(No Model.)

A. HOBERECHT.

VAPOR OR STEAM CONDENSER.

No. 556,674. Patented Mar. 17, 1896.

Fig. 1.

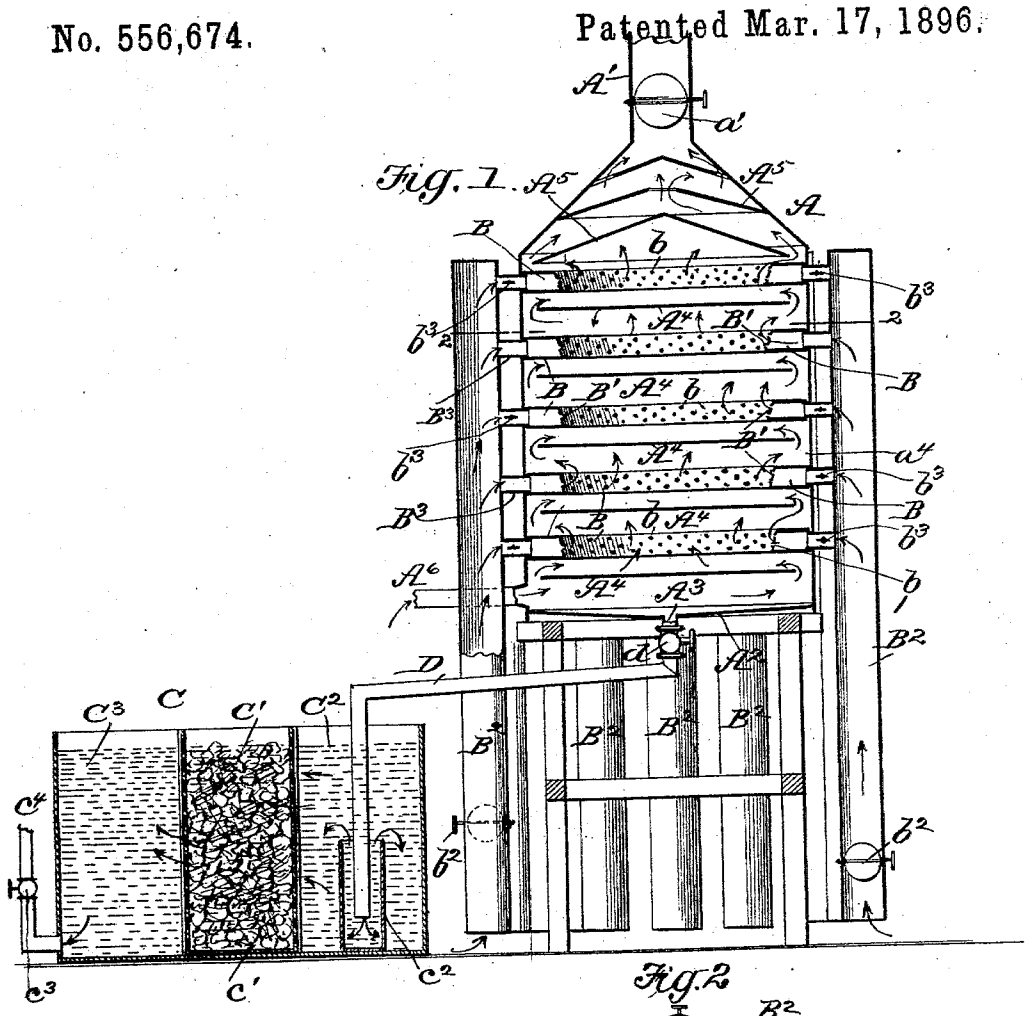


Fig. 2.

