

Title (en)  
DISTILLATION METHODS AND DEVICES, IN PARTICULAR FOR PRODUCING POTABLE WATER

Title (de)  
VERFAHREN UND VORRICHTUNG ZUR DESTILLATION INSBESONDERE ZUR HERSTELLUNG VON SÜSSWASSER

Title (fr)  
PROCEDE ET APPAREIL DE DISTILLATION NOTAMMENT POUR PRODUIRE DE L'EAU DOUCE

Publication  
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Application  
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Abstract (en)  
[origin: US2006272933A1] The inventive device is embodied in the form of a chamber-oven for diffusing vapour and saturated hot air which circulate in a closed circuit by natural convection. Said device is embodied in the form of a domestic-use solar energy collecting device provided with a greenhouse whose surface is equal to 1 m<sup>2</sup> and produces from 50 to 100 litres/day of distilled water. The device comprises a distillation unit arranged between two furnaces ( 59', 79 ') in a temperature-controlled container ( 48 '). Said distillation unit comprises 100 flat thin hollow plates having a surface of 20 dm<sup>2</sup> by face and an active volume of 200 dm<sup>3</sup>. The fine and tensioned walls ( 54 ) of said plates are provided with a hydrophilic coating ( 60 ') and internal ( 56 ') and inter-plate ( 58 ') spaces. The lower chimney ( 59 ') comprises a greenhouse ( 118', 119 ') whose bottom is embodied in the form of an impermeable black layer provided with a thin hydrophilic carpet on the rear part thereof. Saturated hot air at a temperature of 80° C. enters inside ( 56 ') hollow plates from below and exits from the top at a temperature of 50° C. A high chimney ( 79 ') is provided with a monoblock heat exchanger ( 84 ') which is transversely by a non-potable water to be distilled which, afterwards is spread warm (40° C.) over the hydrophilic coating ( 60 '). During passage through the heat exchanger ( 84 ') the air is cooled to 30° C. and moved down by gravity to the inter-plate spaces ( 58 ') and exits therefrom at a temperature of 78° C. The distilled water condensed in the plates and by the heat exchanger is collected and removed. Brine is received in the bottom of the inter-plate space and distributed along the thin hydrophilic carpet of the bottom ( 122 ') of the greenhouse. An air current passes along said hot carpet is heated and saturated and enters the plates. The brine liquor finally flows in an air-preheating tank ( 63 ') which is emptied each morning. The greenhouse can be substituted by a heating tube transversely by a heating fluid or associated with another steam-jet tube. The more powerful chamber-ovens can produce at least 200 m<sup>3</sup>/day of distilled water for collective consumption. Said invention can be used for salt removal from seawater, co-generating electricity and potable water and for producing food concentrates.

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