



US005693876A

# United States Patent [19]

[11] Patent Number: **5,693,876**

Ghitea, Jr. et al.

[45] Date of Patent: **Dec. 2, 1997**

[54] **FUEL ECONOMY DISPLAY FOR VEHICLES**

4,845,630 7/1989 Stephens ..... 73/113  
5,148,702 9/1992 Gulick, Jr. .... 73/114

[75] Inventors: **Nicolae Ghitea, Jr.**, Tigard, Oreg.;  
**James M. Ehlbeck**, La Center, Wash.

### OTHER PUBLICATIONS

[73] Assignee: **Freightliner Corporation**, Portland, Oreg.

Enhances Driver Performance, Detroit Diesel Corporation, ProDriver™.

*ProDriver™ User Manual*, Detroit Diesel Corporation, Mar., 1994.

*Operating & Error Codes*, FloScan Instrument Company, Inc., Apr. 1993.

[21] Appl. No.: **655,841**

[22] Filed: **May 31, 1996**

[51] Int. Cl. 6 ..... **G01M 15/00**

*Primary Examiner*—George M. Dombroske

[52] U.S. Cl. .... **73/114; 340/439**

*Attorney, Agent, or Firm*—Klarquist Sparkman Campbell Leigh & Whinston

[58] Field of Search ..... 73/113, 114, 116,  
73/117.2, 117.3; 340/439

### [57] ABSTRACT

### [56] References Cited

An improved fuel economy device computes a filtered rate of change of instantaneous fuel economy or a filtered instantaneous fuel economy and repetitively updates a graphical display depicting the current fuel economy. The fuel economy can be displayed as a percentage of a target fuel economy, programmed by the driver or other operator of the vehicle.

#### U.S. PATENT DOCUMENTS

4,400,779	8/1983	Kosuge et al. ....	73/114
4,475,380	10/1984	Colovas et al. ....	73/114
4,502,124	2/1985	Grohmann et al. ....	73/113
4,564,905	1/1986	Masuda et al. ....	73/114
4,570,226	2/1986	Aussedat .....	73/113
4,663,718	5/1987	Augello et al. ....	73/114
4,706,083	11/1987	Baatz et al. ....	73/113

