 1 is provided with a removable cover 12 which is tapered upwardly and connected to the neck or pipe 13, extending upwardly into the condensing chamber 14. The condensing chamber 14 is formed within the casing, having its bottom wall 15 tapered downwardly and its upper wall 16 of dome shape. A liquid receptacle or compartment 17 surrounds the condensing chamber and is adapted to be supplied with a cold liquid for keeping the walls of the condensing chamber cooled. A spraying device is supported in the receptacle 17 and comprises a plurality of pipes 18 connected to a manifold or header 19, and bent to substantially conform to the contour of the wall 16. The

pipes 18 are located adjacent to the wall 16 so that the apertures 20 will direct jets of water toward said wall. This spraying device provides an effective method of cooling the walls of the condensing compartment in that the cold liquid is directed toward and against the walls 16, the liquid then rising to the top of the receptacle as it is heated. Thus, there is always a good circulation of the liquid in the receptacle, the coldest liquid being nearest the walls of the condensing chamber where it is most needed. The compartment 17 is provided with an outlet pipe 21. The perforated pipe 18 directs the coldest liquid primarily toward the wall 16 so as to spread it uniformly over the entire surface, and thus provides for the maximum cooling effect on said wall before the temperature of said coldest liquid is raised by mingling with the liquid which has been in the receptacle 17 for some time.

A cooling receptacle or chamber 22 is located below the condensing chamber 6 and has a tubular part 13' surrounding the pipe 13. The chamber 22 is supplied with a cold liquid, preferably water, through the inlet pipe 23. The outlet pipe 24 of the chamber is connected to the spray header 19 so that the same liquid serves the purpose of cooling the distilled water and the walls of the condensing chamber. A spiral coil 25 is supported in the compartment 22 and connected at 26 to the bottom wall 15 of the condensing chamber 14, from which it is adapted to convey the distilled liquid to a storage receptacle 27. The receptacle 27 is provided with a valve 28 so that liquid may be drawn when desired.

The condensing receptacle 14, liquid receptacle 17, and cooling receptacle 22 are supported above the receptacle 1 on brackets 29 secured thereto so as to provide a space above the receptacle to permit the cover 12 to be elevated without disturbing any of the connections of the apparatus and allow access to be had to the interior of the receptacle 1. The bottom of receptacle 1 is concave as viewed from above and is provided with a valved drain pipe 30, by means of which the receptacle may be drained when it is desired to cleanse it. The receptacle 17 is also provided with a valved drain pipe 31.

The operation of the device is as follows:—Steam is admitted through the inlet pipe 3 to the coil 2 which heats the liquid contained in the receptacle 1 and generates steam. If

any steam condenses in the trap 5, it is caused to flow through the pipe 6 into the tank 7. The steam generated in the receptacle 1 passes upwardly through the neck 13 into the condensing chamber 14, where, upon striking the cold wall 16, it becomes condensed and drops into the bottom of the chamber as distilled liquid. This distilled liquid then flows through the coil 25 to the receptacle 27, being cooled in its passage through the coil by reason of the cold liquid that is flowing through the receptacle 22 and supplying the spraying pipes 18 and the receptacle 17.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention, as defined by the following claims.

I claim:—

1. In a distilling apparatus, the combination of a casing having a steam generating chamber, a condensing chamber and a liquid cooling chamber, all arranged substantially in vertical alinement, said cooling chamber having liquid inlet and outlet openings, a storage receptacle for the distilled liquid, a coil located in said cooling chamber and having its opposite ends connected into said condensing chamber and said storage receptacle, and a liquid compartment surrounding said condensing chamber and having inlet and outlet openings, the outlet opening of said cooling chamber being connected to the inlet opening of said liquid compartment.

2. In a distilling apparatus, the combina-

tion of a steam generating receptacle, a condensing receptacle, a plurality of brackets connected to said steam generating receptacle and supporting said condensing receptacle above said generating receptacle in substantially vertical alinement therewith, a cover for said generating receptacle adapted to be elevated between said receptacles to permit access to said generating receptacle, and an outlet pipe connected to said cover and extending into said condensing receptacles, having telescoping connection with the wall of said condensing receptacle.

3. In a distilling apparatus, the combination of a casing having a steam generating chamber and a dome shaped condensing chamber disposed one above the other in substantially vertical alinement, said casing also having a cooling chamber below said condensing chamber, a liquid compartment surrounding said condensing chamber, a storage receptacle for the distilled liquid, a coil of pipe supported in said cooling chamber, and having its opposite ends connected into said condensing chamber and to said receptacle, means for supplying said cooling chamber with a cooling liquid, and a spraying device located in said liquid compartment adjacent to the walls of said condensing chamber and connected to said cooling chamber to receive liquid therefrom.

Signed at Chicago this 14th day of March, 1911.

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Witnesses:

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