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*[Continued on next page]*

(54) Title: COAXIAL TUBE SOLAR HEATER WITH NIGHTTIME COOLING

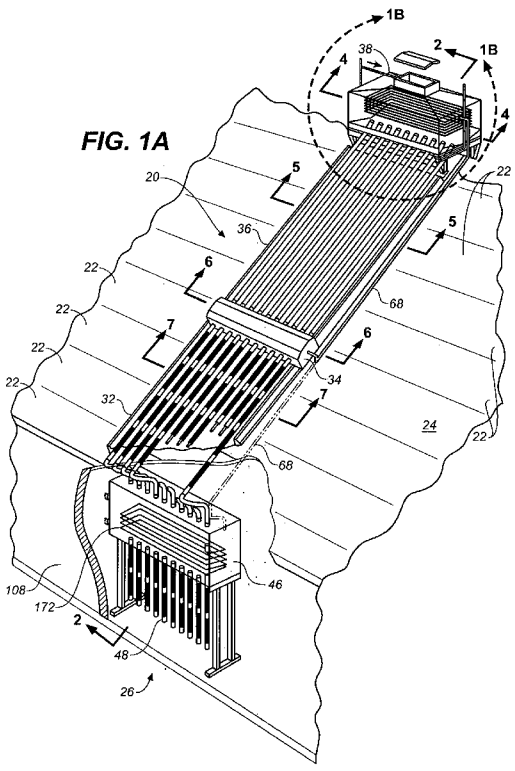



FIG. 1A

(57) Abstract: Disclosed is a solar water-heating-and-cooling system (20) that included a collector array panel (32, 36) having thermosyphon coaxial heating/cooling tubes (52). The disclosed system (20) avoids damaging the collector array panel (32, 36) by filling the tubes (52) : 1. only when environmental conditions ensure that damage won't occur,- and/or 2. using a filling method that ensures that damage won ' t occur. Thermosyphon coaxial heating/cooling tubes (52) disclosed herein may be open both at their upper and lower ends. Tubes (52) that are open at their, lower end enables capturing radiative cooling of liquid present within the tubes (52). A cold water storage tank (46) and cold radiator array (48) included in the water.-heating-and-cooling system (20) permits preserving and using the radiative 'cooling. Also disclosed are coaxial tubes (104, 106) that enable simpler and easier installation of the system (20), and also provide a less architecturally intrusive system (20).

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