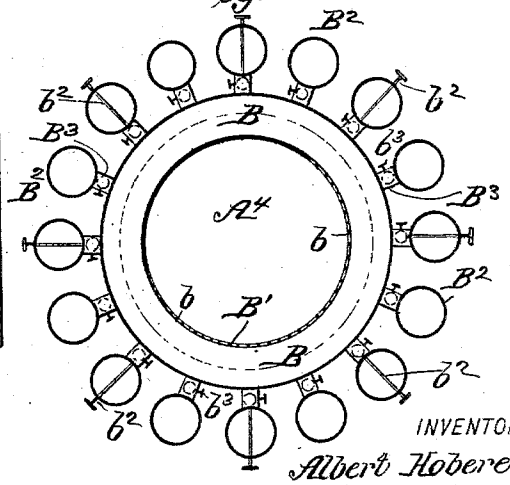
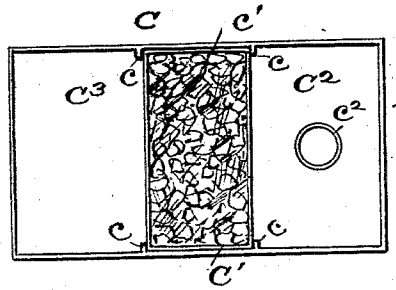


Fig. 3.



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ALBERT HOBERECHT, OF ENSENADA, MEXICO.

VAPOR OR STEAM CONDENSER.

SPECIFICATION forming part of Letters Patent No. 556,674, dated March 17, 1896.

Application filed August 5, 1895. Serial No. 558,257. (No model.)

To all whom it may concern:

Be it known that I, ALBERT HOBERECHT, a citizen of the United States, residing at Ensenada, Mexico, have invented certain new and useful Improvements in Vapor or Steam Condensers, of which the following specification contains a full, clear, and exact description, reference being had to the accompanying drawings, forming part thereof, in which—

Figure 1 is a central vertical section of the apparatus. Fig. 2 is a horizontal section on line 2 2, Fig. 1. Fig. 3 is a plan of the filtering or separating attachment.

The invention relates to apparatus for condensing steam or vapor from various sources.

The objects of the invention are to provide a simple and efficient condenser in which the steam or vapor will be subjected to incoming jets of cold air to condense it, the heated air passing up through a suitable stack, and in so doing causing the indraft of the colder air; also to baffle or deflect the steam in its passage through the condenser and subject it at its various turns to the action of the cold-air jets.

The invention will first be described, and then specifically pointed out in the claims.

A is the condenser formed of an outer casing which is cylindrical in the present instance, but which may be of any desired shape and size and be supported on a suitable support. The top of the condenser is conical and from its apex rises the stack A′, while the bottom A^2 tapers slightly downward to the fluid-outlet A^3, as shown in Fig. 1.

The casing is provided with any desired number of horizontal baffle-plates A^4 spaced at their edges from the inner walls of the casing to permit the steam or vapor to pass, said plates being secured to the casing by any suitable form of stays or braces a^4 and the steam or vapor being admitted from pipe A^6 into the condenser beneath its lowermost baffle-plate, so that it will ascend in a serpentine or zigzag course.

B represents a series of horizontal annular cold-air chambers within the casing on the inner wall thereof and overhanging each of the baffle-plates A^4 to still further baffle and deflect the course of steam or vapor, as indicated by the arrows in Fig. 1. The inner inclined walls B′ of these annular chambers B are each provided with small apertures b, formed by punching the metal from within the chambers outwardly through said walls after the manner of forming graters. These chambers B are connected at their outer walls to a series of vertical cold-air-supply pipes B^2, arranged concentrically to the casing by means of the short horizontal pipes or elbows B^3. The lower ends of the pipes B^2 extend down near the floor, so as to receive the coolest air at their lower open ends.

Every other series of horizontal pipes or elbows B^3 has a damper b^3 in each individual pipe, so that the cold air may be shut off from one or more of the chambers B, if found desirable. Every other pipe B^2 is also provided with a damper b^3. The conical top of the casing is provided with a series of conical baffle-plates A^5 to still further retard the progress of the steam or vapor and cause thorough condensation. The upper and lower of these conical baffles are imperforate and spaced at their edges from the inner wall of the top, while the middle baffle closely fits the said top and has an aperture in its apex. The stack A′ will be carried up to the proper height to insure an updraft, and it has an ordinary damper a'.

