

[54] APPARATUS AND METHOD FOR TESTING PROSTHETIC HEART VALVES

[76] Inventor: Murphy L. Pickard, 3250 Pierce St., Wheatridge, Colo. 80030

[21] Appl. No.: 830,854

[22] Filed: Feb. 19, 1986

[51] Int. Cl.⁴ G01M 19/00

[52] U.S. Cl. 73/37; 73/168; 73/865.6

[58] Field of Search 73/37, 168, 812, 865.6

[56] References Cited

U.S. PATENT DOCUMENTS

4,381,663	5/1983	Swanson	73/37
4,450,710	5/1984	Nettekoven	73/37
4,546,642	10/1984	Swanson	73/37
4,598,579	7/1986	Cummings et al.	73/37

FOREIGN PATENT DOCUMENTS

445432	6/1975	U.S.S.R.	73/37
685294	9/1979	U.S.S.R.	73/432 SD
728864	4/1980	U.S.S.R.	73/168

OTHER PUBLICATIONS

Pickard, M. L. et al., *Computer Managed in Vitro Testing of Ventricular Assist Devices*, In Trans. Am. Soc. Artif. Intern. Organs, vol. XXV, pp. 192-196, 1979.

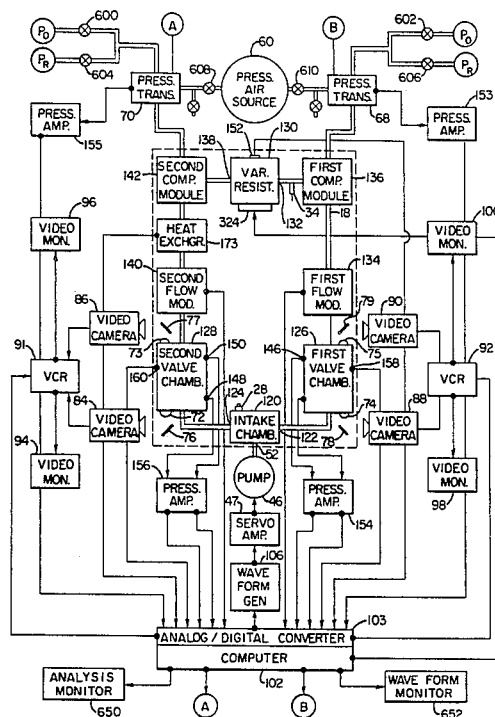
Primary Examiner—Stewart J. Levy

Assistant Examiner—Joseph W. Roskos
Attorney, Agent, or Firm—Timothy J. Martin

[57] ABSTRACT

An apparatus and method for testing prosthetic heart valves prior to implant in the human body provides a test chamber having a flow channel therethrough and a passageway which receives a mounting fixture for a heart valve. The test chamber is used in a mock circulatory loop with the flow channel being in the loop. Preferably, the test chamber has a transverse passageway that intersects the flow channel, and the mounting fixture advances completely through the test chamber from an insertion location to a disconnect location while a dynamic seal is maintained. Two such test chambers may be used in a mock loop, and the loop is configured with an intake chamber fluidly interconnecting one side of each test chamber, and a restriction chamber fluidly interconnecting the other sides of the test chambers. The restriction chamber is variable, and pressure compensation is provided between each of test chambers and the restriction chamber. A pump cyclically drives a fluid through the loop, and flow meters and pressure sensors monitor the test. A data processor monitors and processes the flow data and controls the pump to create a desired flow waveform. The test can also be visually and optically monitored.

