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United States Patent [19]

Lefebvre

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[54] **LAND VEHICLE NAVIGATION APPARATUS WITH VISUAL DISPLAY**

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[21] Appl. No.: **581,495**

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[51] **Int. Cl.**[5] **G06F 15/50**

[52] **U.S. Cl.** **364/449**; 364/444; 340/990; 340/995

[58] **Field of Search** 340/988, 990, 995, 996, 340/701, 703, 721, 729; 364/449, 444, 443, 446, 424.01, 424.02; 395/103, 127, 128, 135, 138, 139

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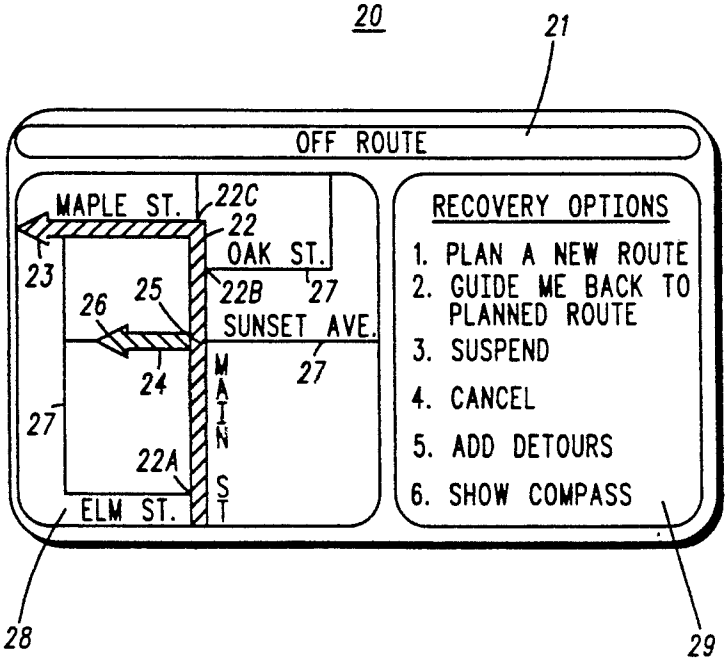
[57] **ABSTRACT**

Land vehicle navigation apparatus (**10**) with a visual display (**16, 20**) is provided. The apparatus provides a visual display of a calculated navigation route (**22**) with a visual indication (**23**) of the direction of desired travel along the navigation route. An off route map display portion (**28**) is provided which has the visual navigation route display (**22**) in one color and, in a second contrasting color, a visual display (**24, 26**) of actual vehicle travel. A separate additional feature is that an off route display (**20**) provides a visual display portion (**29**) of a plurality of operator selectable off route recovery options (**1–6**). Off route recovery means (**12, 49–63**) are provided such that the vehicle operator can implement the visually displayed recovery options. The result is a navigation system which visually provides vehicle navigation information to the vehicle operator in an improved minimal comprehension time format, and allows the vehicle operator to select for himself how to recover from an off route condition.

