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United States Patent [19]

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Sheffer et al.

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[54] **MOBILE TELEPHONE LOCATION SYSTEM AND METHOD**

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[73] Assignee: **Trackmobile, Inc.**, San Diego, Calif.

0417944 3/1991 European Pat. Off. .

[21] Appl. No.: **543,031**

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Attorney, Agent, or Firm—Brown, Martin, Haller & McClain, LLP

[22] Filed: **Oct. 13, 1995**

[57] ABSTRACT

[51] **Int. Cl.⁶** **G01S 3/02**

[52] **U.S. Cl.** **342/457; 455/32.1; 455/33.1**

[58] **Field of Search** **342/457; 455/32.1, 455/33.1, 54.1, 56.1**

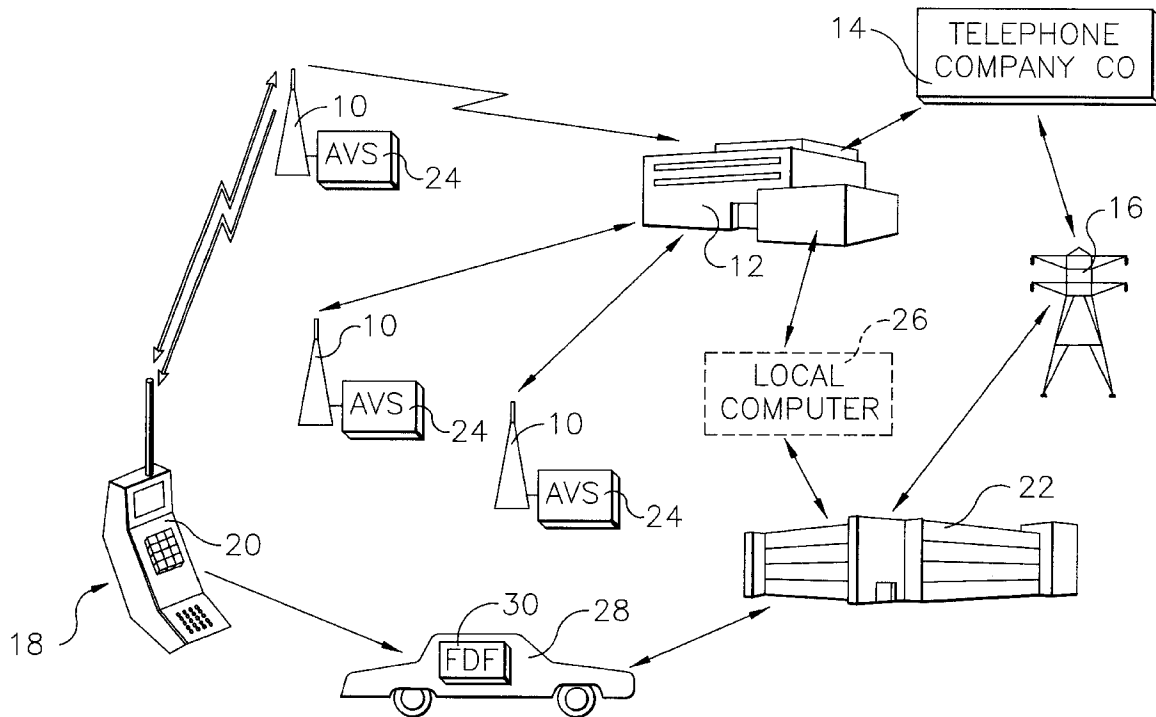
A wireless network based location system and method uses an existing wireless communication network to locate the position of any active phone or transceiver unit in the network. The system includes a plurality of agile vector sensor units, one each installed at each antenna site in the network, and a remote central monitoring station to which wireless network users can call for assistance in the event of an emergency. The system is designed to locate a portable phone transceiver unit using the reverse voice channel signal transmitted by the transceiver unit. Each agile vector sensor unit locks onto the reverse voice channel to determine azimuth and signal strength in the reverse voice channel, and also tracks any changes in voice channel by monitoring the forward voice channel. In the event of a voice channel change, the sensor unit tunes to the new voice channel. The azimuth, signal strength, and reverse voice channel information collected is used to track the location of a transceiver unit in real time.