42 Claims, 8 Drawing Figures



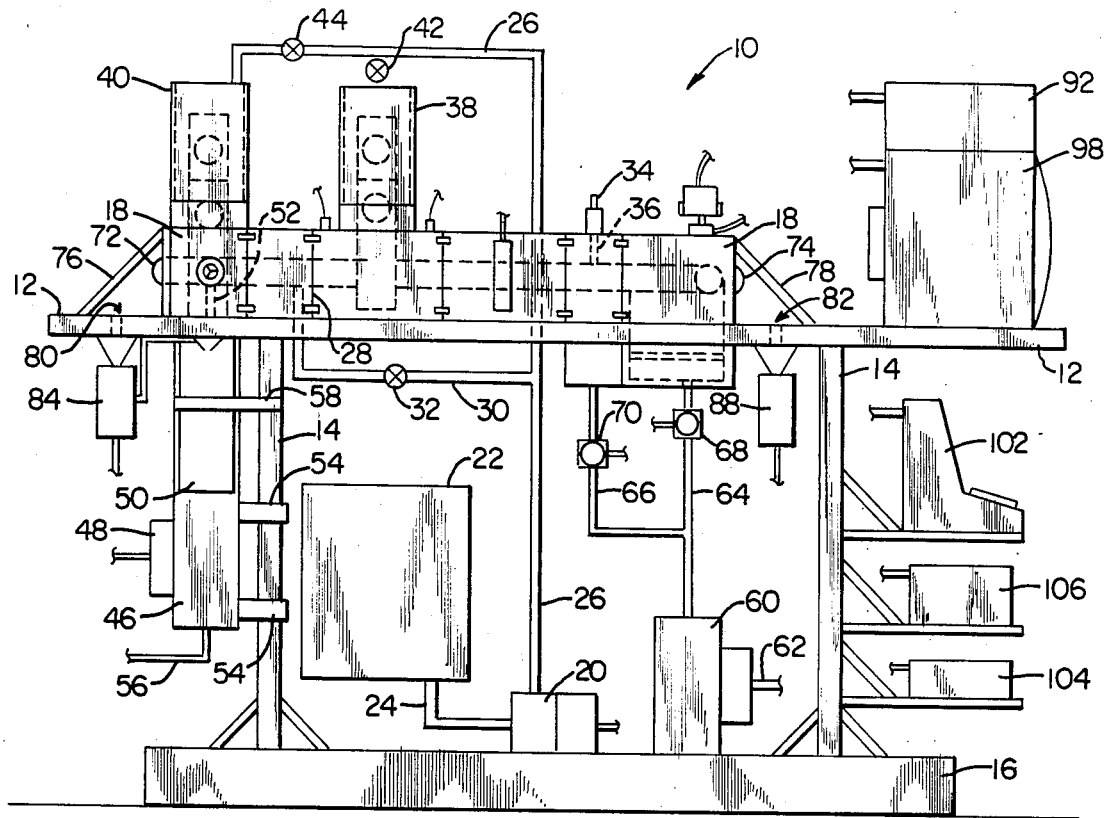


FIG 1