37 Claims, 4 Drawing Sheets



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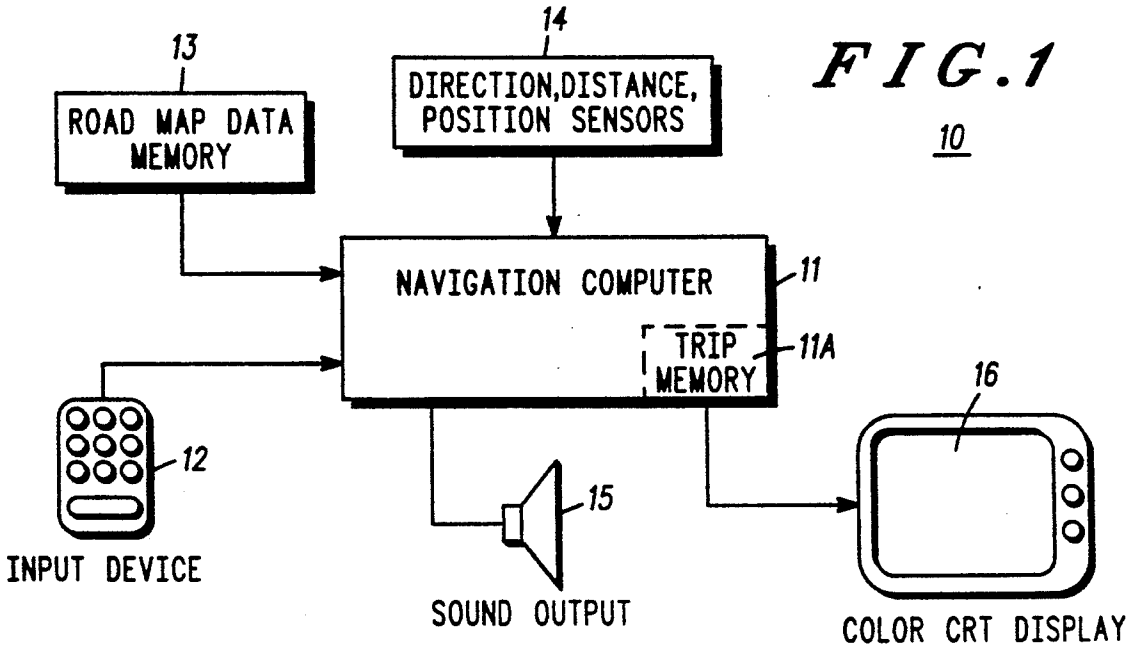
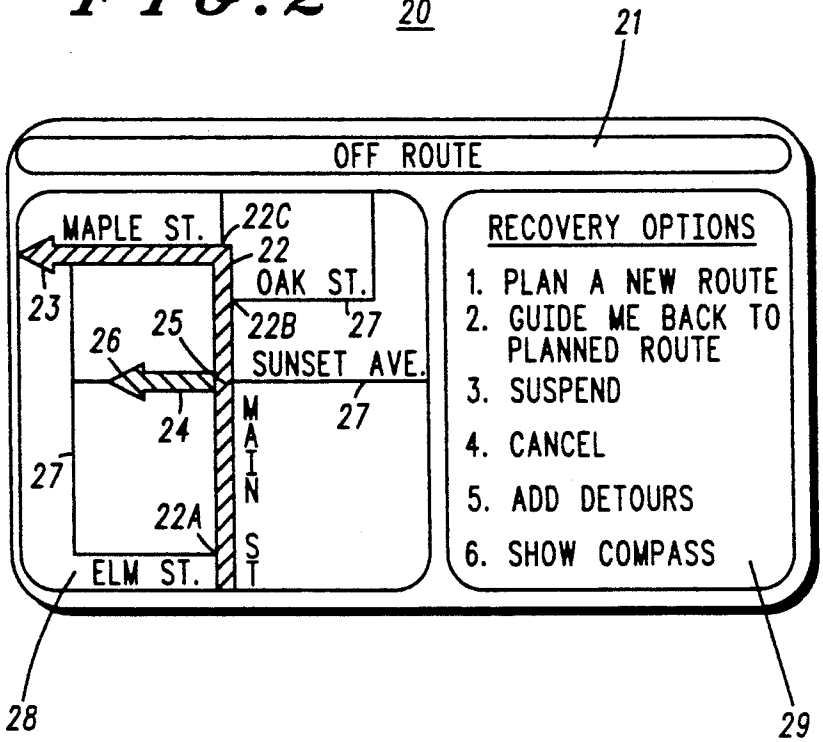


