



[54] **HEAT EXCHANGE APPARATUS**
[76] Inventor: **John Samuel Batchelder**, 2 Campbell Dr., Somers, N.Y. 10589

5,203,399	4/1993	Koizumi	165/104.33
5,316,077	5/1994	Reichard	165/104.28
5,394,936	3/1995	Budelman	165/104.33
5,731,954	3/1998	Cheon	361/699
5,763,951	6/1998	Hamilton et al.	257/714

[21] Appl. No.: **09/080,915**

FOREIGN PATENT DOCUMENTS

[22] Filed: **May 18, 1998**

4225676 2/1994 Germany .

[51] **Int. Cl.**⁷ **F28F 7/00**

Primary Examiner—Ira S. Lazarus

[52] **U.S. Cl.** **165/80.3**; 165/80.4; 165/80.5;
165/104.33; 257/714; 317/234 R

Assistant Examiner—Terrell McKinnon

[58] **Field of Search** 165/80.3, 80.4,
165/80.5, 104.33; 257/714; 317/234 R

[57] **ABSTRACT**

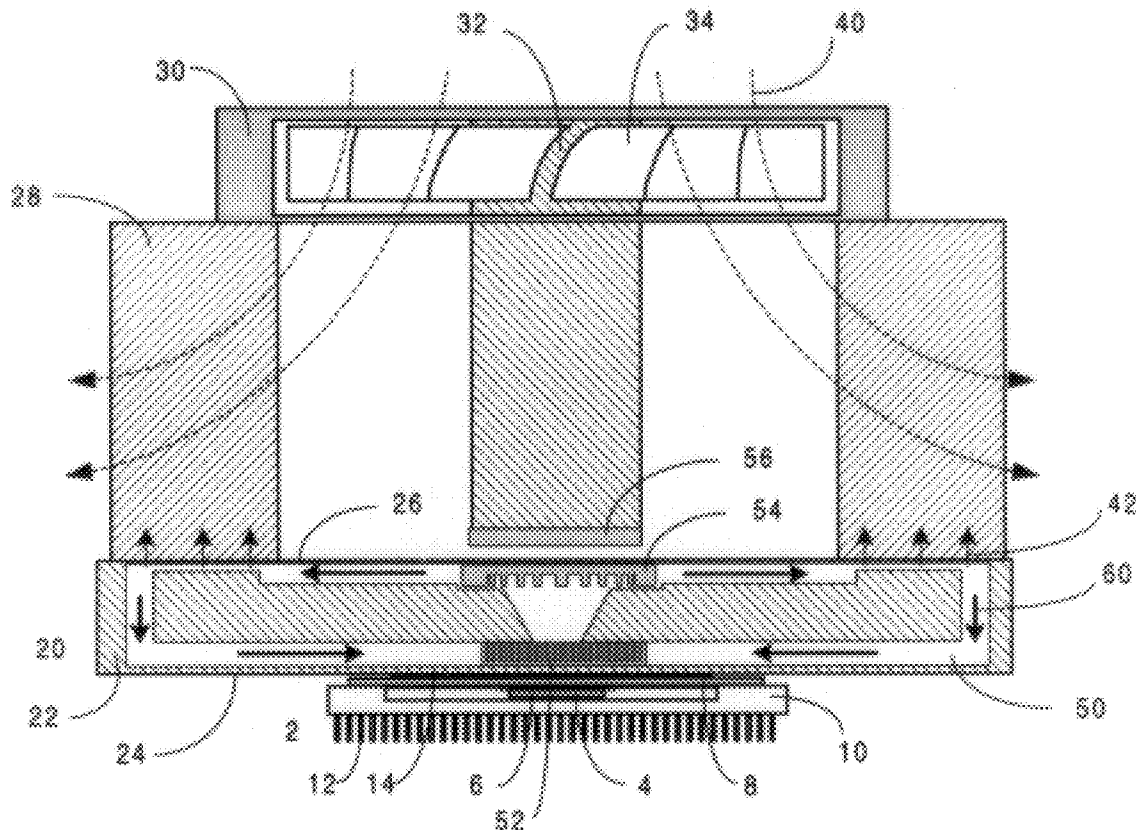
[56] **References Cited**

U.S. PATENT DOCUMENTS

1,819,528	8/1931	Terry .	
3,654,528	4/1972	Barkan	317/234 R
4,519,447	5/1985	Wiech	165/104.33
4,780,062	10/1988	Yamada	417/322
5,001,548	3/1991	Iversen	165/80.3
5,183,104	2/1993	Novotny	165/104.33

An apparatus to transfer heat from a heat source to a heat absorber, the apparatus consisting of an active thermal spreader plate with internal flow channels, a recirculating heat transfer fluid, and a means to impel the heat transfer fluid using an external moving magnetic field. In the most preferred embodiment a centripetal pump impeller is trapped inside the active thermal spreader plate, and the impeller is motivated to rotate due to eddy currents generated by the external moving magnetic fields.