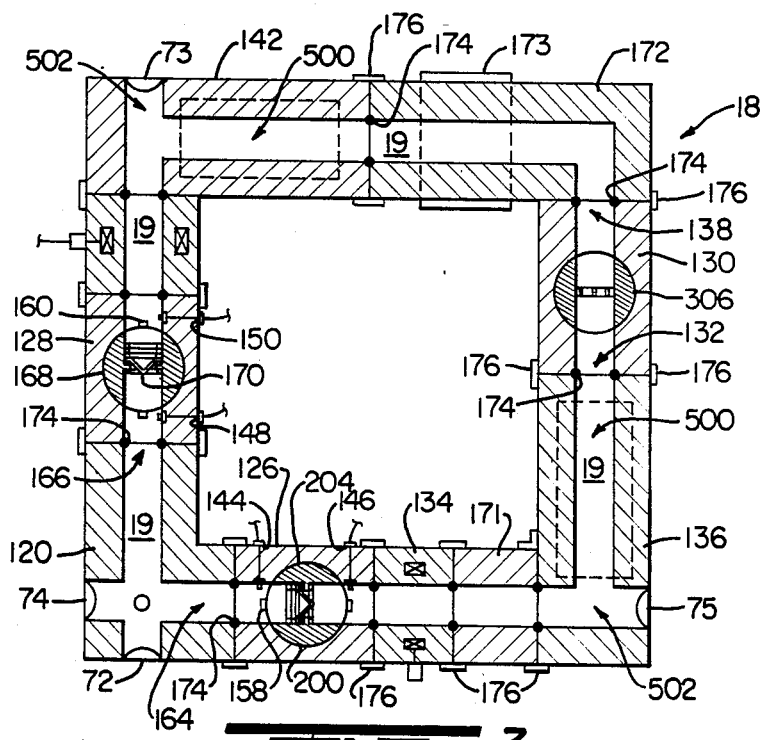
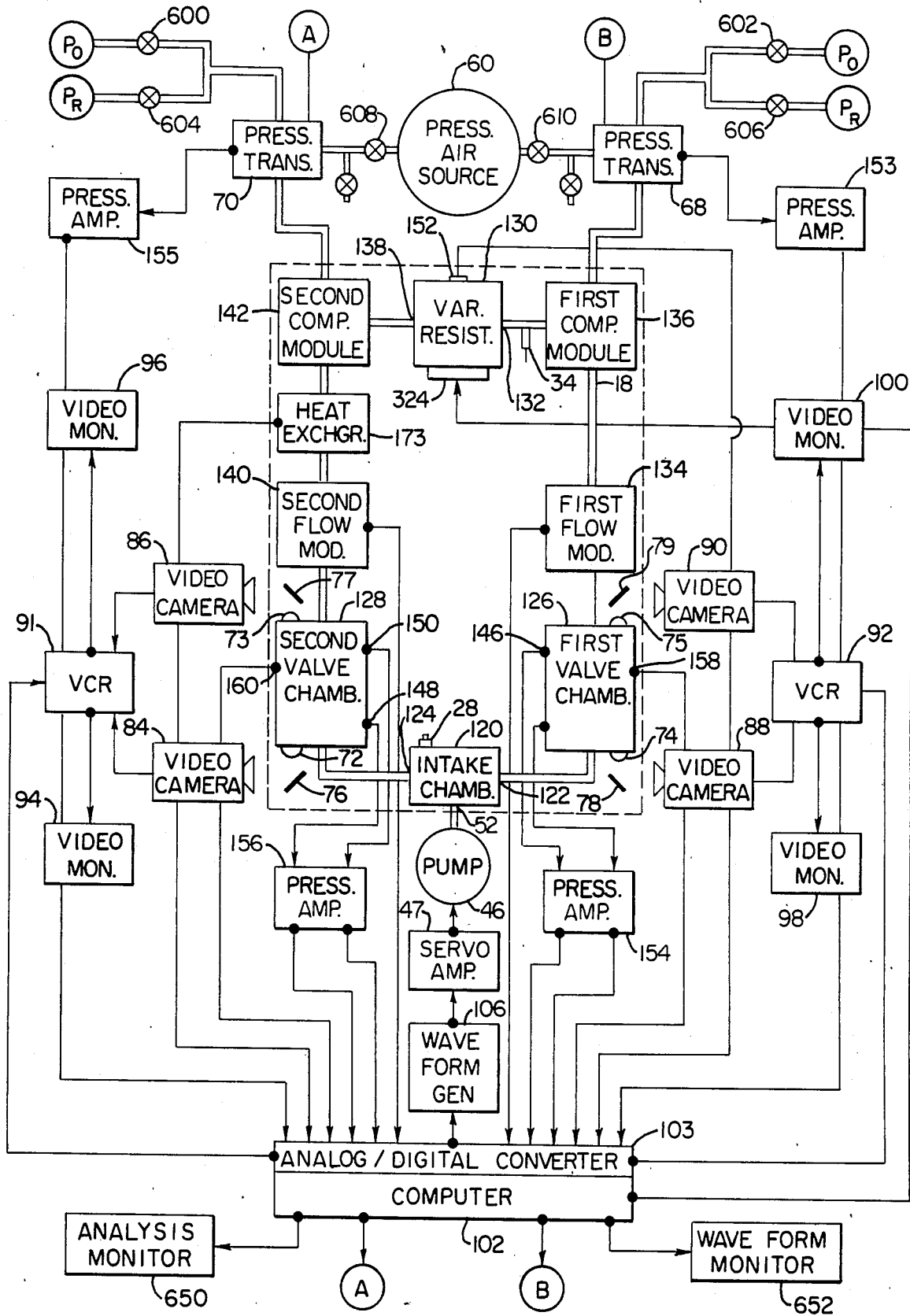
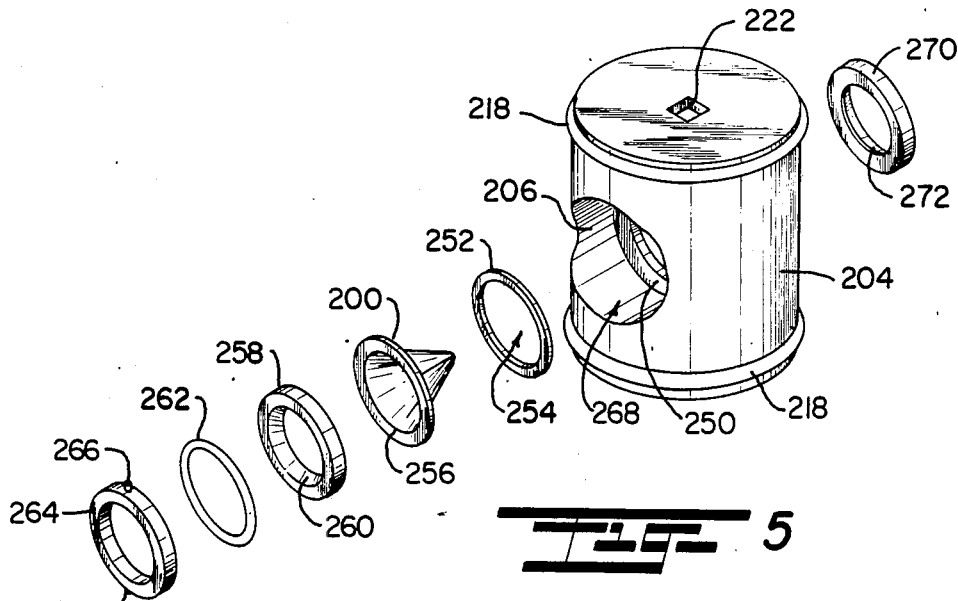
