US005771455A

United States Patent [19]

Kennedy, III et al.

[11] **Patent Number: 5,771,455**

[45] **Date of Patent: *Jun. 23, 1998**

[54] **DATA MESSAGING IN A COMMUNICATIONS NETWORK USING A FEATURE REQUEST**

[75] Inventors: **William C. Kennedy, III**, Dallas; **Kenneth R. Westerlage**, Ft. Worth, both of Tex.

[73] Assignee: **Highwaymaster Communications, Inc.**, Dallas, Tex.

[*] Notice: The term of this patent shall not extend beyond the expiration date of Pat. No. 5,539,810.

[21] Appl. No.: **573,135**

[22] Filed: **Dec. 15, 1995**

Related U.S. Application Data

[63] Continuation of Ser. No. 175,256, Dec. 28, 1993, Pat. No. 5,539,810, which is a continuation-in-part of Ser. No. 95,166, Jul. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 826,521, Jan. 27, 1992, abandoned.

[51] **Int. Cl.**[6] **H04Q 7/22**

[52] **U.S. Cl.** **455/456**; 455/414; 340/992

[58] **Field of Search** 379/58, 59, 60, 379/63; 455/33.1, 33.2, 54.1, 456, 457, 414, 403, 422, 466, 550, 564, 404; 340/988, 989, 992, 425.5, 431, 445, 447; 342/457, 357, 385, 386, 388, 389, 450

[56] **References Cited**

U.S. PATENT DOCUMENTS

H610	3/1989	Focarile et al.	379/60
Re. 34,034	8/1992	O'Sullivan	379/59

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

3767589	2/1993	Australia	G01S 5/02
0242099	10/1987	European Pat. Off. .	
0290725	11/1988	European Pat. Off. .	
0367935	5/1990	European Pat. Off. .	
3516357	11/1986	Germany	H04B 7/26
59-0161941	9/1984	Japan .	
63-0175537	7/1988	Japan .	
63-0219238	9/1988	Japan .	
0226226	9/1989	Japan .	
2193861	2/1988	United Kingdom .	
2221113	1/1993	United Kingdom .	
WO 8904035	5/1989	WIPO .	
WO 8912835	12/1989	WIPO	G01S 5/02

OTHER PUBLICATIONS

"Trimpack" Brochure, TrimbleNavigation, date unknown, 1 page.

Gary D. Ott, "Vehicle Location in Cellular Mobile Radio Systems,"*IEEE*, vol. VT–26, No. 1, Feb., 1977, pp. 43–46.

James C. Reynolds, et al., "GPS–Based Vessel Positioning Monitoring and Display System,"*IEEE*, 1990, pp. 601–607.

R. DeSadaba, "Personal Communications in the Intelligent Network," *British Telecommunications Engineering*, vol. 9, Aug., 1990, pp. 80–83.

"GPS Navstar Global Positioning System User's Overview—YEE–82–009D," *Navstar Positioning System Joint Program Office*, Mar., 1991, pp. 1–164.

"U. S. Coast Guard Differential GPS" Brochure, *U.S. Department of Transportation, United States Coast Guard*, May, 1993.

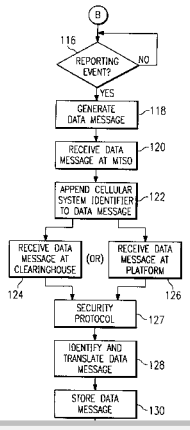
(List continued on next page.)

Primary Examiner—Dwayne Bost
Assistant Examiner—William G. Trost
Attorney, Agent, or Firm—Baker & Botts, L.L.P.

[57] **ABSTRACT**

A messaging unit **(16)** equipped with a cellular transceiver **(38)** is attached to a mobile item **(12)** located within a communications network **(10)**. The messaging unit **(16)** issues a feature request having data digits that represent information on the mobile item **(12)**. The cellular transceiver **(38)** transmits the feature request using the network **(10)**. The feature request is received at an MTSO **(20)** and then routed to a platform **(24)**, a clearinghouse **(22)**, or the platform **(24)** through the clearinghouse **(22)**. The data digits are translated into information on the mobile item **(12)** and stored at the platform **(24)** or the clearinghouse **(22)** for access by a host **(26)**.

