



US006778074B1

(12) **United States Patent**
Cuozzo

(10) **Patent No.:** **US 6,778,074 B1**
(45) **Date of Patent:** **Aug. 17, 2004**

(54) **SPEED LIMIT INDICATOR AND METHOD FOR DISPLAYING SPEED AND THE RELEVANT SPEED LIMIT**

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(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 114 days.

5,485,161 A	*	1/1996	Vaughn	342/357.13
5,680,306 A	*	10/1997	Shin et al.	180/167
5,819,198 A	*	10/1998	Peretz	701/117
D411,122 S	*	6/1999	Velazquez	D10/98
5,995,895 A	*	11/1999	Watt et al.	701/50
6,134,499 A	*	10/2000	Goode et al.	701/93
6,161,072 A	*	12/2000	Clapper	701/93
6,265,989 B1	*	7/2001	Taylor	340/901
6,515,596 B2	*	2/2003	Awada	340/905

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Primary Examiner—Nina Tong

(21) **Appl. No.:** **10/100,378**

(22) **Filed:** **Mar. 18, 2002**

(51) **Int. Cl.**⁷ **B60Q 1/00**

(52) **U.S. Cl.** **340/441; 340/905; 340/988**

(58) **Field of Search** 340/441, 905, 340/438, 901, 988; 701/117, 119, 202

(56) **References Cited**

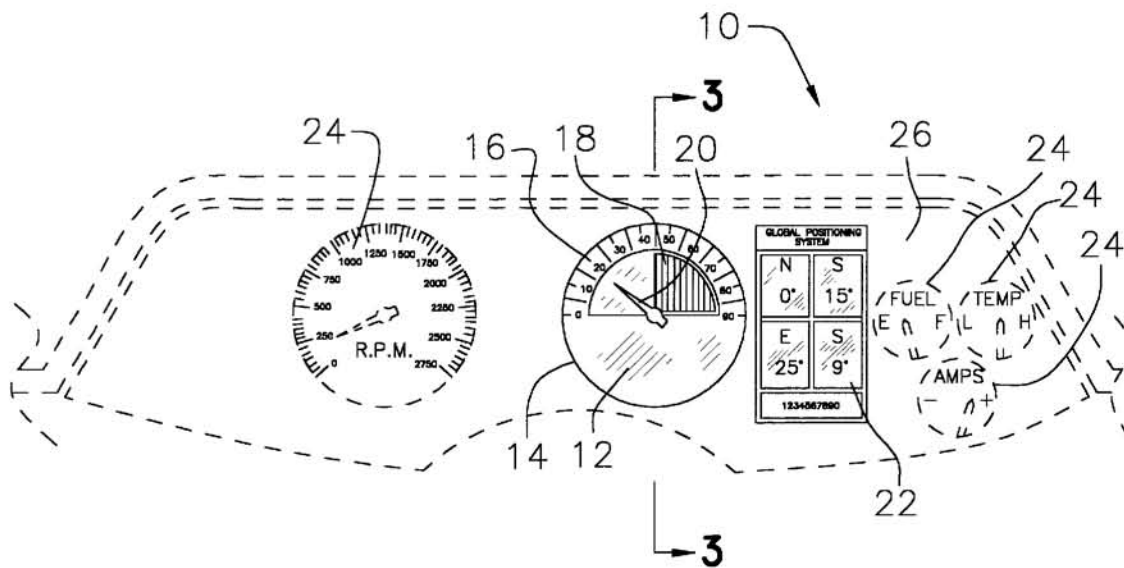
U.S. PATENT DOCUMENTS

4,315,295 A	*	2/1982	Zocholl	361/96
D270,339 S	*	8/1983	Boleis	D10/125
4,935,850 A	*	6/1990	Smith, Jr.	362/27

(57) **ABSTRACT**

Speed limit indicators and methods for determining speed, the relevant speed limit, and displaying same make it easy for the driver of a vehicle to compare his current speed with the legal limit for the location in which he is traveling. This eliminates the need for the driver to take his eyes off the road to look for speed limit signs, thereby reducing the chance of an accident, and resolves any confusion that might exist as to what the current legal limit is. An audible warning of excessive speed reduces the amount of time the driver needs to spend examining the speedometer.