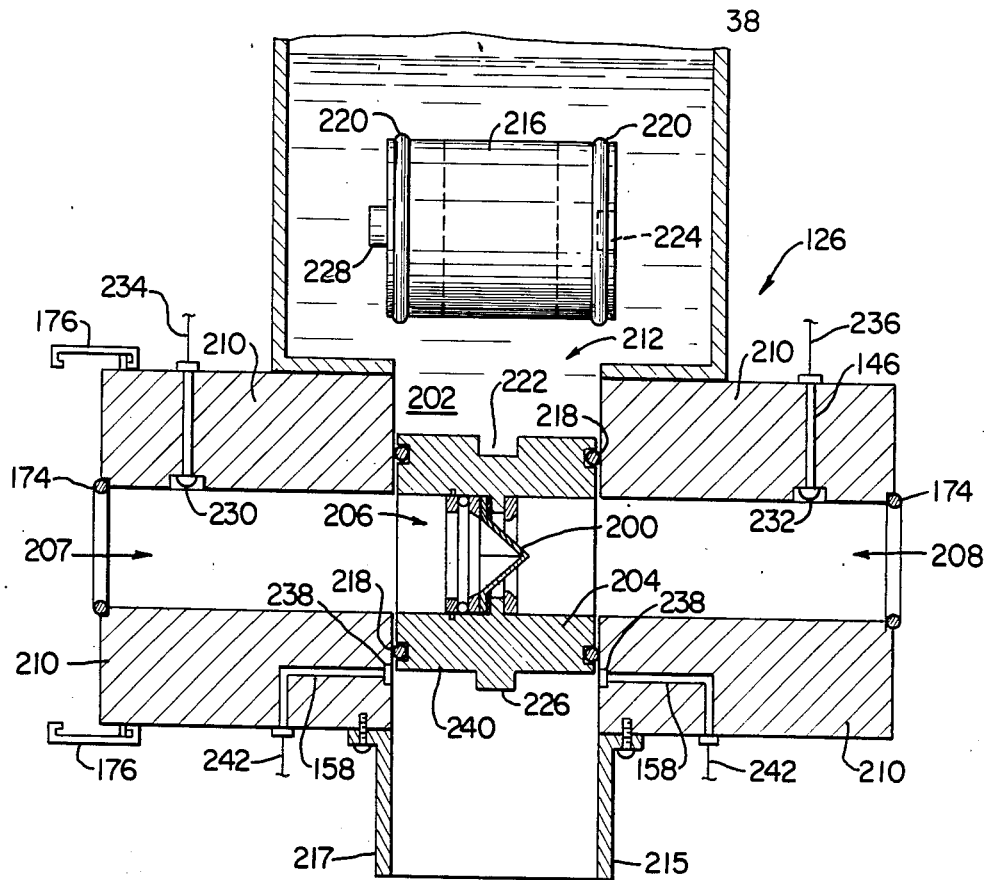
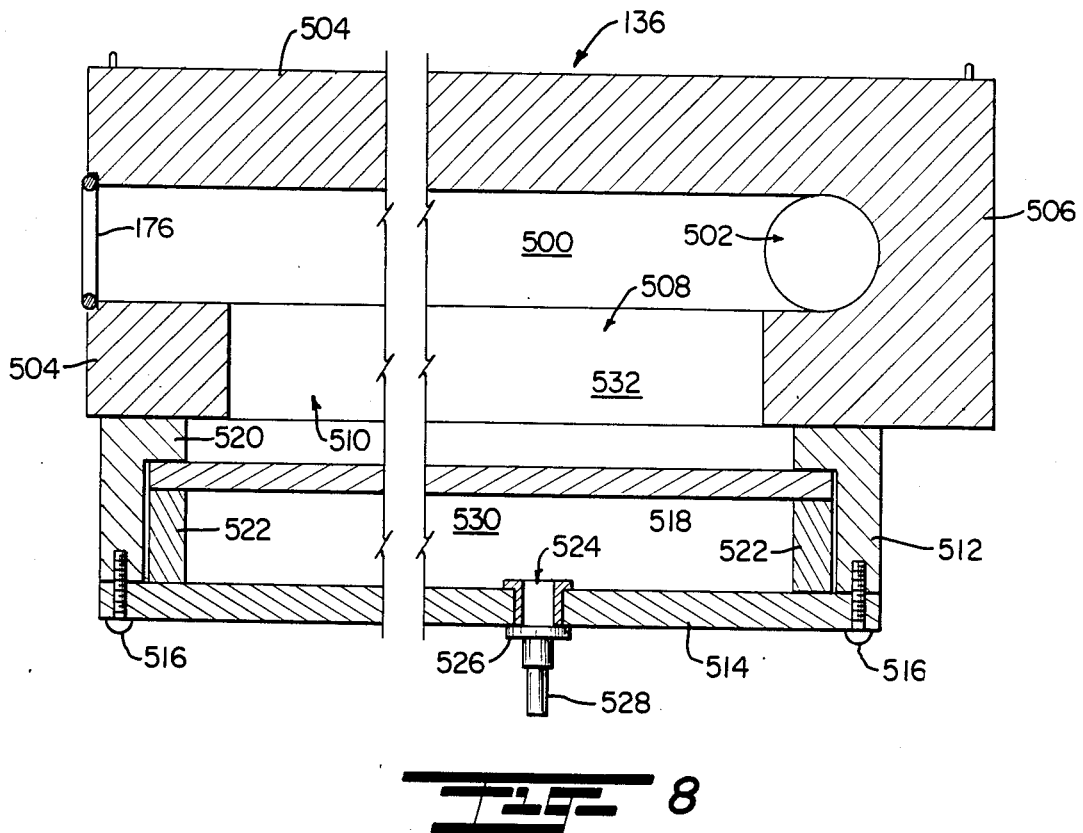