43 Claims, 8 Drawing Sheets



DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

U.S. PATENT DOCUMENTS

3,518,674	6/1970	Moorehead et al.	343/112
3,680,121	7/1972	Anderson et al.	343/112 TC
3,714,650	1/1973	Fuller et al.	343/6.5 LC
3,757,290	9/1973	Ross et al.	340/23
3,789,409	1/1974	Easton	343/112 R
3,848,254	11/1974	Drebinger et al.	343/112 R
3,906,166	9/1975	Cooper et al.	179/41 A
3,937,892	2/1976	Bloch et al.	179/15 AL
3,973,200	8/1976	Akerberg	325/55
4,053,893	10/1977	Boyer	343/112 PT
4,083,003	4/1978	Haemming	325/6
4,107,689	8/1978	Jellinek	343/23
4,152,693	5/1979	Ashworth, Jr.	340/24
4,172,969	10/1979	Levine et al.	179/2 EC
4,177,466	12/1979	Reagan	343/112 TC
4,222,052	9/1980	Dunn	343/112 R
4,245,340	1/1981	Landry	370/111
4,263,480	4/1981	Levine	179/2 EC
4,428,052	1/1984	Robinson et al.	364/436
4,428,057	1/1984	Setliff et al.	364/521
4,435,711	3/1984	Ho et al.	343/389
4,445,118	4/1984	Taylor et al.	343/357
4,547,778	10/1985	Hinkle et al.	343/456
4,590,569	5/1986	Rogoff et al.	364/452
4,633,464	12/1986	Anderson	370/111
4,644,351	2/1987	Zabarsky et al.	340/825.44
4,646,082	2/1987	Engel et al.	340/825.54
4,651,157	3/1987	Gray et al.	342/457
4,654,879	3/1987	Goldman et al.	455/33
4,660,037	4/1987	Nakamura	340/990
4,670,905	6/1987	Sandvos et al.	455/33
4,688,244	8/1987	Hannon et al.	379/58
4,700,374	10/1987	Bini	379/60
4,713,808	12/1987	Gaskill et al.	370/94
4,734,928	3/1988	Weiner et al.	379/59
4,737,978	4/1988	Burke et al.	379/60
4,740,792	4/1988	Sagey et al.	342/457
4,742,357	5/1988	Rackley	342/457
4,750,197	6/1988	Denekamp et al.	379/58
4,754,465	6/1988	Trimble	375/1
4,774,670	9/1988	Palmieri	364/446
4,775,999	10/1988	Williams	379/59
4,776,003	10/1988	Harris	379/91
4,788,637	11/1988	Tamaru	364/200
4,791,571	12/1988	Takahashi et al.	364/436
4,791,572	12/1988	Green, III et al.	364/449
4,796,189	1/1989	Nakayama et al.	364/449
4,797,948	1/1989	Milliorn et al.	455/54
4,799,162	1/1989	Shinkawa et al.	364/436
4,804,937	2/1989	Barbiaux et al.	340/52 F
4,809,005	2/1989	Counselman, III	342/352
4,814,763	3/1989	Nelson	340/825.44
4,819,174	4/1989	Furuno et al.	364/444
4,823,123	4/1989	Siwiak	340/825.44
4,825,193	4/1989	Siwiak et al.	340/311.1
4,825,457	4/1989	Lebowitz	379/40
4,831,373	5/1989	Hess	340/825.03
4,833,477	5/1989	Tendler	342/389
4,833,701	5/1989	Comroe et al.	379/60
4,833,702	5/1989	Shitara et al.	379/60
4,837,800	6/1989	Freeburg et al.	379/59
4,843,575	6/1989	Crane	364/550
4,856,047	8/1989	Saunders	379/57
4,860,341	8/1989	D'Avello et al.	379/91
4,866,762	9/1989	Pintar	379/200
4,868,560	9/1989	Oliwa et al.	340/825.44
4,868,859	9/1989	Sheffer	379/39