**21 Claims, 8 Drawing Sheets**

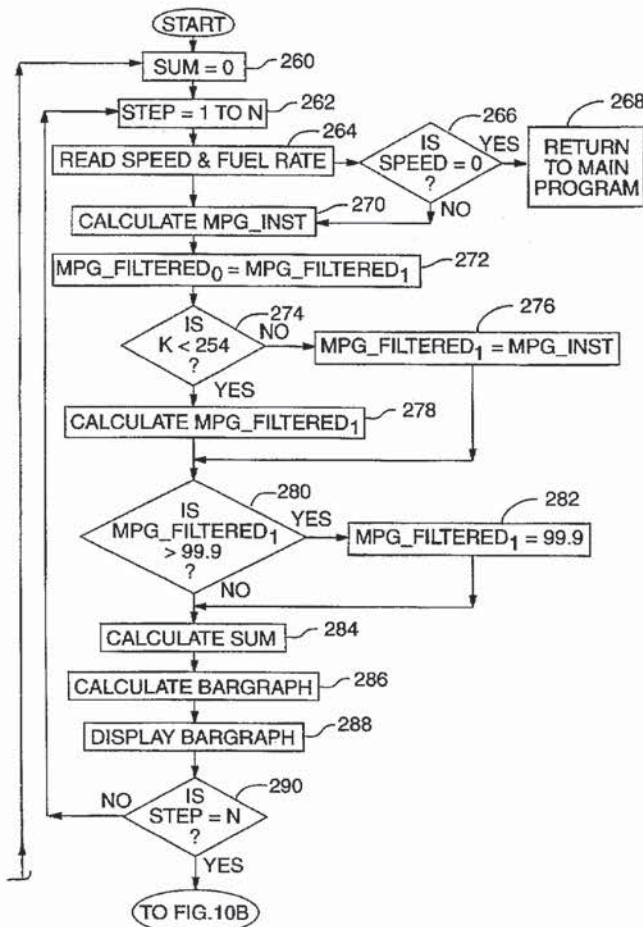


FIG. 1

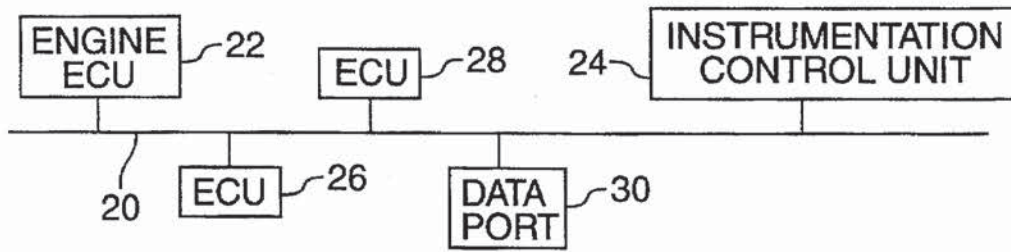


FIG. 2

