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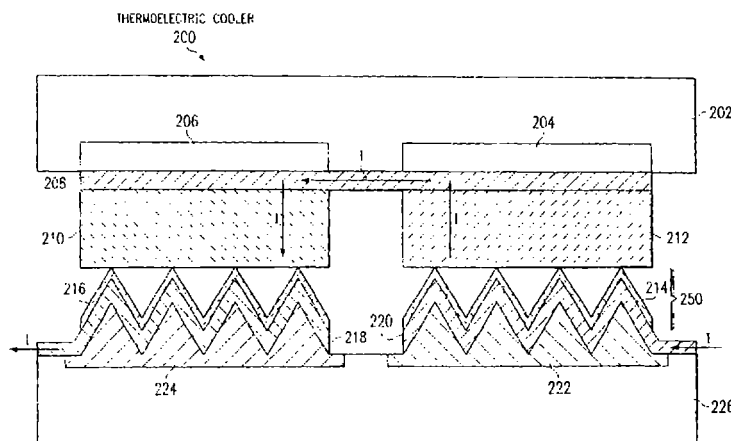
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(54) Title: ENHANCED INTERFACE THERMOELECTRIC COOLERS



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(57) Abstract: A thermoelectric device with enhanced structured interfaces for improved cooling efficiency is provided. In one embodiment, the thermoelectric device includes a first thermoelement comprising a superlattice of p-type thermoelectric material and a second thermoelement comprising superlattice of n-type thermoelectric material. The first and second thermoelements are electrically coupled to each other. The planer surface of the first thermoelement is proximate to, without necessarily being in physical contact with, a first array of electrically conducting tips at a discrete set of points such that electrical conduction between the planer surface of the first thermoelement and the first array of electrically conducting tips is facilitated while thermal conductivity between the two is retarded. A planer surface of the second thermoelement is proximate to, without necessarily being in physical contact with, a second array of electrically conducting tips at a discrete set of points such that electrical conduction between the electrically conducting tips and the planer surface of the second thermoelement is facilitated while thermal conduction between the two is retarded. The electrically conducting tips are coated with a material that has the same Seebeck coefficient as the material of the nearest layer of the superlattice to the tip.

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