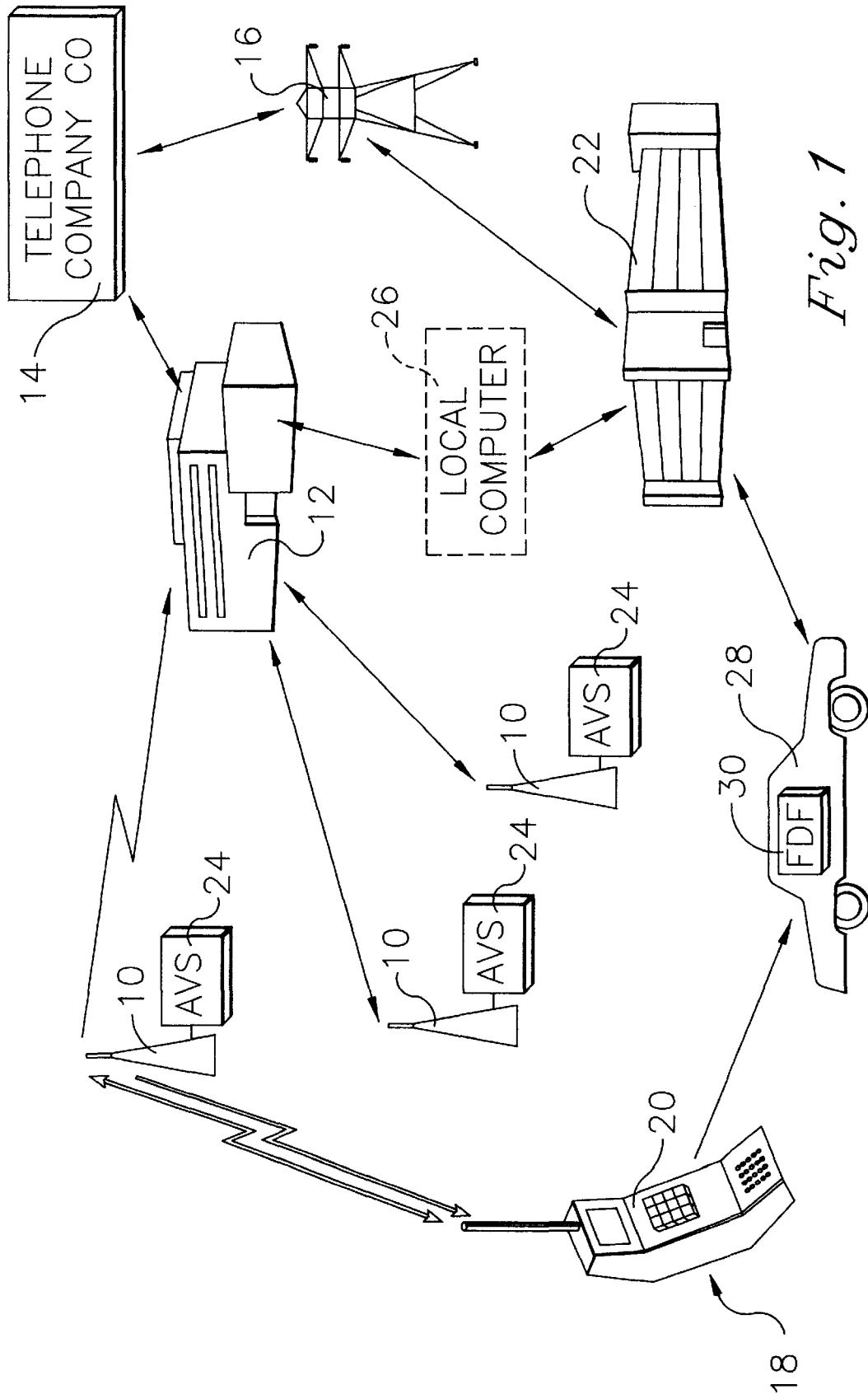
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25 Claims, 13 Drawing Sheets