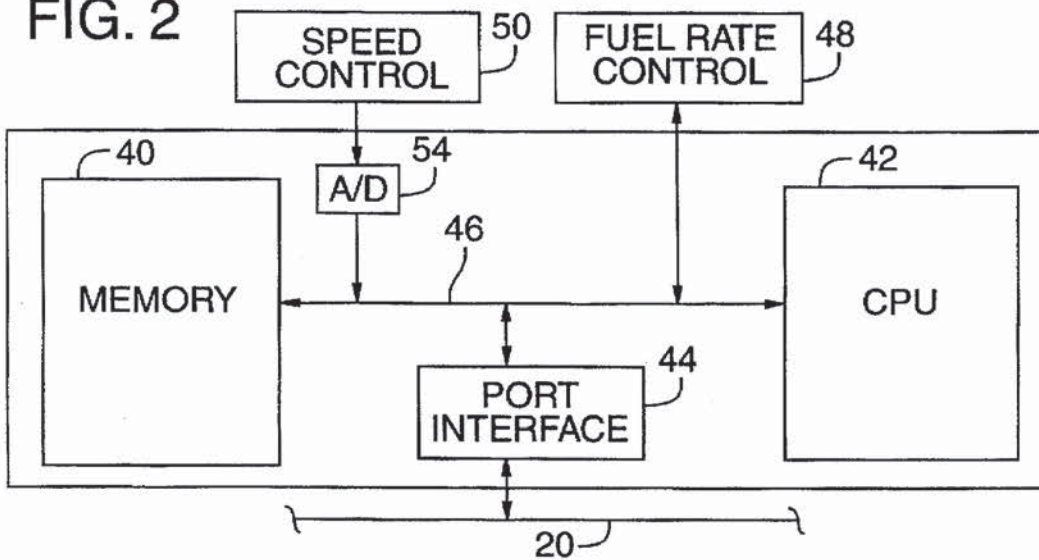


FIG. 3

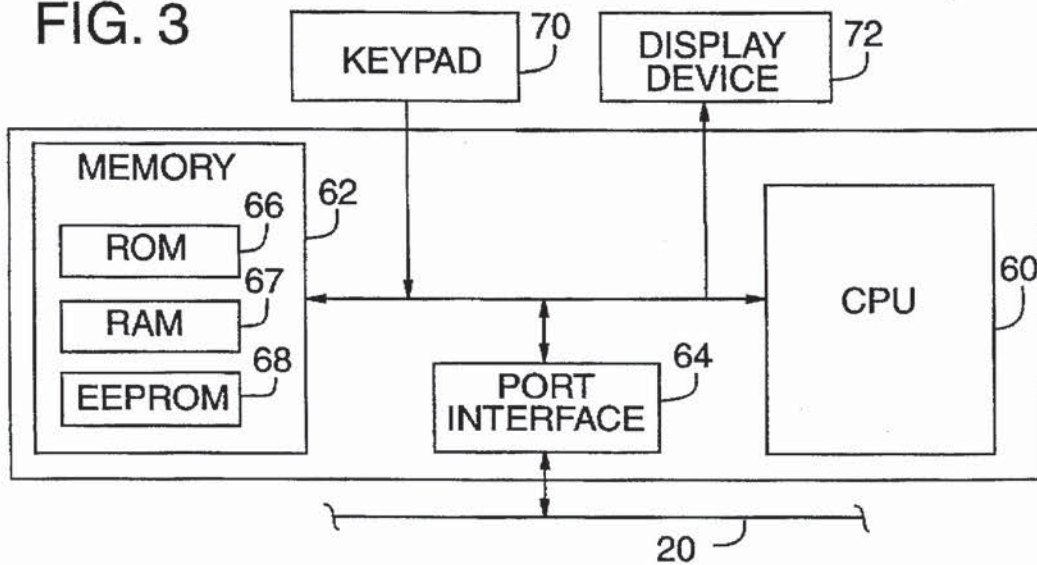


FIG. 4

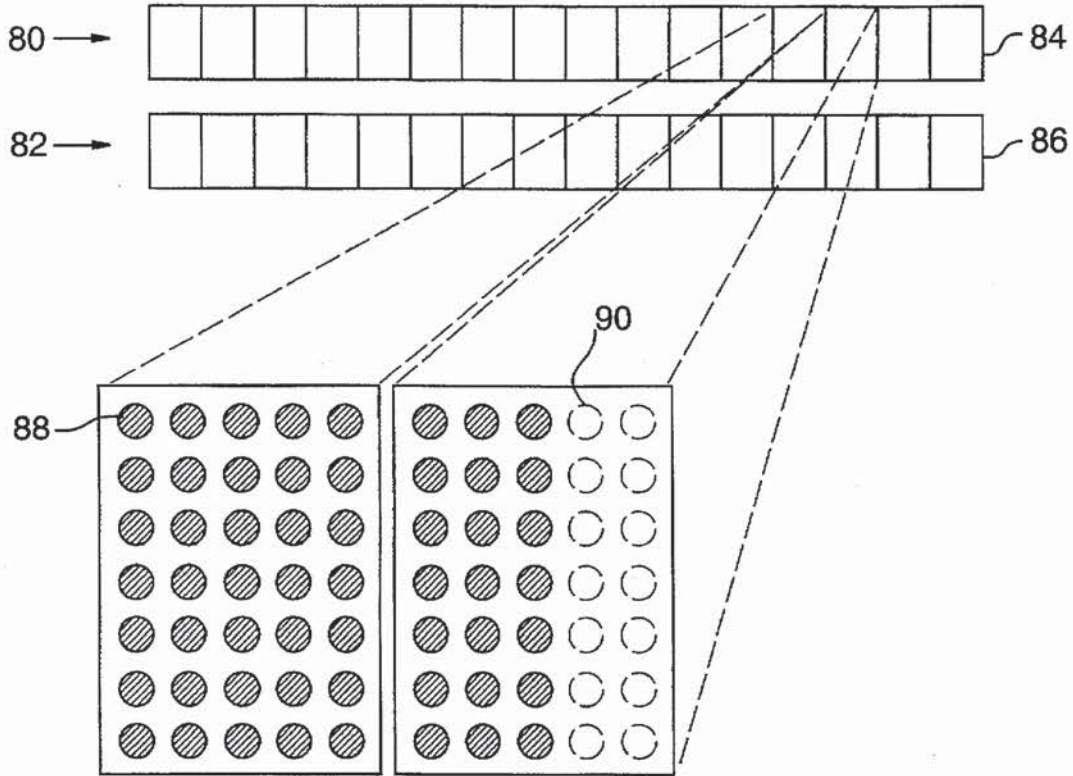


FIG. 5