4,875,038	10/1989	Siwiak et al.	340/825.44
4,884,208	11/1989	Marinelli et al.	364/460
4,891,637	1/1990	Siwiak et al.	340/825.44
4,891,650	1/1990	Sheffer	342/457
4,891,761	1/1990	Gray et al.	364/452
4,897,642	1/1990	DiLullo et al.	340/825.06
4,901,340	2/1990	Parker et al.	379/60
4,905,270	2/1990	Ono	379/58
4,907,290	3/1990	Crompton	455/56
4,908,629	3/1990	Apsell et al.	342/457
4,912,756	3/1990	Hop	379/60
4,914,651	4/1990	Lusignan	370/69.1
4,914,686	4/1990	Hagar, III et al.	379/61
4,928,096	5/1990	Leonardo et al.	340/825.44
4,940,963	7/1990	Gutman et al.	340/313
4,945,570	7/1990	Gerson et al.	381/110
4,953,198	8/1990	Daly et al.	379/61
4,963,865	10/1990	Ichikawa et al.	340/995
4,993,059	2/1991	Smith et al.	379/39
4,993,062	2/1991	Dula et al.	379/88
4,998,291	3/1991	Marui et al.	455/89
5,003,317	3/1991	Gray et al.	342/457
5,005,014	4/1991	Jasinski	340/825.44
5,008,814	4/1991	Mathur	364/200
5,014,206	5/1991	Scribner et al.	364/449
5,019,963	5/1991	Alderson et al.	364/200
5,025,253	6/1991	DiLullo et al.	340/825.06
5,027,383	6/1991	Sheffer	379/39
5,032,845	7/1991	Velasco	342/457
5,043,736	8/1991	Darnell et al.	342/357
5,045,861	9/1991	Duffett-Smith	342/457
5,046,082	9/1991	Zicker et al.	379/59
5,047,763	9/1991	Kuznicki et al.	340/825.44
5,048,015	9/1991	Zilberfarb	370/110.4
5,055,851	10/1991	Sheffer	342/457
5,058,201	10/1991	Ishii et al.	455/33
5,068,656	11/1991	Sutherland	340/989
5,077,830	12/1991	Mallia	455/58
5,090,050	2/1992	Heffernan	379/60
5,101,500	3/1992	Marui	455/33
5,119,102	6/1992	Barnard	342/357
5,121,126	6/1992	Clagett	342/419
5,121,325	6/1992	DeJonge	364/442
5,124,697	6/1992	Moore	340/825.44
5,128,979	7/1992	Reich et al.	379/40
5,131,019	7/1992	Sheffer et al.	379/39
5,131,020	7/1992	Liebesny et al.	379/59
5,142,279	8/1992	Jasinski et al.	340/825.44
5,142,281	8/1992	Park	340/991
5,142,654	8/1992	Sonberg et al.	379/59
5,148,473	9/1992	Freeland et al.	379/59
5,153,582	10/1992	Davis	340/825.44
5,153,902	10/1992	Buhl et al.	379/57
5,153,903	10/1992	Eastmond et al.	379/57
5,155,490	10/1992	Spradley, Jr. et al.	342/357
5,155,847	10/1992	Kirouac et al.	395/600
5,159,625	10/1992	Zicker	379/59
5,162,790	11/1992	Jasinski	340/825.44
5,166,694	11/1992	Russell et al.	342/457
5,172,321	12/1992	Ghaem et al.	364/444
5,175,758	12/1992	Levanto et al.	379/57
5,208,756	5/1993	Song	364/449
5,222,123	6/1993	Brown et al.	379/57
5,223,844	6/1993	Mansell et al.	342/357
5,225,842	7/1993	Brown et al.	342/357
5,235,598	8/1993	Sasuta	370/110.1
5,235,633	8/1993	Dennison et al.	379/60
5,237,612	8/1993	Raith	380/23
5,239,294	8/1993	Flanders et al.	340/825.34
5,239,678	8/1993	Grube et al.	455/34.1