20 Claims, 3 Drawing Sheets



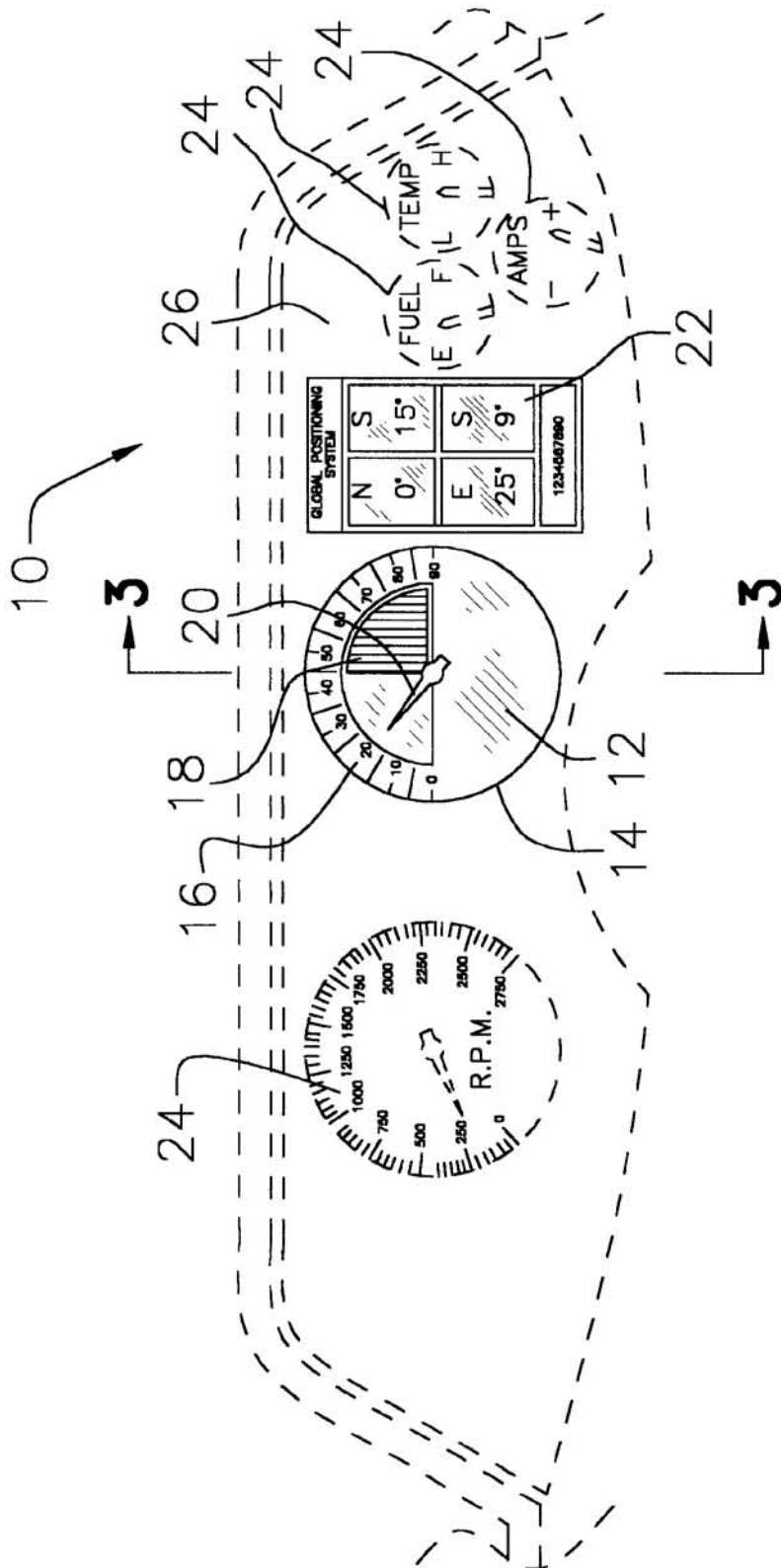


FIG. 1

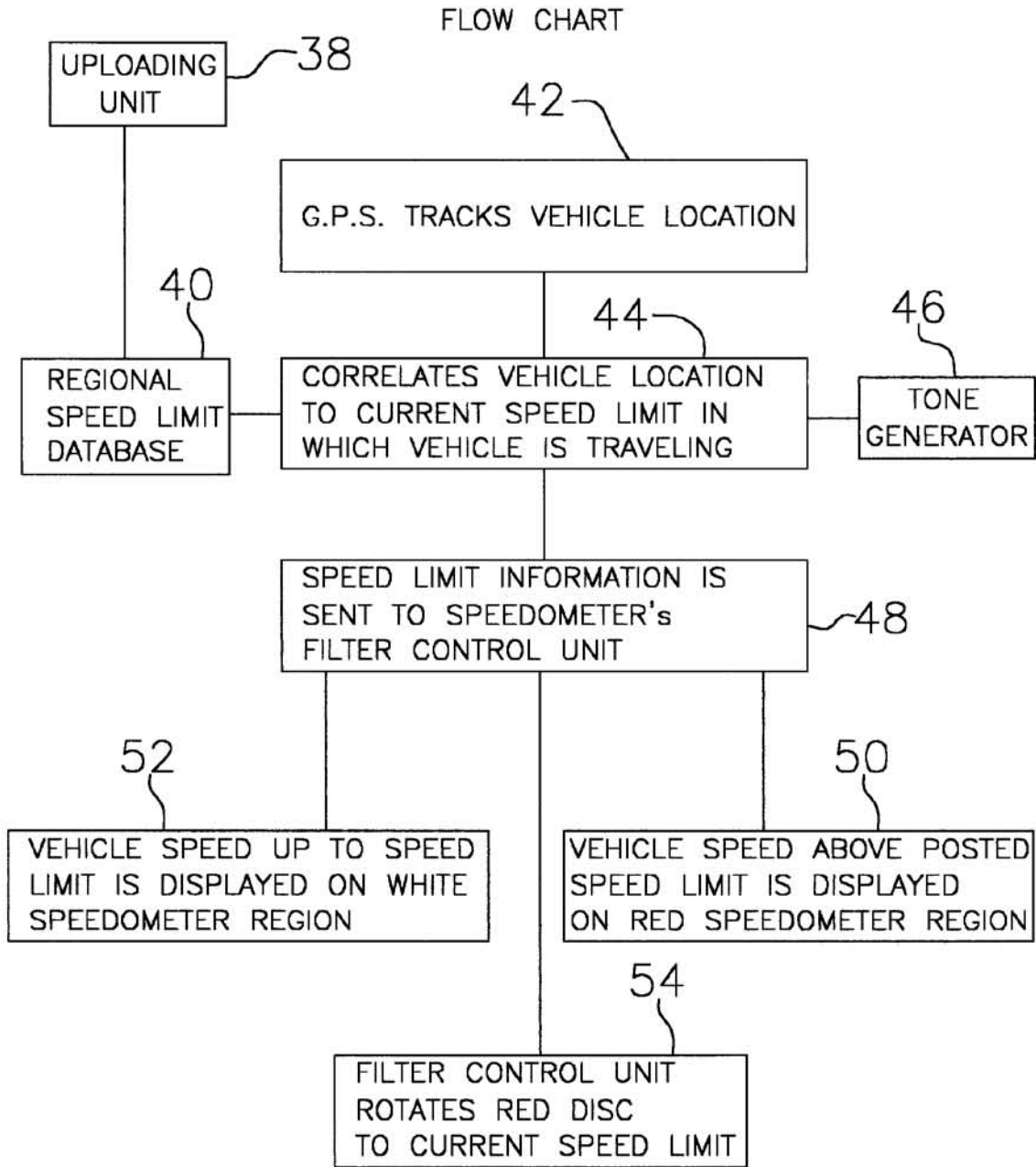


FIG. 2

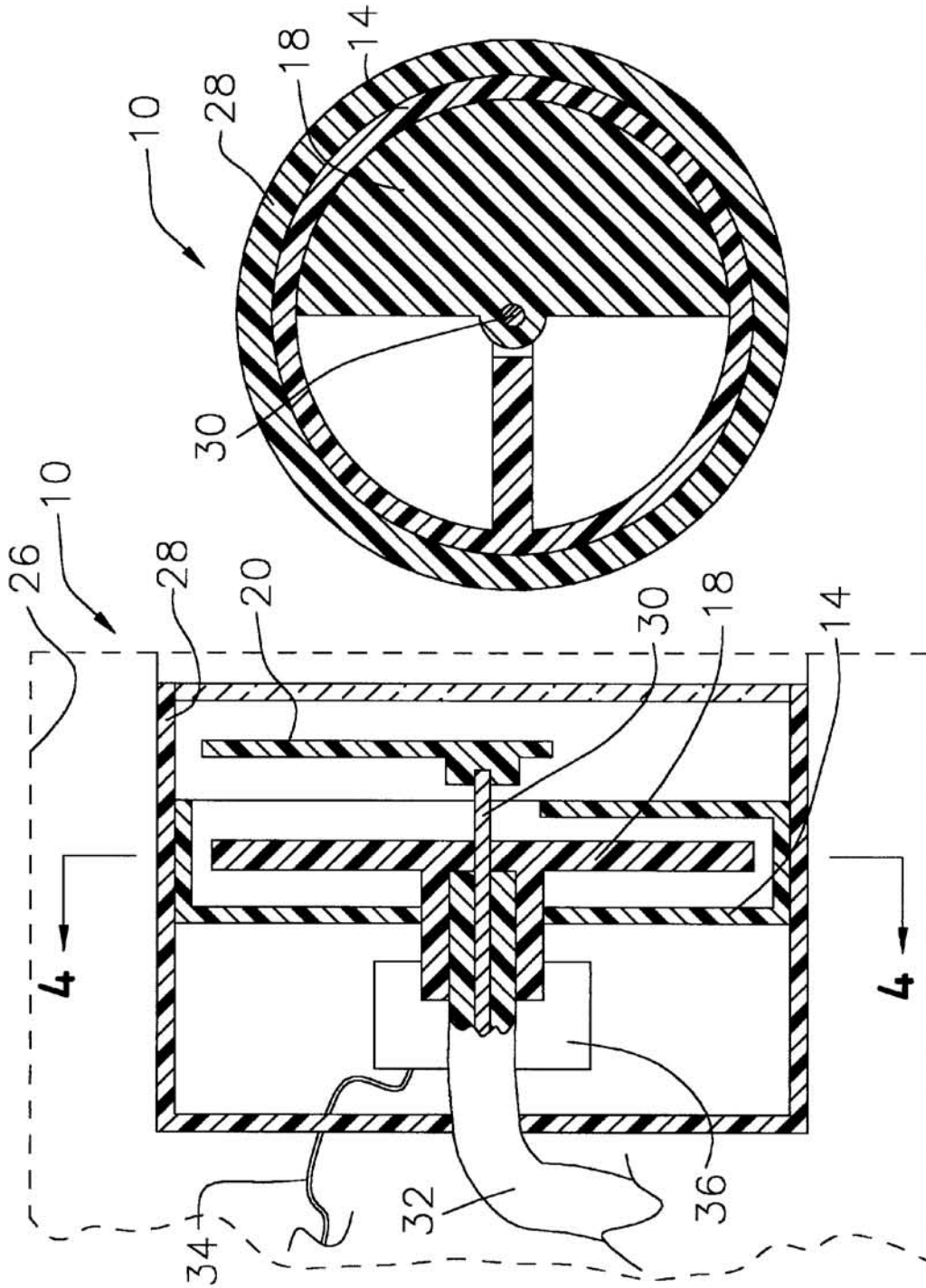


FIG. 4

FIG. 3

SPEED LIMIT INDICATOR AND METHOD FOR DISPLAYING SPEED AND THE RELEVANT SPEED LIMIT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a speed limit indicator and method for displaying speed and the relevant speed limit for use in connection with vehicles. The speed limit indicator and method for displaying speed and the relevant speed limit has particular utility in connection with displaying the current speed of a vehicle and how it relates to the legal speed limit for the current location in which the vehicle is traveling.