FIG. 1

10

FIG. 2

20



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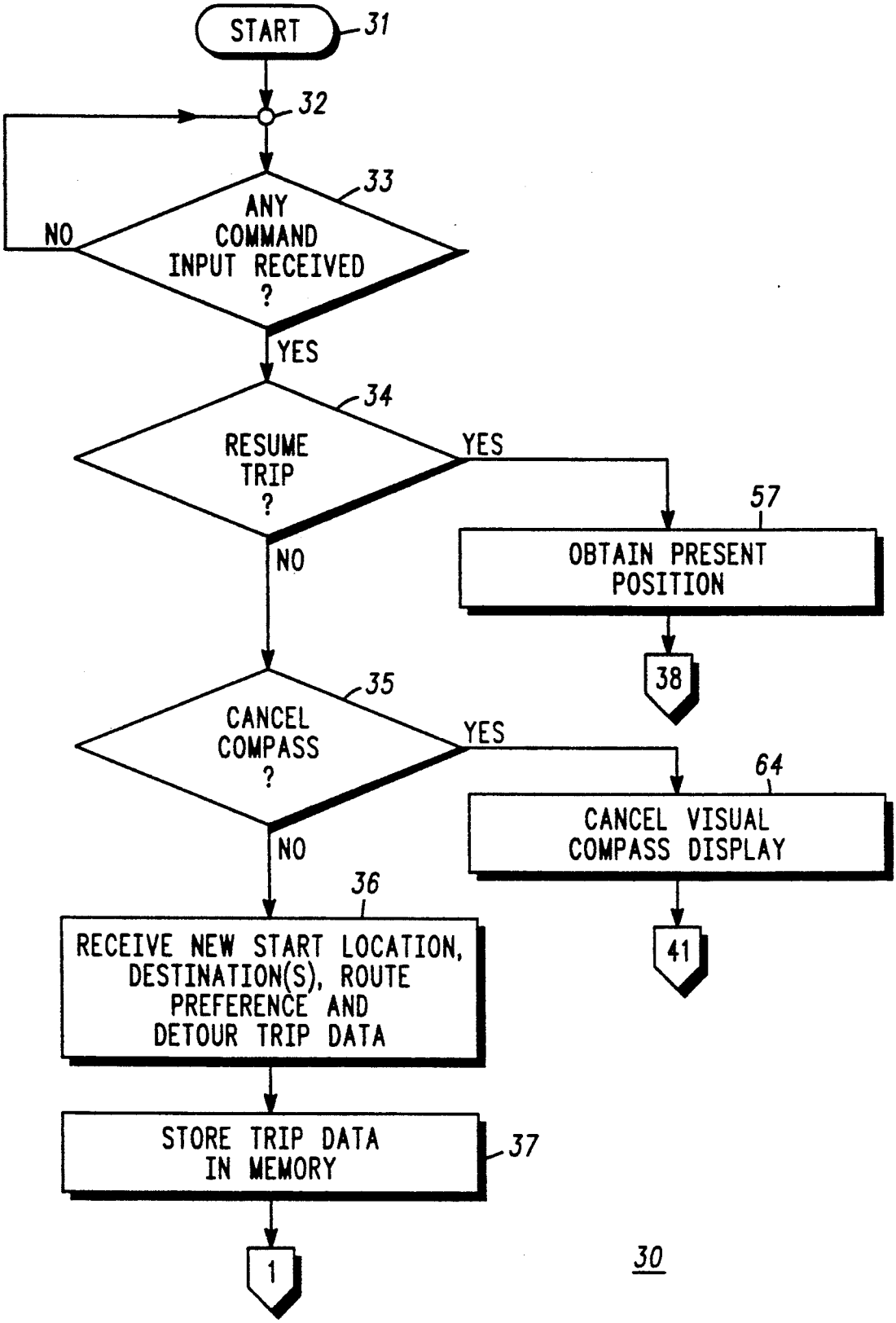