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

5,247,564	9/1993	Zicker	379/40
5,247,700	9/1993	Wohl et al.	455/33.1
5,248,215	9/1993	Fladung	404/6
5,252,982	10/1993	Frei	342/357
5,255,306	10/1993	Melton et al.	379/38
5,261,118	11/1993	Vanderspool, II et al.	455/51.2
5,270,936	12/1993	Fukushima et al.	364/444
5,276,729	1/1994	Higuchi et al.	379/58
5,278,890	1/1994	Beeson et al.	379/57
5,293,163	3/1994	Kakihara et al.	340/995
5,295,178	3/1994	Nickel et al.	379/58
5,297,191	3/1994	Gerszberg	379/59
5,297,192	3/1994	Gerszberg	379/59
5,299,132	3/1994	Wortham	364/460
5,305,466	4/1994	Taketsugu	455/33.1
5,307,509	4/1994	Michalon et al.	455/54.1
5,311,194	5/1994	Brown	342/357
5,323,322	6/1994	Mueller et al.	364/449
5,327,478	7/1994	Lebowitz	379/40
5,341,410	8/1994	Aron et al.	379/59
5,343,493	8/1994	Karimullah	375/1
5,365,516	11/1994	Jandrell	370/18
5,369,681	11/1994	Boudreau et al.	379/87
5,377,193	12/1994	Grube et al.	370/95.1
5,382,970	1/1995	Kiefl	348/1
5,392,458	2/1995	Sasuta et al.	455/54.1
5,396,539	3/1995	Slekys et al.	379/59
5,396,540	3/1995	Gooch	379/59
5,404,392	4/1995	Miller et al.	379/60
5,404,395	4/1995	Miller et al.	379/60
5,410,737	4/1995	Jones	455/56.1
5,420,911	5/1995	Dahlin et al.	379/59
5,423,056	6/1995	Linquist et al.	455/33.1
5,463,672	10/1995	Kage	379/59
5,506,886	4/1996	Maine et al.	379/57
5,513,243	4/1996	Kage	379/58
5,517,690	5/1996	Linquist	455/33.1
5,519,621	5/1996	Wortham	379/59 X
5,526,398	6/1996	Okada et al.	379/57
5,533,094	7/1996	Sanmugam	379/57
5,546,444	8/1996	Roach, Jr. et al.	379/59
5,594,740	1/1997	LaDue	379/59

OTHER PUBLICATIONS

"GPS Facts & Figures" Brochure, *U.S. Department of Transportation*, United States Coast Guard, May, 1993.

D. H. Alsip, J. M. Butler, and J. T. Radice, "Implementation of the U.S. Coast Guard's Differential GPS Navigation Service," *U. S. Coast Guard Headquarters, Office of Navigation Safety and Waterway Services Radionavigation Division*, Jun. 28, 1993, pp. 1–10.

"Motorola GPS Technical Reference Manual," *Motorola*, Oct., 1993, Manual Cover, Title Page, and pp. 4–109.

Don Burtis, "CDPD—A Bandwidth Optimization Technique for Cellular Telephones," *Computer Design's OEM Integration*, May, 1994, pp, 19–20.

"U.S. Coast Guard Bulletin Board System File 'FRP–DGPS,'" *U.S. Coast Guard*, Date Unknown, pp. 1–6.

Gene L. Schlechte, LCDR, "U.S. Coast Guard Bulletin Board System Document 'Design.txt'—Design Process for the United States Coast Guard's Differential GPS Navigation Service," *U.S. Coast Guard, U.S. Coast Guard Omega Navigation System Center*, Date Unknown, pp. 1–21.

"Appendix B, The 1991 Radionavigational User Conference," *Department of Transportation*, Date Unknown, pp. 1–2.

Kirk Ladendorf, First in Flight—Using State–Of–The–Art Technology, Austin–Based Arrowsmith, Technologies Establishes Itself As A Major Player in Nascent Technology–Supplier Market, *Austin America–Statesman*, Jan. 30, 1995, 3 pages.

International Patent Search dated Jun. 20, 1995, PCT/US94/08351.

Michel Mouly and Marie–Bernadette Pautet, *The GSM System*, 1992, pp. 56–59.

European Telecommunications Standard ETS 300 537, GSM Global System For Mobile Communications—Digital cellular telecommunications system (Phase 2); Technical realization of Short Message Service Cell Broadcast (SMSCB) (GSM 03.41), *European Telecommunications Standards Institiute*, May, 1996, 32 pages.