C is the separator or purifier, consisting in an ordinary tank placed at a lower level than the bottom of the condenser and having a central transverse filter C′ dividing the receiving-chamber C^2 from outlet-chamber C^3. The filter is in the form of an oblong reticulated or foraminated basket filled with any suitable filtering material c' and held removably in vertical guideways c on the inside of the tank, so that it may be removed for refilling and cleaning.

D is a pipe having a globe-valve d and extending from the outlet A^3 in the bottom of the condenser A to the receptacle c^2 in the receiving-chamber, into which it discharges. The receptacle c^2 is of less height than the receiving-chamber, and the liquid of condensation flows over the upper edge thereof into chamber C^2 and percolates through the filter C′ into the chamber C^3. The pure filtered liquid in chamber C^3 may be drawn therefrom in any suitable manner, but where the condenser is part of a steam-plant a pipe c^3, having a globe-valve c^4, will connect with

a pump and be carried back to the boiler free from oil and other impurities. The water may thus be used over and over again, being purified every time and thus preventing incrustation of the boiler.

The condenser will be found useful in many places, such as steam-plants, distilleries, &c., and may be used with or without the purifier C.

The operation is as follows: Steam is admitted at A^6 and flows upwardly past the baffle-plates, causing an upward current which sucks in cold air through the apertures in the annular chambers. The air issues in jets, which impinge upon the steam or vapor just as it passes upwardly around the several annular air-chambers, which is the most effective point. After passing the uppermost annular chamber the heated air must pass the upper baffle-plates, A^5, which are the coolest and complete the process of condensation. The amount of cold air to be admitted may be regulated by the dampers in the air-inlet pipes and their lateral branches B^3. The liquid of condensation will flow from the several baffle-plates and annular chambers down to the bottom of the casing to the outlet.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A steam or vapor condenser comprising a casing having an offtake or stack at its upper end and a steam or vapor inlet at its lower end, air-inlets discharging through the sides of the casing and provided with cold-air-supply pipes open at their lower ends, and horizontal baffle-plates within the casing and spaced therefrom to direct the ascending steam and vapor past the cold-air jets, substantially as set forth.

2. A steam or vapor condenser comprising a casing into which the steam or vapor is discharged and having a hot-air offtake or stack, and an annular foraminated chamber discharging within the casing into the ascending steam or vapor and having a supply-pipe; the induction of cold air being produced by the ascending heated current to the offtake or stack, substantially as set forth.

3. A steam or vapor condenser comprising the casing horizontal annular series of cold-air inlets or jets one above the other, discharging into the casing and provided with an external cold-air supply, baffle-plates within the casing to direct the ascending steam or vapor past said inlets or jets, and a hot-air offtake or stack to cause an updraft and the inflow of cold air through said inlets or jets, substantially as set forth.

4. A steam or vapor condenser comprising the casing into which the steam or vapor is discharged and having series of horizontal annular cold-air chambers on its inner wall, the inner walls of said chambers having discharge-apertures, baffle-plates overlapped by said chambers, a series of vertical supply-pipes connecting said chambers exterior to the casing and open at their lower ends for the admission of air, and an offtake or stack at the upper end of the casing, substantially as and for the purpose set forth.

5. A steam or vapor condenser, comprising the casing having a steam-inlet at its lower end and a hot-air offtake at its upper end, a series of air-chambers having outlets discharging into the casing, a series of vertical air-supply pipes exterior to the casing and each having branch pipes connected to the said air-chambers, and dampers in certain of the vertical and branch pipes substantially as set forth.

6. A steam or vapor condensing apparatus comprising a casing having an offtake or stack, an inlet therebelow for the steam, a series of cold-air inlets between the offtake or stack and the steam-outlet, and through which the cold air is drawn and discharged into the steam or vapor by the heated current ascending to the offtake or stack, a series of depending air-supply pipes open at their lower ends and connected at their upper ends to said air-inlets, and a purifier or separator into which the fluid of condensation is discharged from the bottom of the condenser substantially as set forth.

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Witnesses:
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