FIG. 3A

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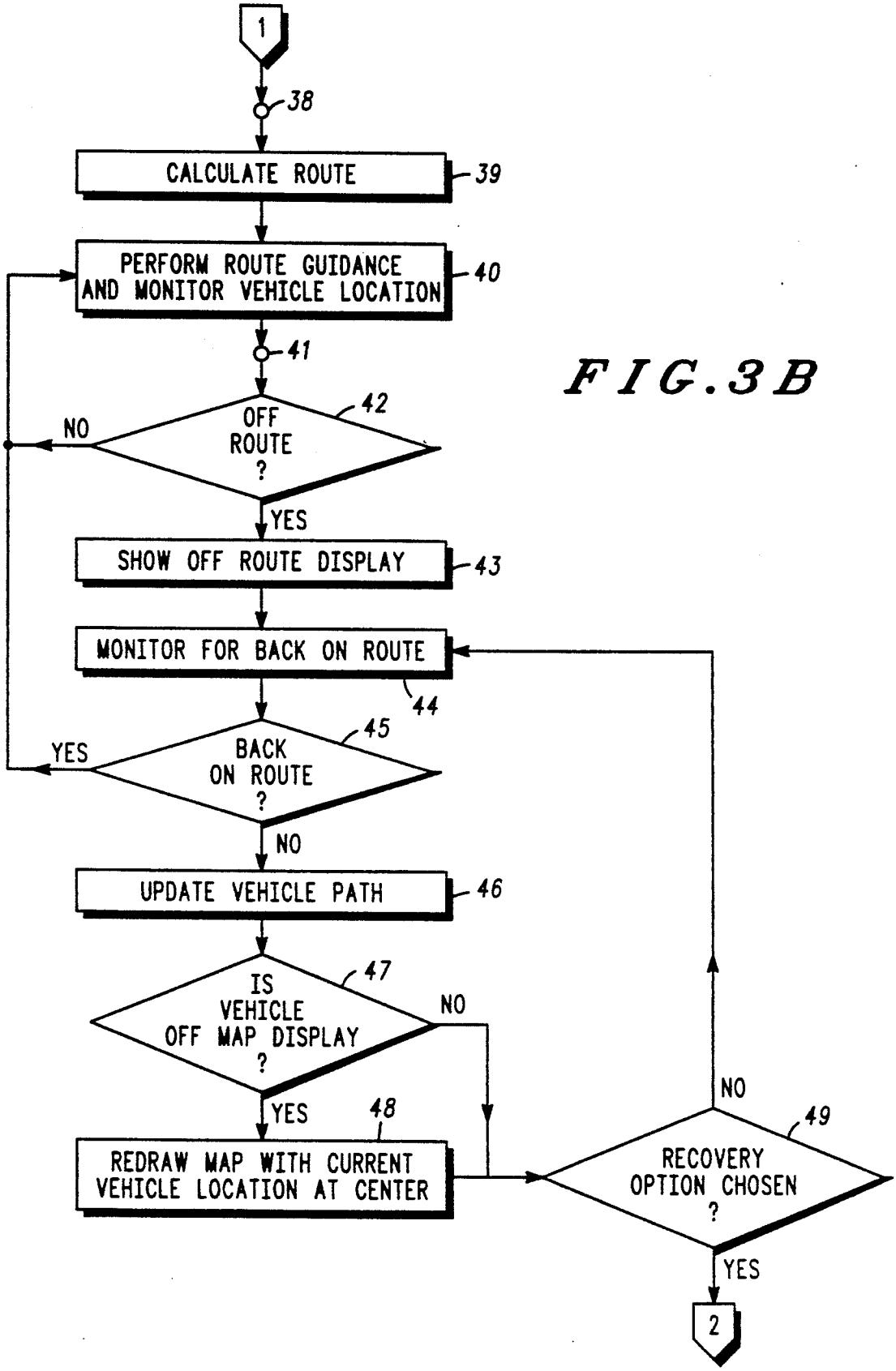

