



US006428142B1

(12) **United States Patent**
Silverbrook et al.

(10) **Patent No.:** **US 6,428,142 B1**
(45) **Date of Patent:** **Aug. 6, 2002**

(54) **FOUR COLOR MODULAR PRINTHEAD SYSTEM**

(75) Inventors: **Kia Silverbrook**, Balmain; **Tobin Allen King**, Cremorne; **Garry Raymond Jackson**, Haberfield, all of (AU)

(73) Assignee: **Silverbrook Research Pty Ltd**, Balmain (AU)

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

(21) Appl. No.: **09/693,312**

(22) Filed: **Oct. 20, 2000**

(30) **Foreign Application Priority Data**

Dec. 9, 1999 (AU) PQ 4559

(51) Int. Cl.⁷ **B41J 2/155**

(52) U.S. Cl. **347/42; 347/13**

(58) Field of Search 347/13, 42, 12, 347/40, 43, 49, 66

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,896,168 A 1/1990 Newman et al.
5,734,394 A * 3/1998 Hackleman 347/42
6,062,666 A * 5/2000 Omata et al. 347/12

FOREIGN PATENT DOCUMENTS

EP 568175 A 11/1993

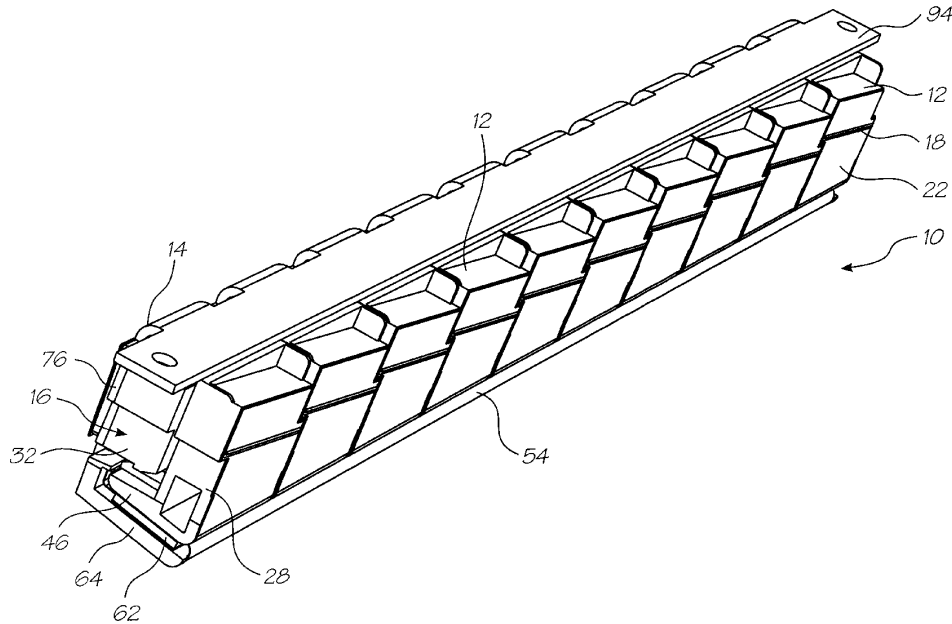
* cited by examiner

Primary Examiner—Lamson D. Nguyen

(57) **ABSTRACT**

A printhead system includes a plurality of printhead assemblies aligned in end-to-end relationship. Each printhead assembly includes a plurality of printhead modules, the printhead modules being arranged in end-to-end relationship and being angled with respect to a longitudinal axis of the assembly such that printhead chips of adjacent modules overlap in a direction transversely to a direction of movement of print media past the assemblies.