35 Claims, 13 Drawing Sheets



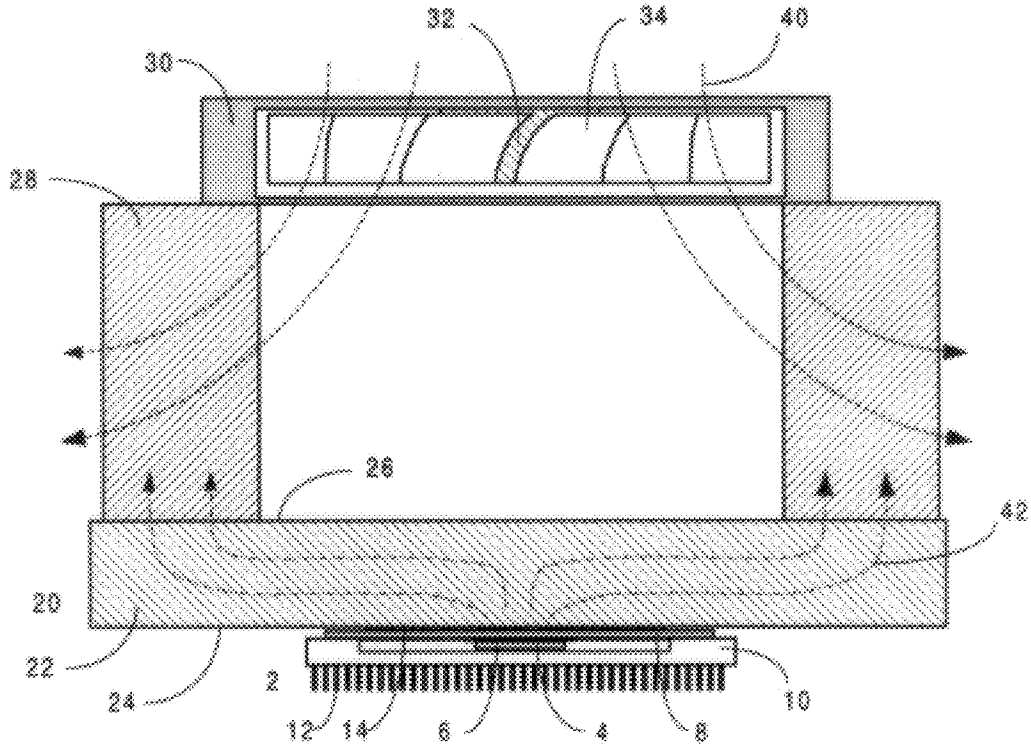


FIG.1 Prior Art

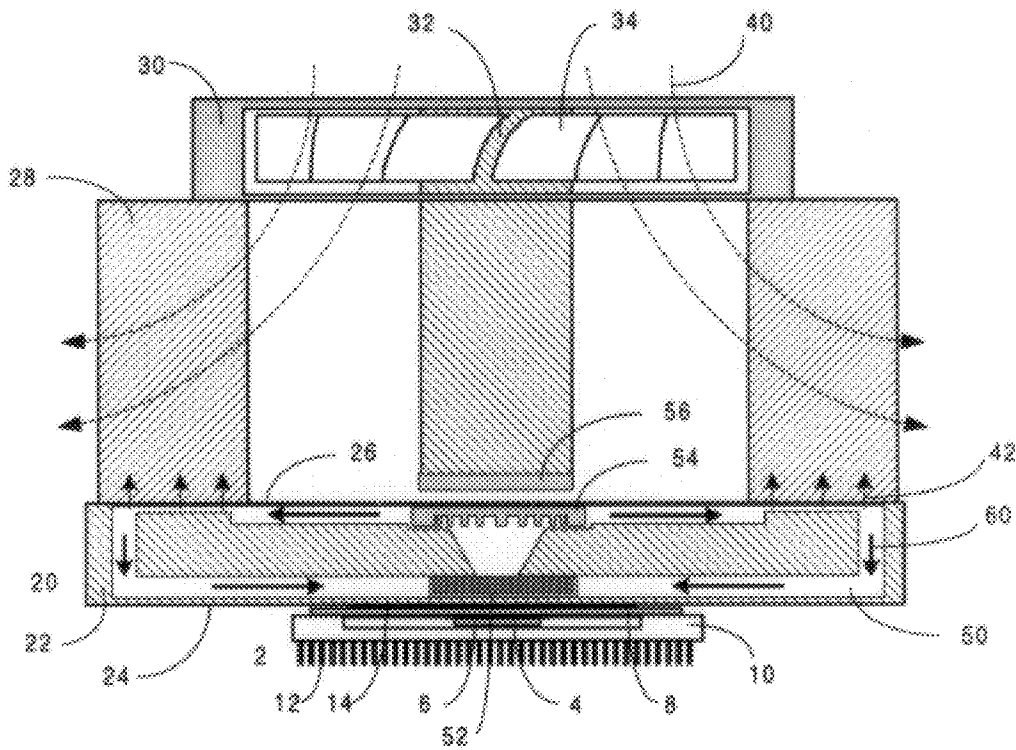


