

[54] TOUCH PANEL WITH ADAPTIVE NOISE REDUCTION

4,698,461 10/1987 Meadows et al. 178/19
 4,707,845 11/1987 Krein et al. 178/19
 4,723,299 2/1988 Kobayashi 178/18

[75] Inventor: Robert D. Meadows, Portland, Oreg.

[73] Assignee: Tektronix, Inc., Beaverton, Oreg.

[21] Appl. No.: 455,892

[22] Filed: Dec. 27, 1989

OTHER PUBLICATIONS

Thomas Malzbender, "Permuted Trace Ordering Allows Low-Cost, High Resolution Graphics Input," Hewlett-Packard Journal, Jun. 1987, pp. 4-7.

Primary Examiner—Jeffery A. Brier
 Assistant Examiner—Richard Hjerpe
 Attorney, Agent, or Firm—John D. Winkelman; Mark M. Meininger

Related U.S. Application Data

[63] Continuation of Ser. No. 58,320, Jun. 4, 1987, abandoned.

[51] Int. Cl.⁵ G09G 5/00

[52] U.S. Cl. 340/712; 178/18; 341/22

[58] Field of Search 340/706, 712, 825.34; 178/18, 19, 20; 84/1.22, 1.24, 1.26; 273/85 G; 341/22, 33, 34; 307/116

[57] ABSTRACT

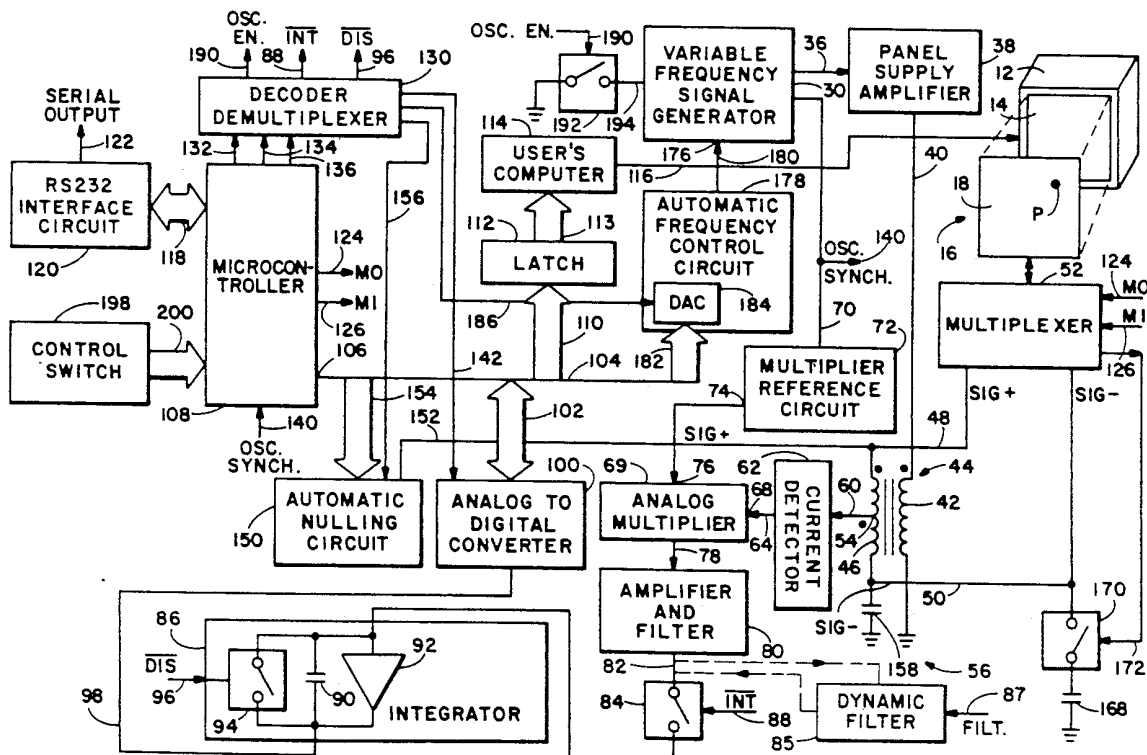
A touch panel has panel scanning signals selectively applied to the four sides of a touch sensing surface of the panel so as to establish alternating current voltage gradients in desired directions across the touch sensing surface. When the panel is touched, touch signals result and are utilized by a touch location circuit in determining the location of touch. The impedance touch current resulting from a user's touch may also be determined and used. The touch panel circuit automatically filters the touch signals to an extent which varies depending upon the rate of movement of touch from one location on the touch sensing surface to a subsequent location. Filtering is decreased with the increasing rates of movement. The touch panel thereby minimizes the effects of noise on touch location determination.