European Telecommunications Standard ETS 300 536, GSM Global System For Mobile Communications—Digital cellular telecommunications system (phase 2); Technical realization of the Short Message Service (SMS) Point–to–Point (PP) (GSM 03.40), *European Telecommunications Standards Institute*, Oct. 1996, 106 pages.

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

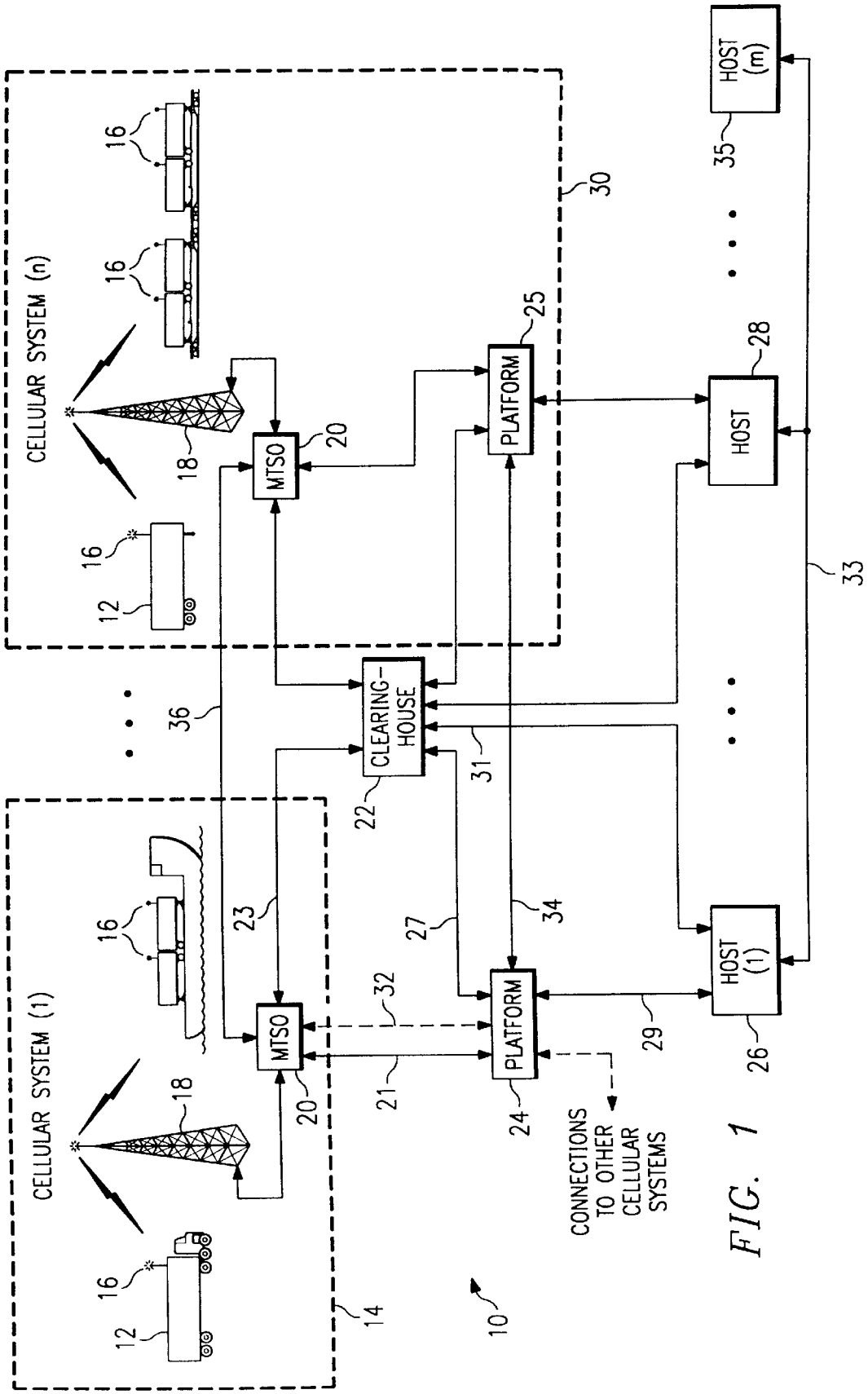


FIG. 1

DOCKET ALARM Find authenticated court documents without watermarks at docketalarm.com.