FIG. 2

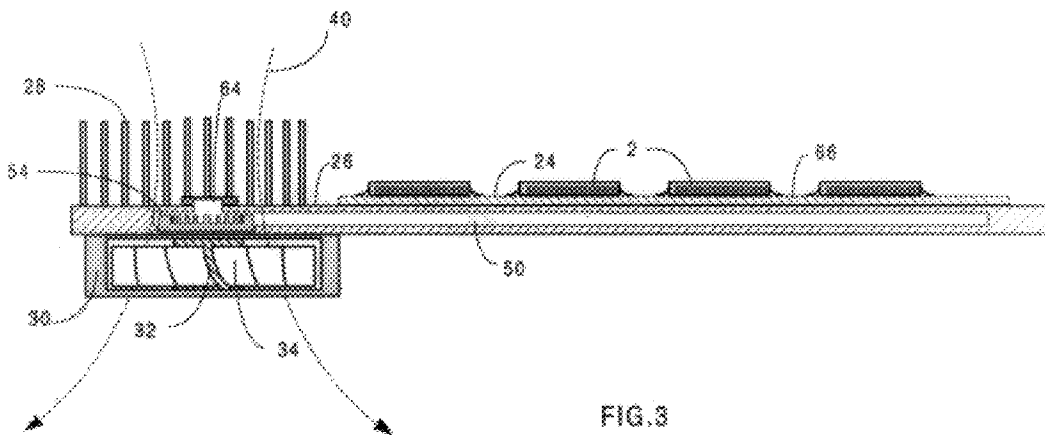
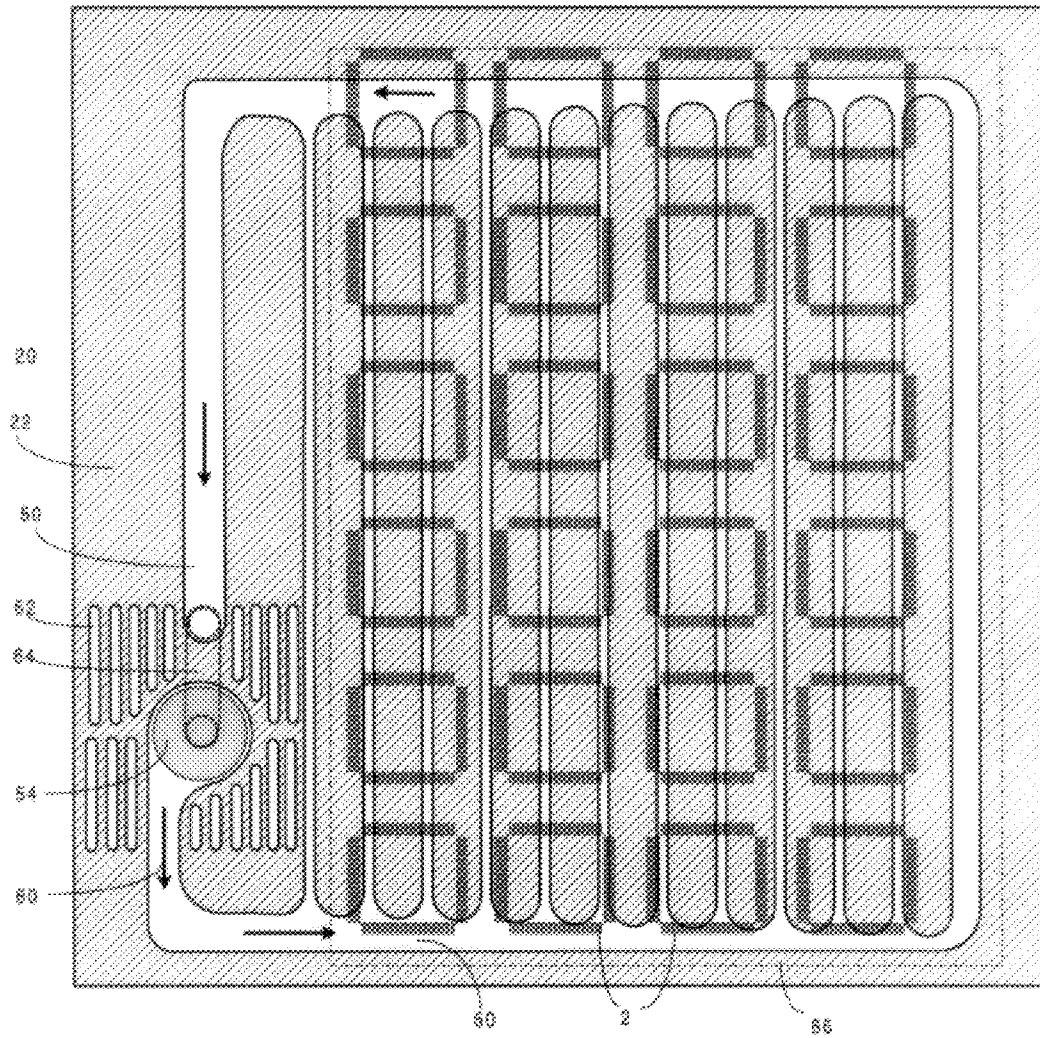