[56] References Cited

U.S. PATENT DOCUMENTS

3,955,178	5/1976	Warfel	340/825.34
4,205,199	5/1980	Mochizuki	178/18
4,213,367	7/1980	Moog	84/1.22
4,221,975	9/1980	Ledniczki et al.	307/116
4,344,347	8/1982	Faulkner	84/1.26
4,353,552	10/1982	Pepper, Jr.	273/85 G
4,476,463	10/1984	Ng et al.	340/712
4,567,480	1/1986	Blanchard	340/712
4,680,429	7/1987	Murdock et al.	178/19
4,686,331	8/1987	Burgess	178/19
4,698,460	10/1987	Krein et al.	178/19

21 Claims, 12 Drawing Sheets



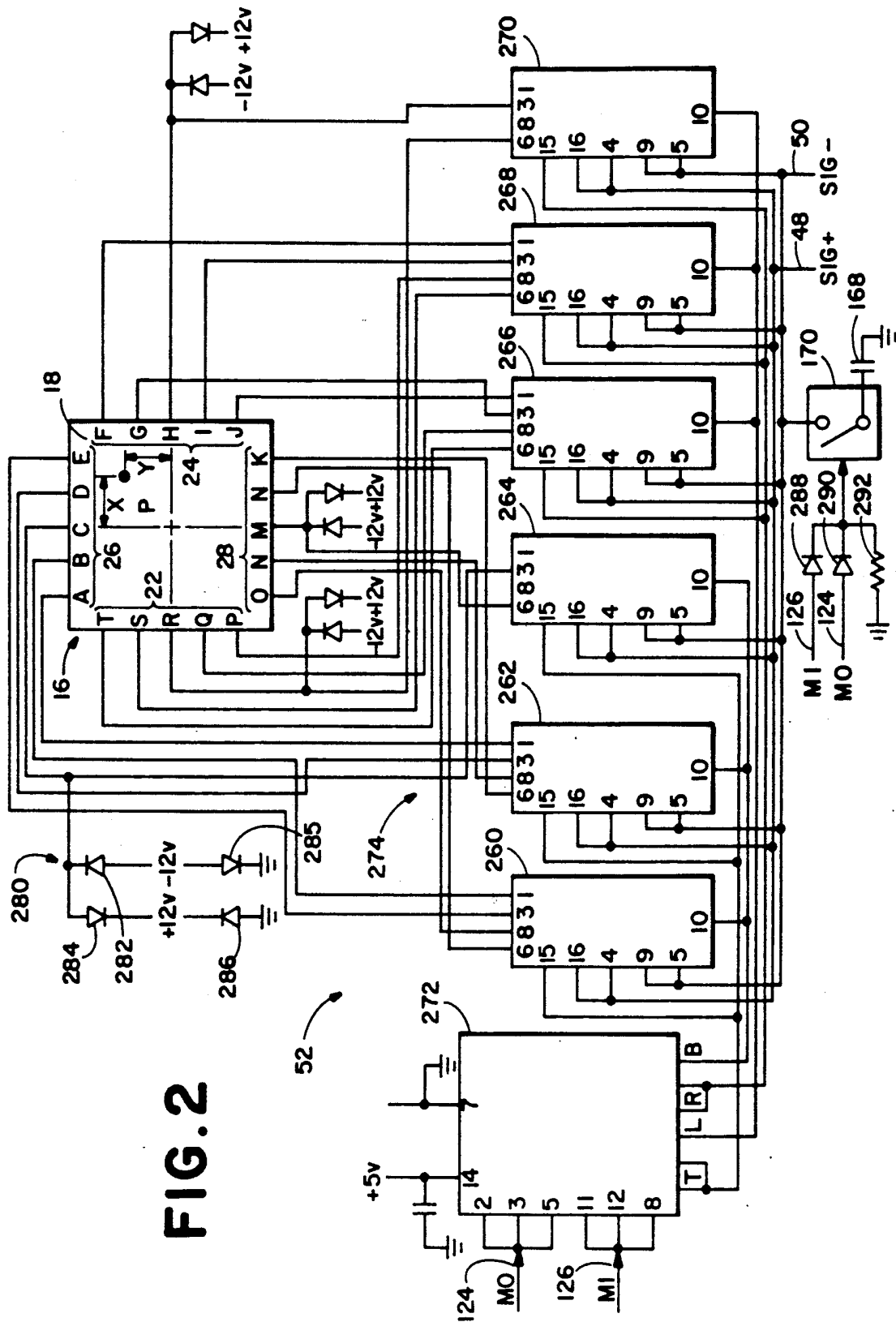
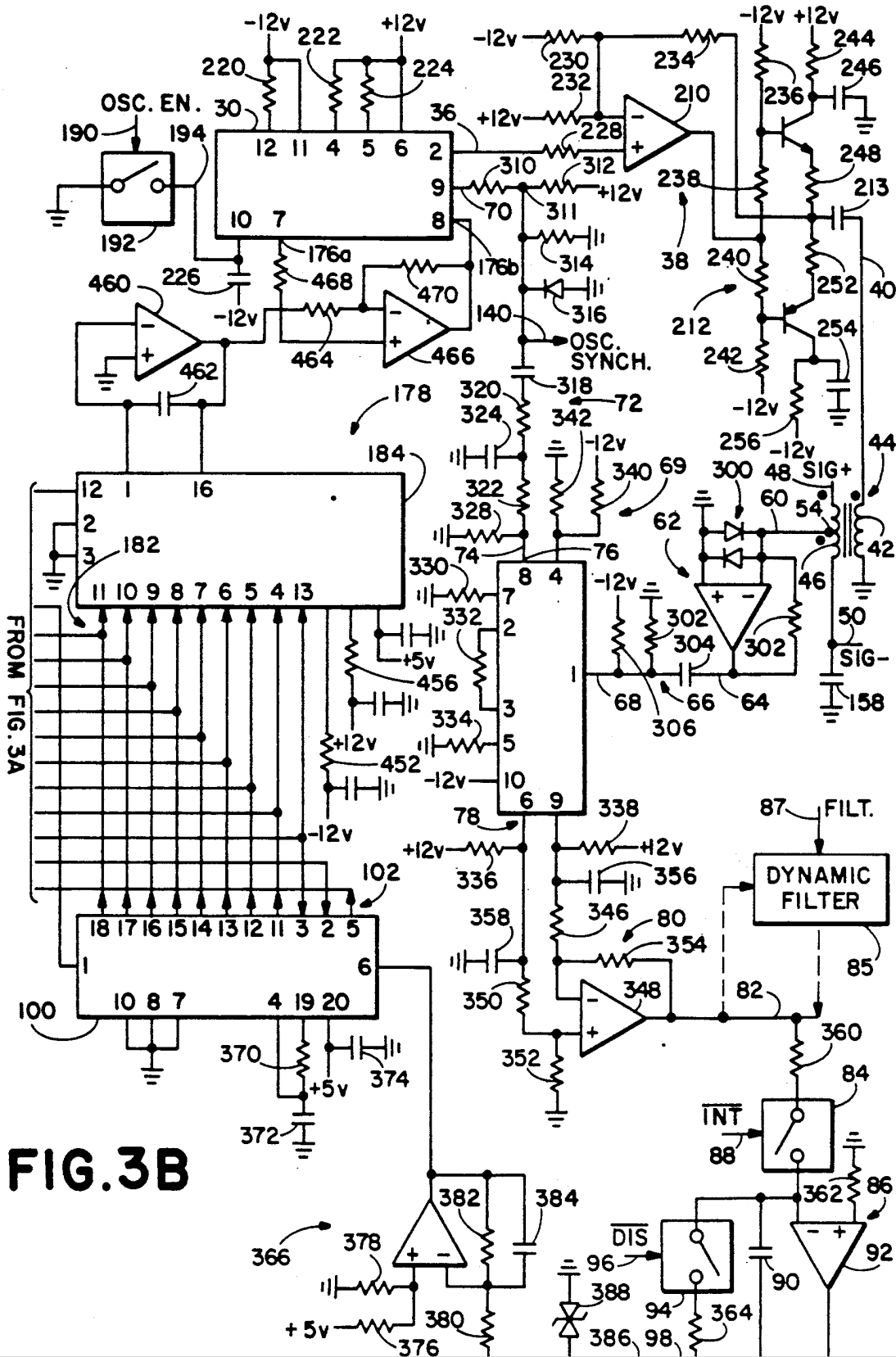


FIG. 2



FROM FIG. 3A

FIG. 3B

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.