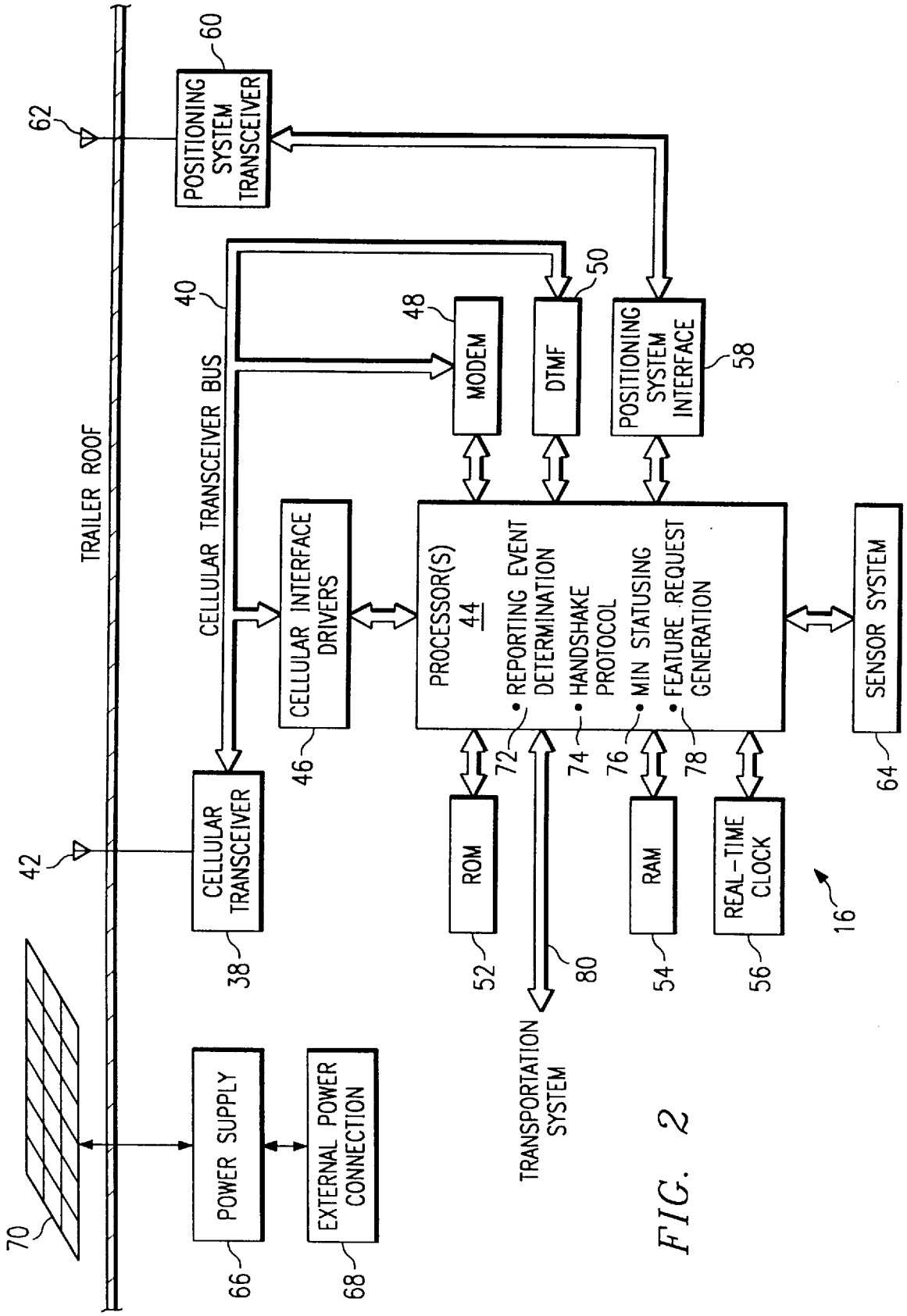


FIG. 2

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

DOCKET ALARM

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.