9 Claims, 15 Drawing Sheets



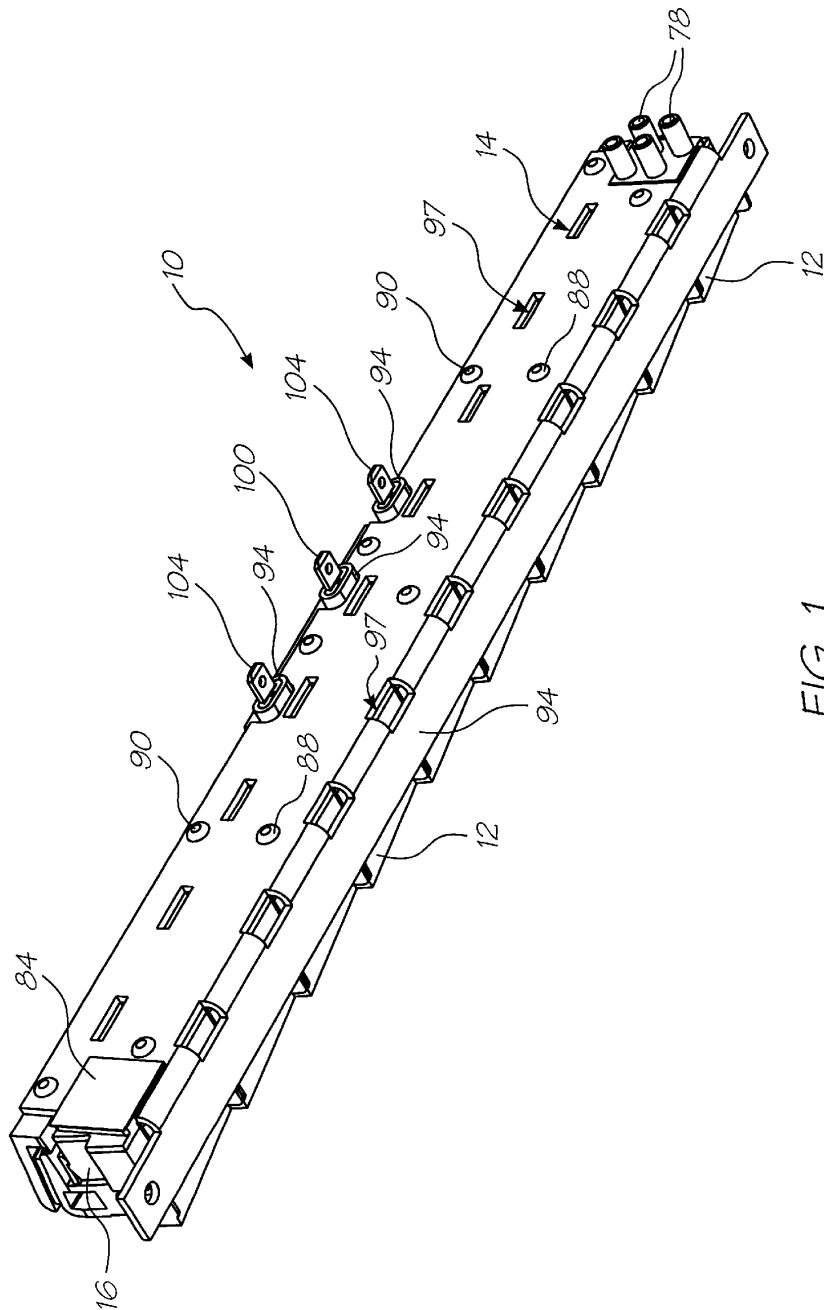


FIG. 1

