

US006201544B1

## (12) United States Patent Ezaki

(10) Patent No.: US 6,201,544 B1

(45) **Date of Patent:** Mar. 13, 2001

(54)	LOCATION FLOOR NUMBER DISPLAY
	DEVICE IN NAVIGATION APPARATUS

(75) Inventor: Toru Ezaki, Tokyo (JP)

(73) Assignee: Alpine Electronics, Inc., Tokyo (JP)

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/132,010

(22) Filed: Aug. 10, 1998

## (30) Foreign Application Priority Data

(51)	Int. Cl. <sup>7</sup> .			G06T	11/40
(52)	U.S. Cl		345/4	33; 34	5/439;
		345/427	; 345/3	355; 3	45/357

Aug. 11, 1997 (JP) ...... 9-216279

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<sup>\*</sup> cited by examiner

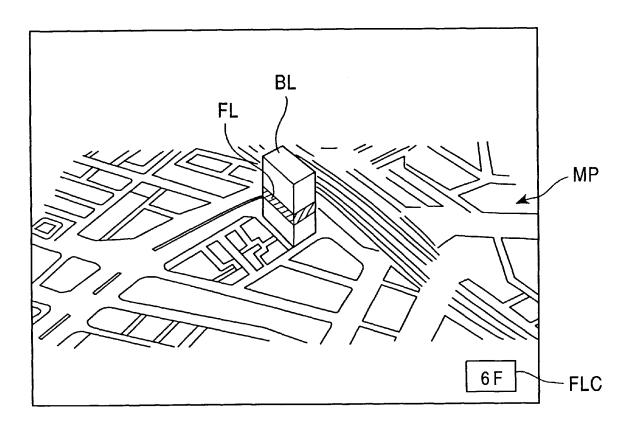
Primary Examiner—Mark Zimmerman Assistant Examiner—Kimbinh T. Nguyen

(74) Attorney, Agent, or Firm—Brinks Hofer Gilson & Lione

### (57) ABSTRACT

A detailed map is displayed on a display screen by using detailed map information. When a building BL on the detailed map is indicated, a user name list of the building is calculated from building information to display the user name list on a part of the display screen, and a detailed map MP displayed on another part of the display screen is inclined by a birds-eye process to be displayed. The indicated building BL is displayed three-dimensionally with a height corresponding to the number of its floors. When a user is specified from the user name list, the floor number of a floor on which the user is located is calculated from the building information. The floor is displayed by an L-shaped mark FL in the three-dimensionally displayed building such that the number of floors can be identified, and/or the floor number is displayed by the characters FLC.

