



(12) **United States Patent**  
**Koplow**

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(54) **HEAT EXCHANGER DEVICE AND METHOD FOR HEAT REMOVAL OR TRANSFER**

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(58) **Field of Classification Search**  
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See application file for complete search history.

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **12/856,440**

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**Related U.S. Application Data**

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(63) Continuation-in-part of application No. 12/732,662, filed on Mar. 26, 2010, which is a continuation of application No. PCT/US2009/044550, filed on May 19, 2009, which is a continuation-in-part of application No. 12/185,570, filed on Aug. 4, 2008.

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(57) **ABSTRACT**  
Systems and methods for a forced-convection heat exchanger are provided. In one embodiment, heat is transferred to or from a thermal load in thermal contact with a heat conducting structure, across a narrow air gap, to a rotating heat transfer structure immersed in a surrounding medium such as air.

**24 Claims, 23 Drawing Sheets**