FIG. 3B

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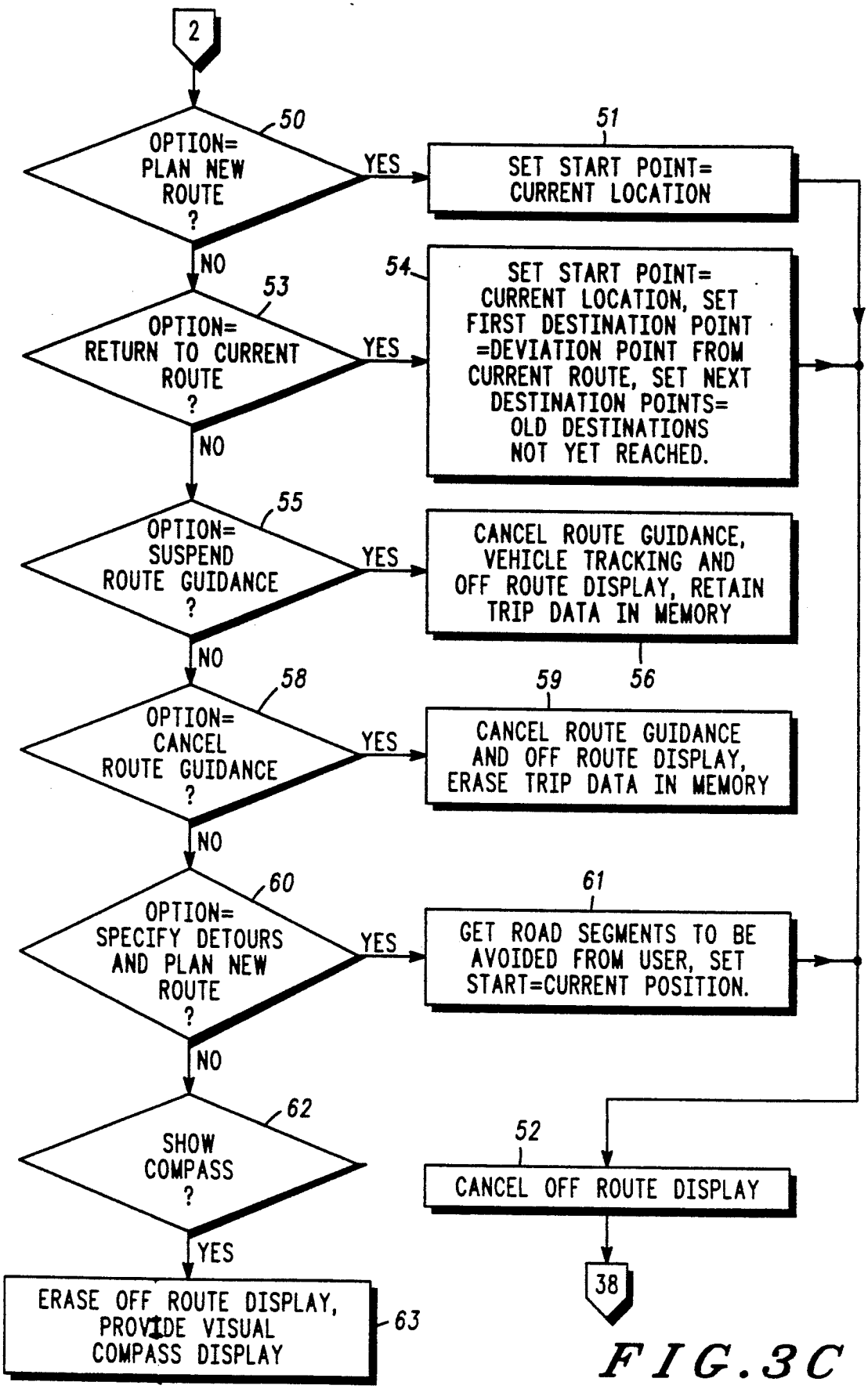

FIG. 3C

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