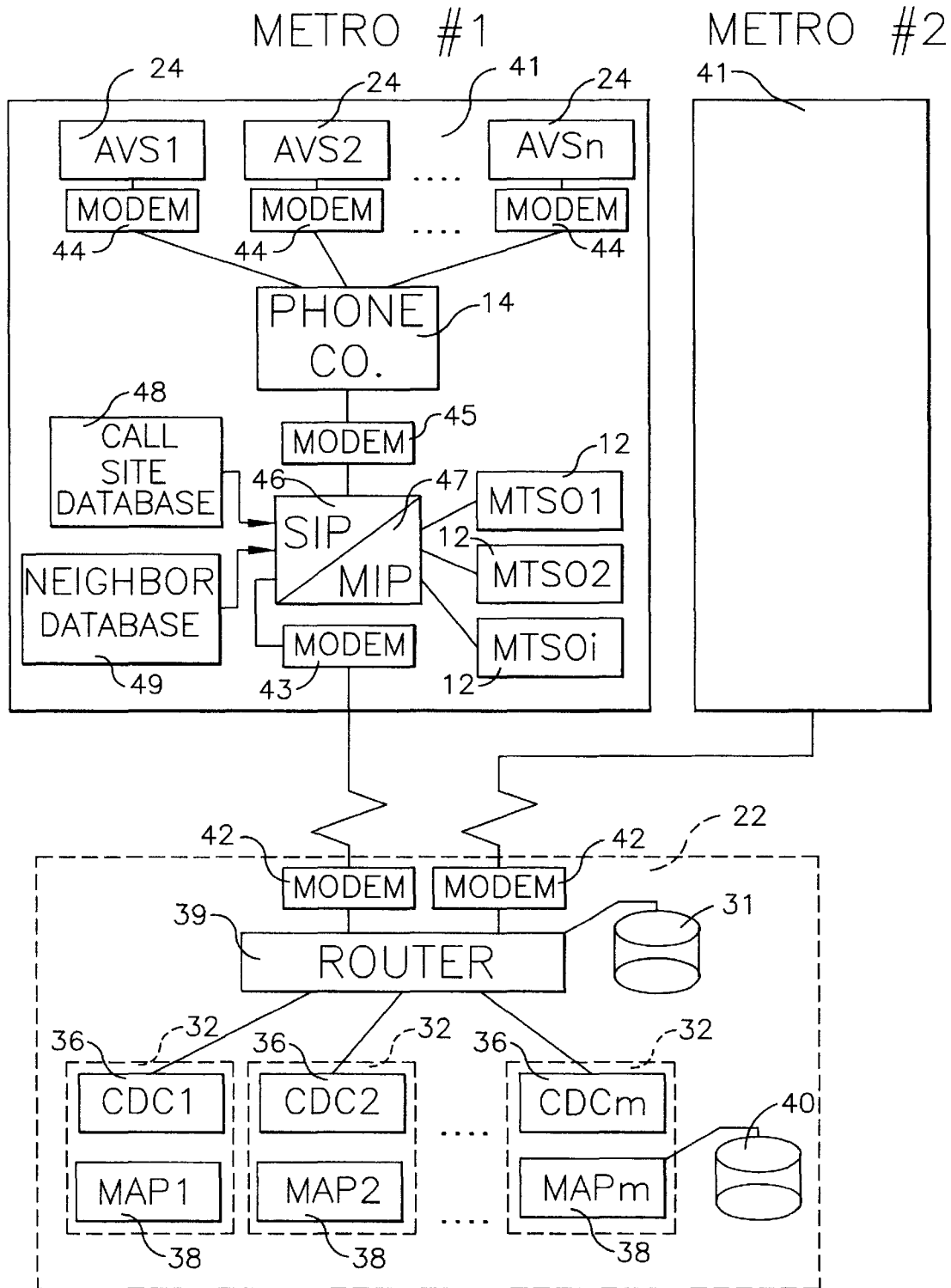


Fig. 2

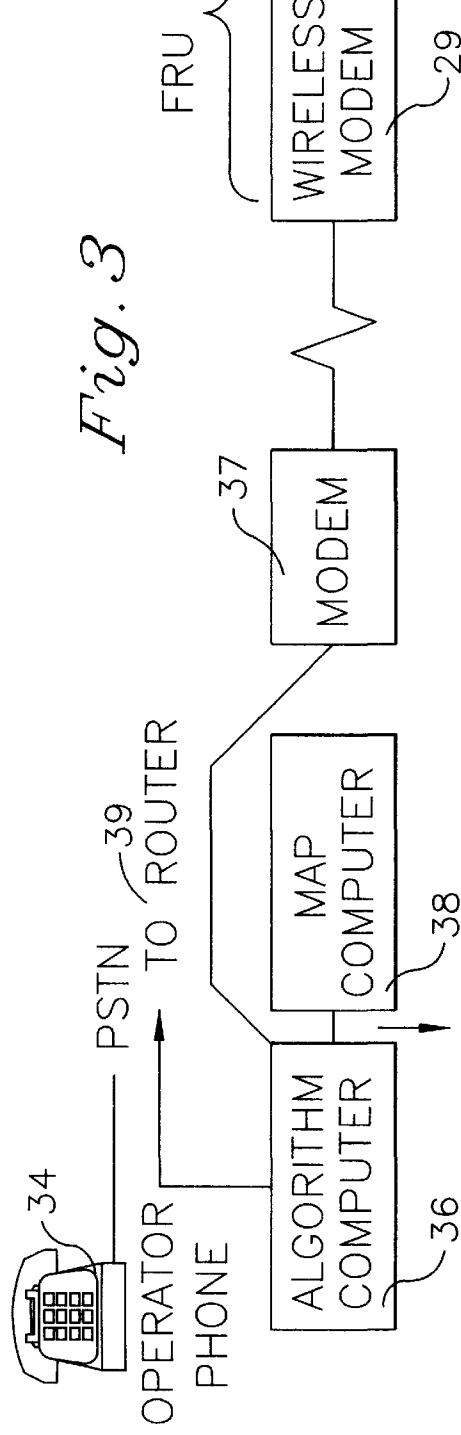
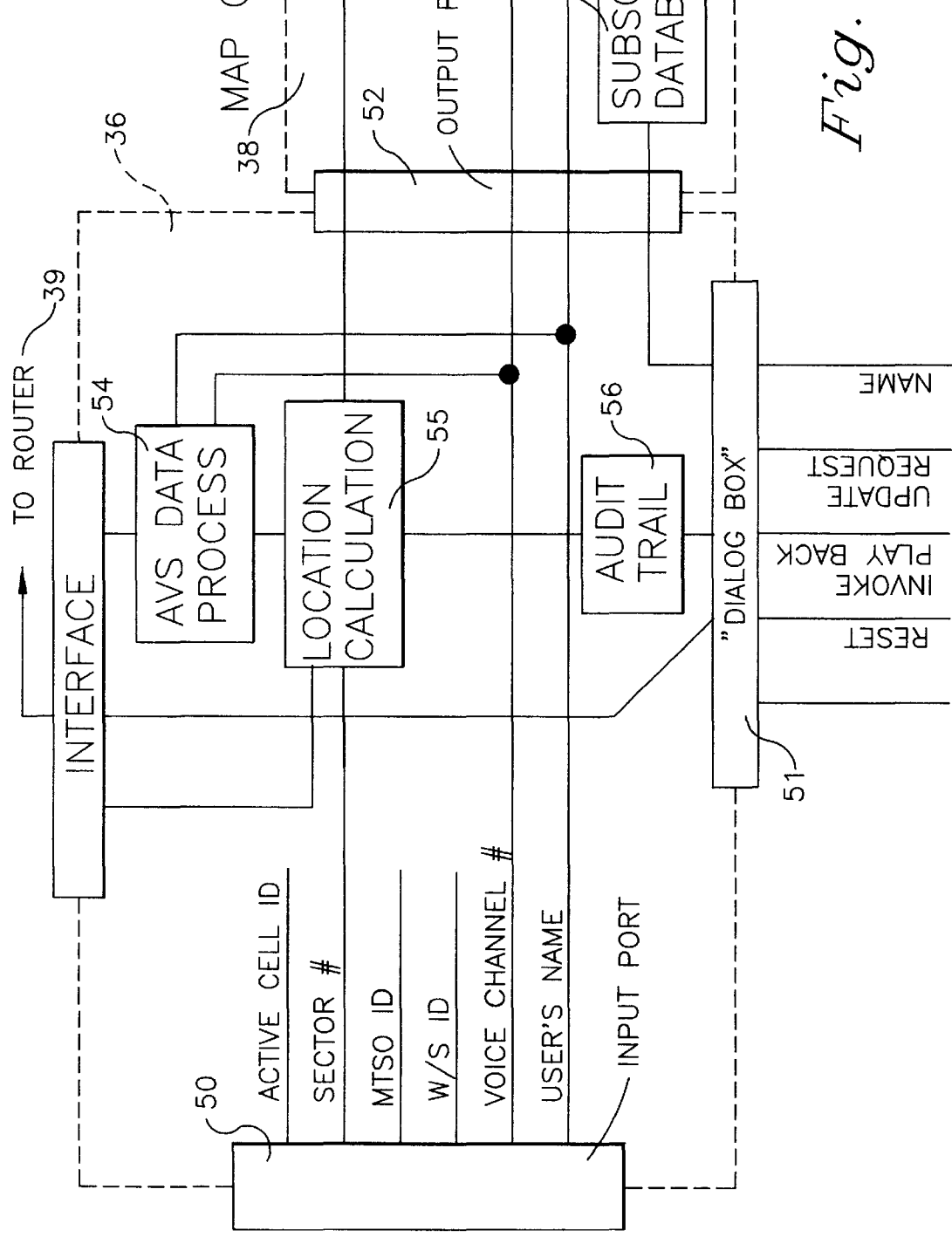


Fig. 3

71		72		73		74		75		76		77	
TIME	STAMP	Ch.#	RSSI	AZIMUTH	MIN1	MIN2	VMC	SCC					
1111001..1110110		1	-88	10									
1111001..1110111		2	-86	320									
1111001..1111000		7	-94	17									
1111001..1111000		100	-45	27									
1111001..1111000		103			XXX	YYY	6	2					
1111001..1111000		25					2	1					
1111001..0001000		1023	-75	33	ABC	DEF	3	1					

Fig. 6



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