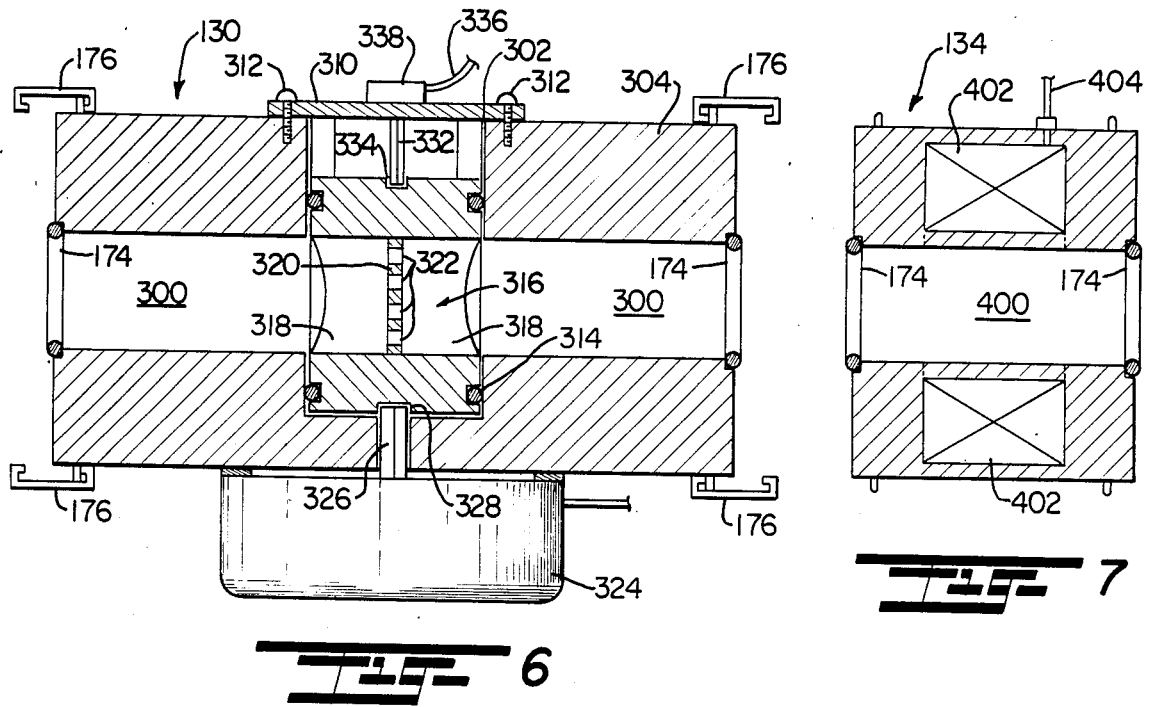


FIG 3







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.