## 30 Claims, 14 Drawing Sheets





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FIG. 1

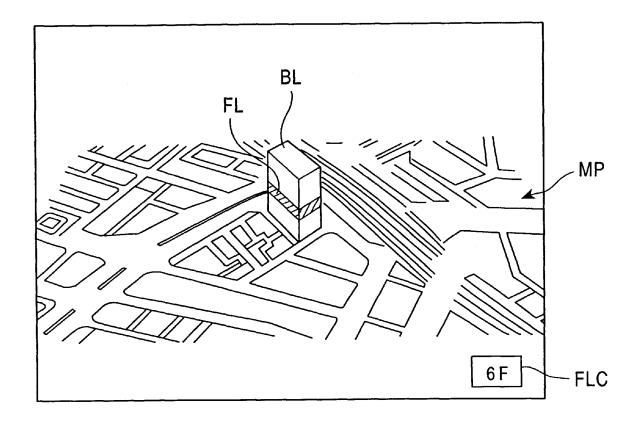




FIG. 2

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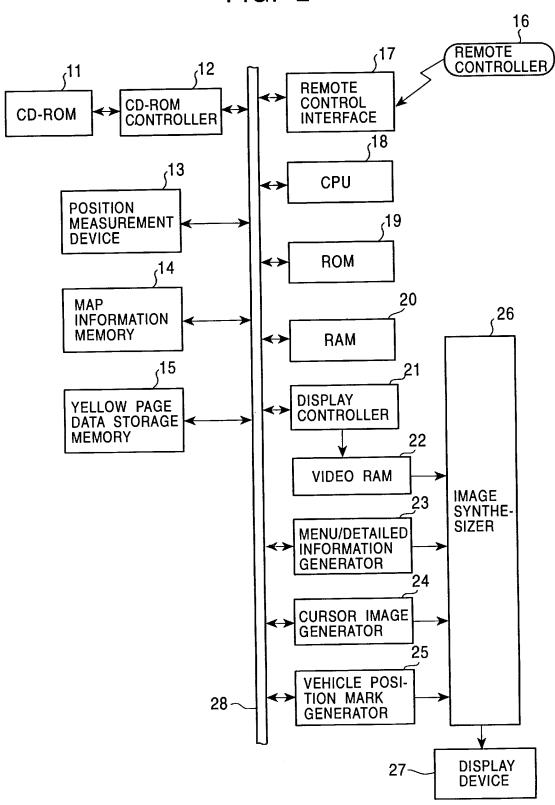
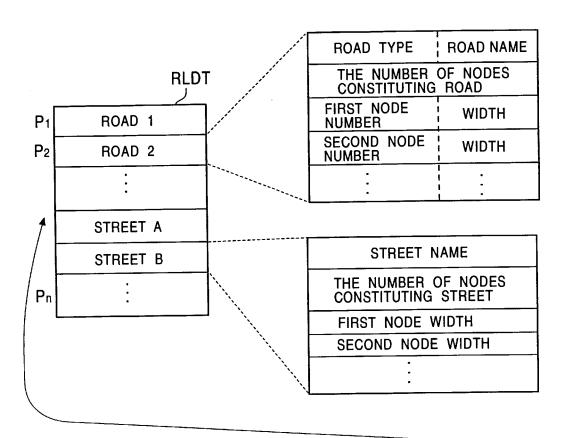




FIG. 3

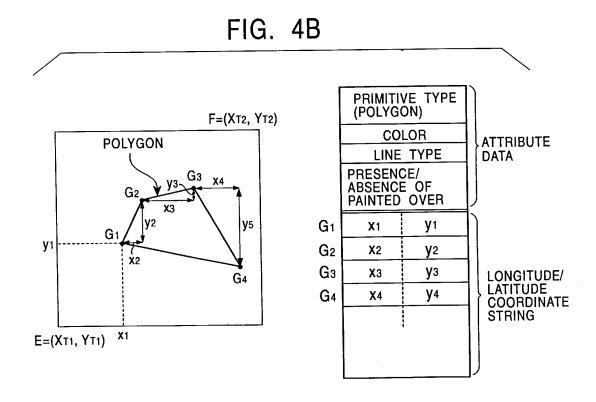


	CRDT		NODE NUMBE	R ND	DT	
Q <sub>1</sub>	SET OF NODE NUMBERS OF OTHER END NODES OF LINK CONSTITUTING		COORDINATE	INTERSECTION IDENTIFICATION FLAG	POINTER	
F	FIRST INTERSECTION	1	LONGITUDE ·	0	Pn -	
Q2	SET OF NODE NUMBERS OF OTHER END NODES OF LINK CONSTITUTING SECOND INTERSECTION	2	LONGITUDE ·	1	Qi -	
	SECOND INTERSECTION					1
				i :		
<b>Q</b> i	SET OF NODE NUMBERS OF OTHER END NODES OF LINK CONSTITUTING			÷		
	i TH INTERSECTION			0		
	:					

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FIG. 4A PRIMITIVE TYPE F=(XT2, YT2) (LINE) **COLOR** ATTRIBUTE LINE TYPE DATA LINE G1 **y**1 **X**1 G2 y2 **X**2 **y**1 Gз ХЗ уз LONGITUDE/ LATITUDE COORDINATE **STRING** E=(XT1, YT1)



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