FIG. 3

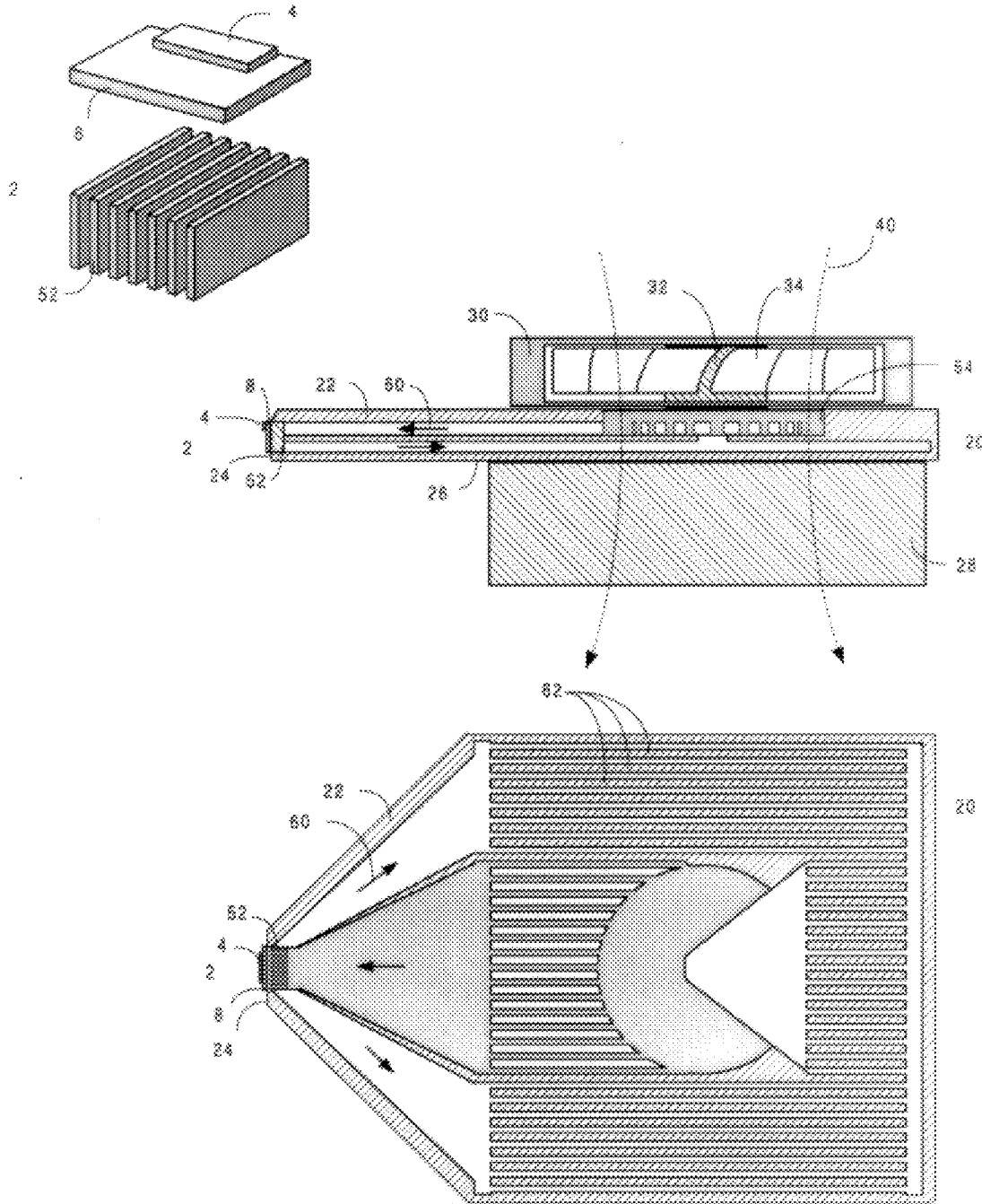


FIG. 4

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.