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(21) International Application Number: PCT/US96/15042 (22) International Filing Date: 20 September 1996 (20.09.96) (30) Priority Data: 08/530,789 20 September 1995 (20.09.95) US <i>Wolaw</i> (71) Applicant: AMERICAN TECHNOLOGIES GROUP, INC. [US/US]; 1017 S. Mountain, Monrovia, CA 91016 (US). (71)(72) Applicants and Inventors: WANG, Chunsing [CN/US]; 1017 S. Mountain, Monrovia, CA 91016 (US). LO, Shui-Yin [AU/US]; 1017 S. Mountain, Monrovia, CA 91016 (US). (74) Agent: RUSHFORD, Francis, Gerard; Suite 108, 3435 Ocean Park Boulevard, Santa Monica, CA 90405 (US).	(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>	

(54) Title: **COMPACT VACUUM DISTILLATION DEVICE**

(57) Abstract

Disclosed herein is a compact vacuum distillation device for the distillation of liquids. The device comprises an evaporator (14) in which liquid is evaporated and a condenser (24) where the liquid is condensed, both evaporator (14) and condenser (24) units are contained within the same distiller vessel (42). A refrigeration cycle (14, 28, 24, 10) is used to supply heat to boil the liquid being distilled and to condense the vapor. The distiller vessel (42) also includes a novel heater vacuum generator (30, 32, 34) which creates a vacuum inside the vessel. This vacuum allows boiling of the liquids at a reduced temperature thus allowing the use of a refrigeration system as the heating and cooling source that reduces energy consumption. The device will produce distilled liquid at a cost less than 25 - 50 % of simple distillation. Due to the compact size and the use of the same components as a conventional refrigerator, this device can be integrated into the refrigerator system and produce distilled water.