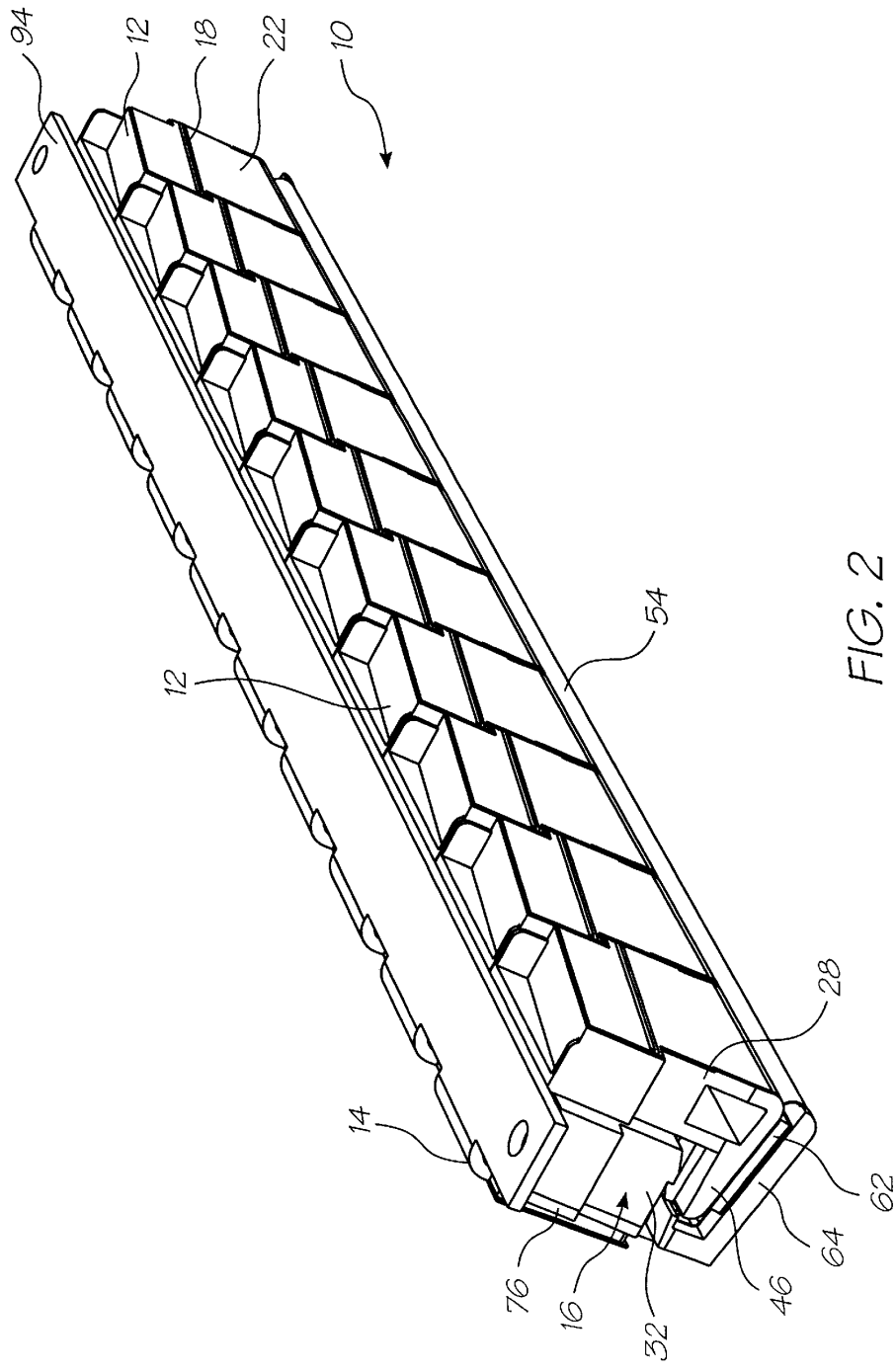


FIG. 2

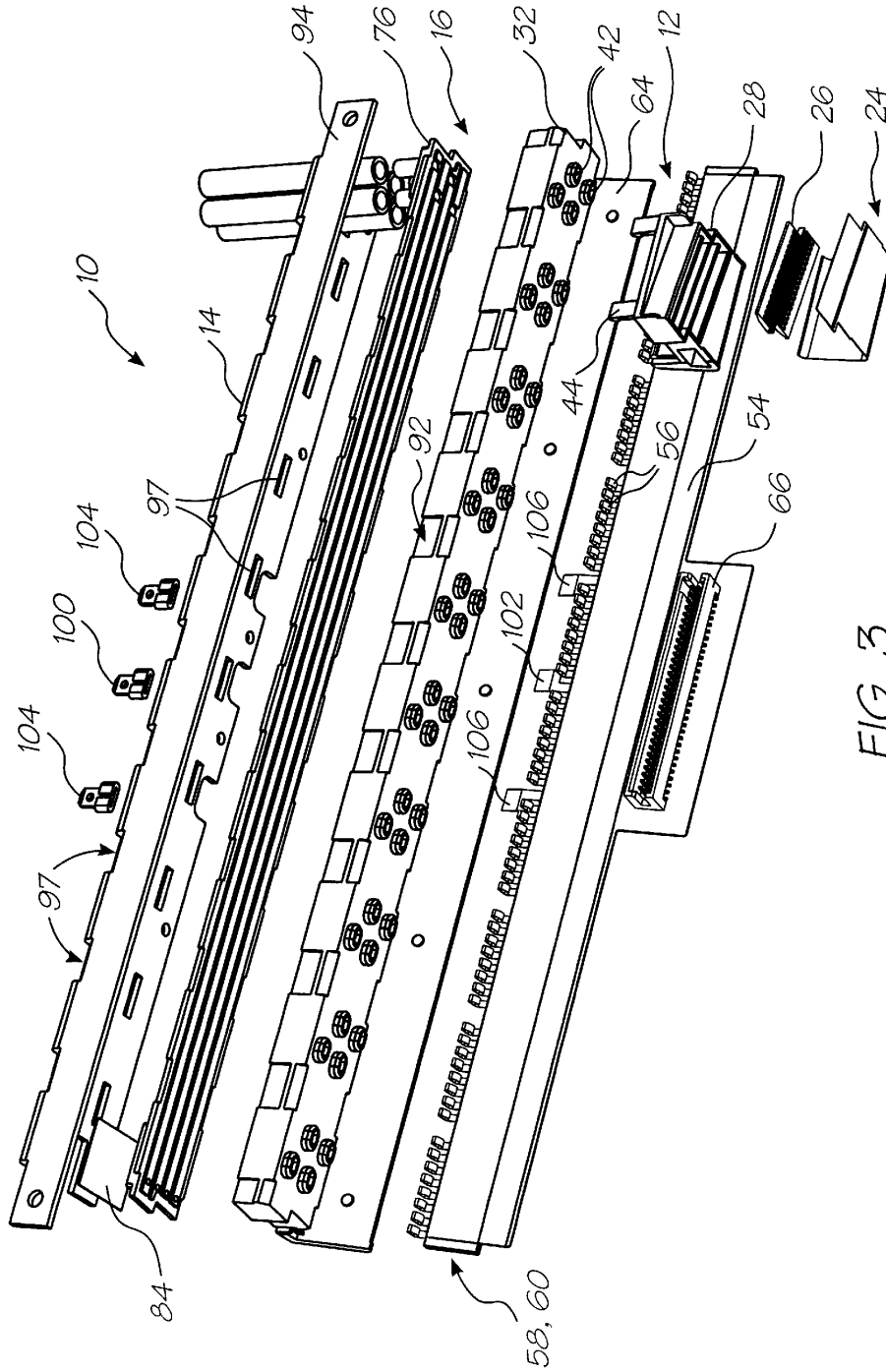


FIG. 3