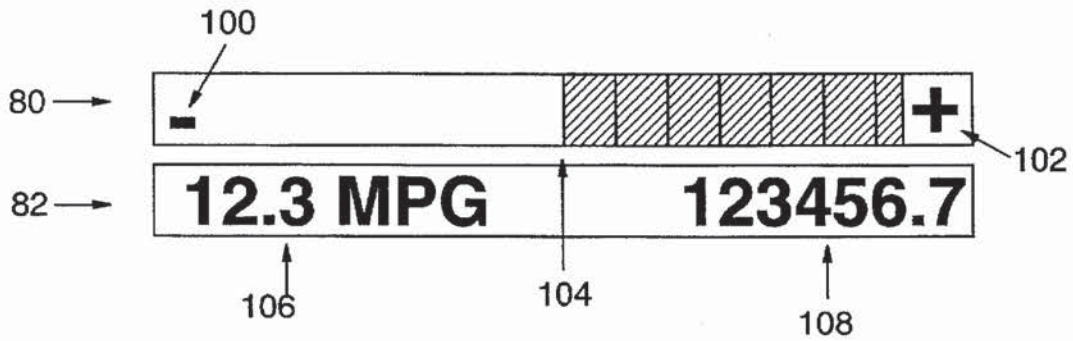


FIG. 6

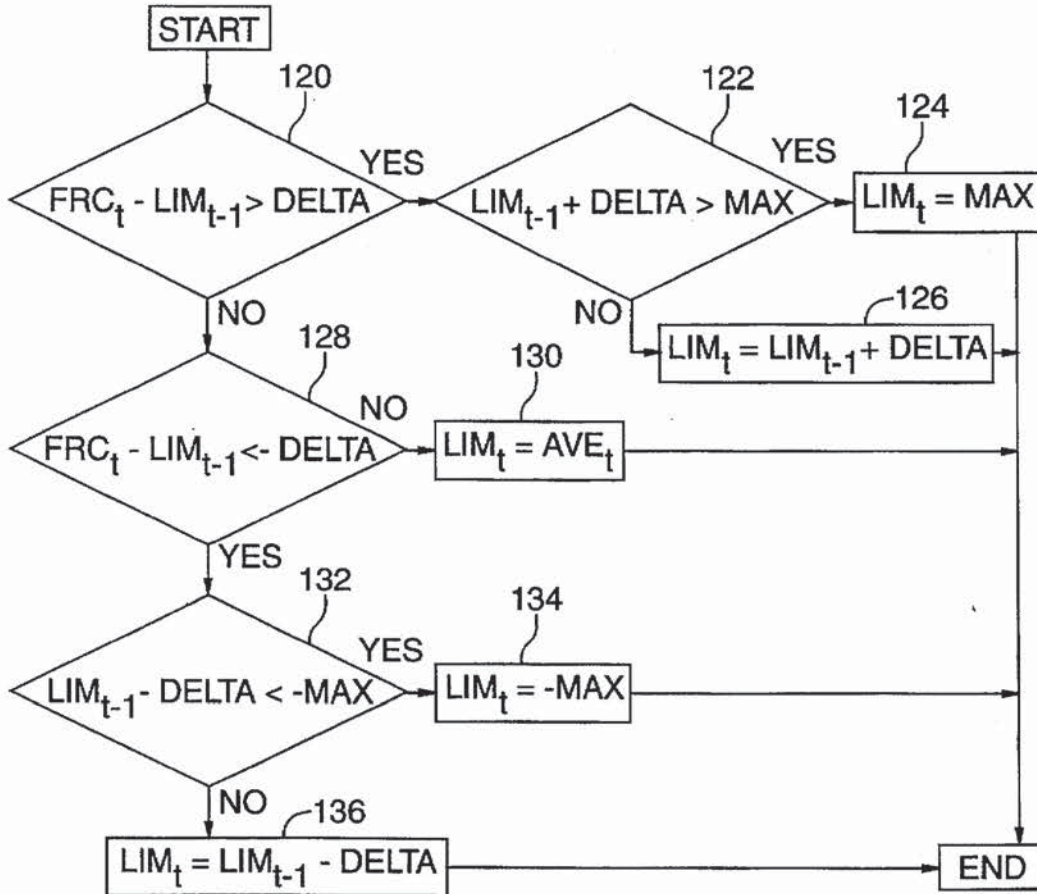
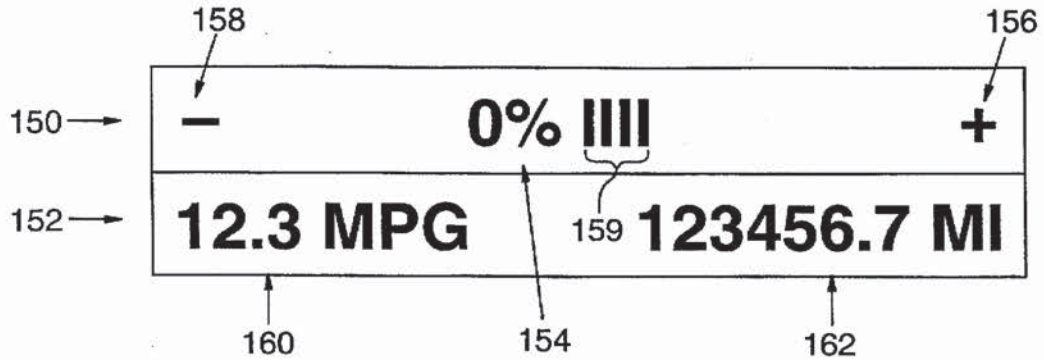