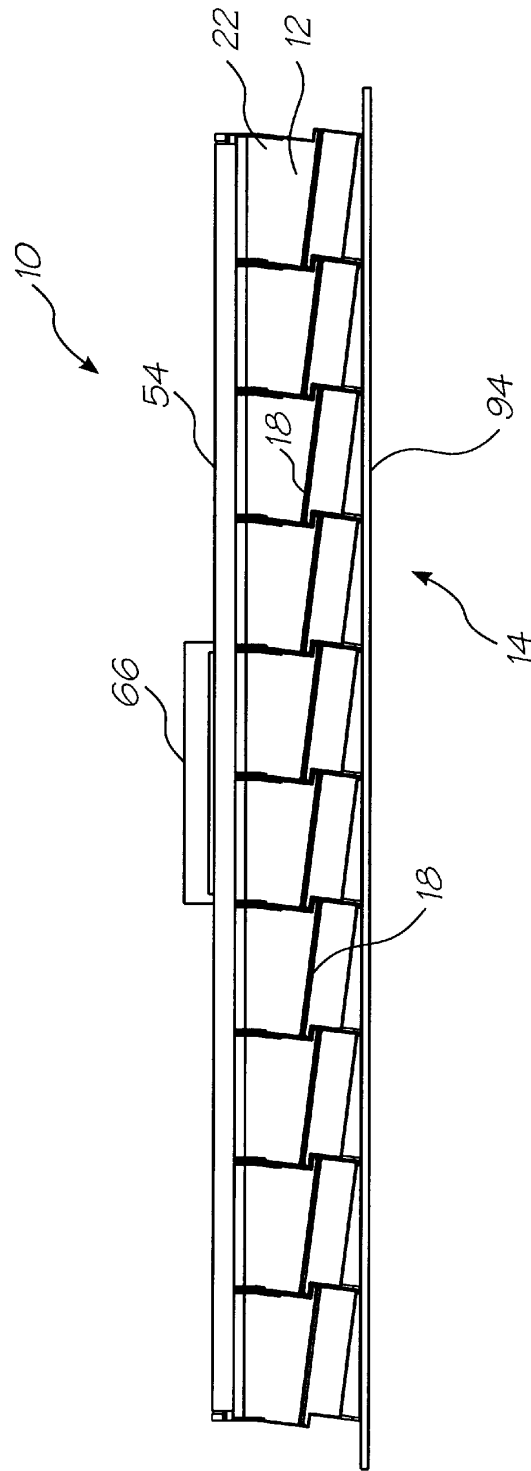


FIG. 4

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.