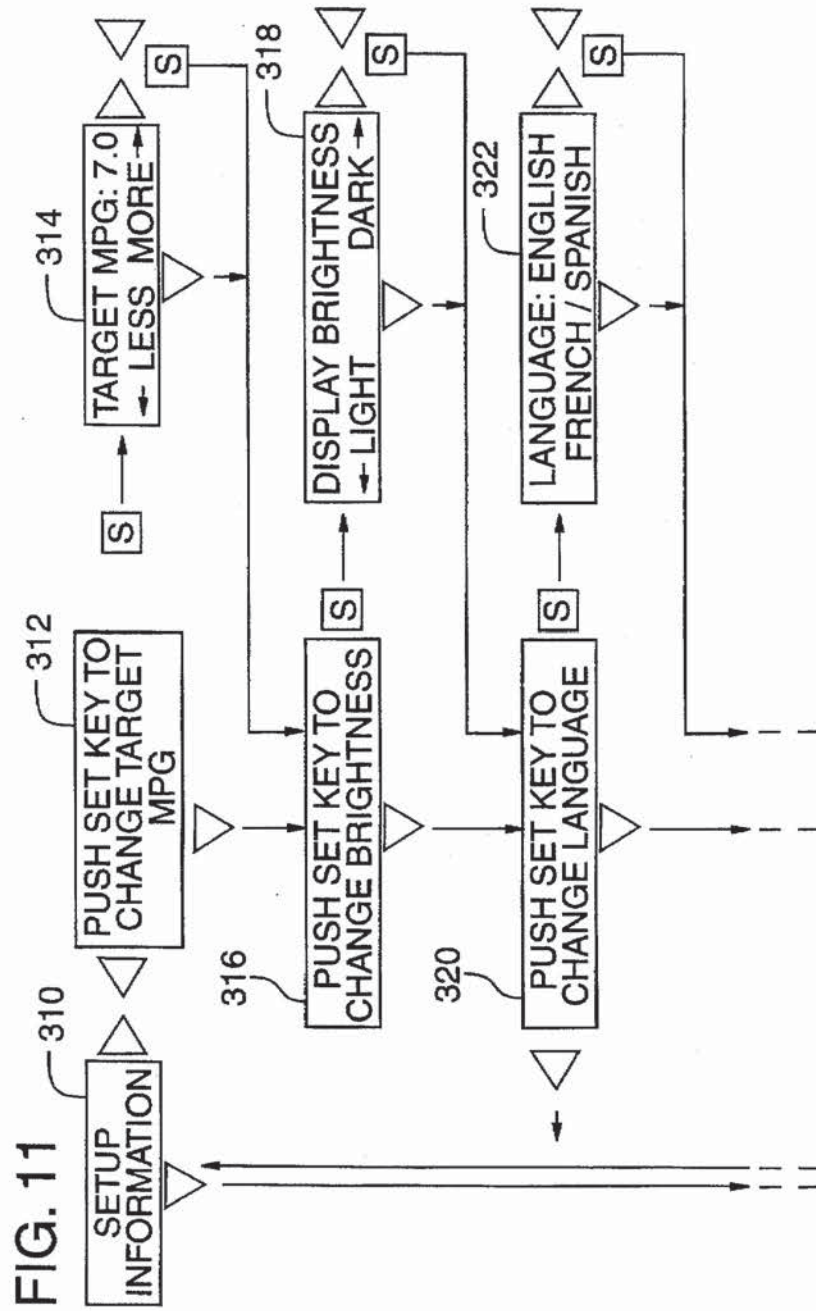
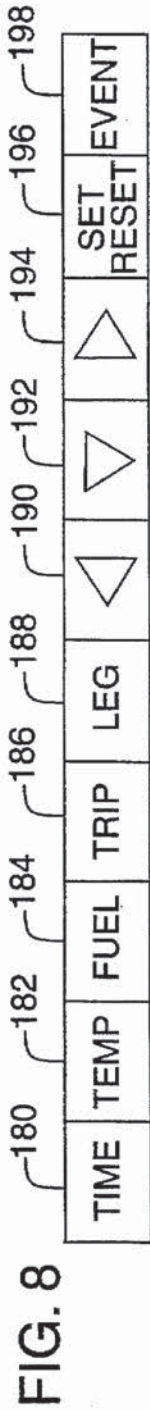


FIG. 7





# 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.