2. Description of the Prior Art

Speed limit indicators and methods for determining speed, the relevant speed limit, and displaying same are desirable for making it easy for the driver of a vehicle to compare his current speed with the legal limit for the location in which he is traveling. This eliminates the need for the driver to take his eyes off the road to look for speed limit signs, and resolves any confusion that might exist as to what the current legal speed limit is. An audible warning of excessive speed reduces the amount of time the driver needs to spend examining the speedometer. By allowing the driver to keep his eyes on the road more of the time, the speed limit indicator reduces the chance of an accident.

The use of speed regulators is known in the prior art. For example, U.S. Pat. No. 5,485,161 to Vaughn discloses a vehicle speed control based on GPS/MAP matching of posted speeds. However, the Vaughn '161 patent does not display the current speed limit, and has further drawbacks of not allowing the driver to speed in the event of an emergency, potentially creating a more dangerous situation.

U.S. Pat. No. 5,315,295 to Fujii discloses a vehicle speed control system that decelerates a vehicle during a turn. However, the Fujii '295 patent does not display the current speed limit, and additionally does not provide an audible notification to the driver when the speed limit is being exceeded under all situations.

Similarly, U.S. Pat. No. 6,134,499 to Goode et al. discloses a road speed control system for a vehicle driven by an internal combustion engine that controls engine speed with transmission gear speed. However, the Goode et al. '499 patent does not display the current speed limit, and cannot audibly notify the driver when the speed limit is being exceeded.

Additionally, U.S. Pat. No. 5,680,306 to Shin et al. discloses a system, and method for enabling a vehicle to track a path that positions and navigates an autonomous vehicle. However, the Shin et al. '306 patent does not display the current speed limit, and has the additional deficiency of not audibly notifying the driver when the speed limit is being exceeded.

Furthermore, U.S. Pat. No. 5,995,895 to Watt et al. discloses a control of vehicular systems in response to anticipated conditions predicted using predetermined georeferenced maps. However, the Watt et al. '895 patent does not display the current speed limit, and has the additional deficiency of not audibly notifying the driver when the speed limit is being exceeded.

In addition, U.S. Pat. No. Des. 270,339 to Boleis discloses

and does not audibly notify the driver when the speed limit is being exceeded. Lastly, U.S. Pat. No. Des. 411,122 to Velazquez discloses a vehicle speed limiting controller. However, the Velazquez '122 patent does not display the current speed limit, and has the additional deficiency of not audibly notifying the driver when the speed limit is being exceeded.

While the above-described devices fulfill their respective, particular objectives and requirements, the aforementioned patents do not describe a speed limit indicator and method for displaying speed and the relevant speed limit that allows displaying the current speed of a vehicle and how it relates to the legal speed limit for the current location in which the vehicle is traveling. The above patents make no provision for displaying the current speed limit to the driver. They also do not audibly notify the driver when the speed limit is being exceeded.

Therefore, a need exists for a new and improved speed limit indicator and method for displaying speed and the relevant speed limit that can be used for displaying the current speed of a vehicle and how it relates to the legal speed limit for the current location in which the vehicle is traveling. In this regard, the present invention substantially fulfills this need. In this respect, the speed limit indicator and method for displaying speed and the relevant speed limit according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in doing so provides an apparatus primarily developed for the purpose of displaying the current speed of a vehicle and how it relates to the legal speed limit for the current location in which the vehicle is traveling.

SUMMARY OF THE INVENTION

In view of the foregoing disadvantages inherent in the known types of speed regulators now present in the prior art, the present invention provides an improved speed limit indicator and method for displaying speed and the relevant speed limit, and overcomes the above-mentioned disadvantages and drawbacks of the prior art. As such, the general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new and improved speed limit indicator and method for displaying speed and the relevant speed limit for displaying the current speed of a vehicle and how it relates to the legal speed limit for the current location in which the vehicle is traveling which has all the advantages of the prior art mentioned heretofore and many novel features that result in a speed limit indicator and method for displaying speed and the relevant speed limit which is not anticipated, rendered obvious, suggested, or even implied by the prior art, either alone or in any combination thereof.

To attain this, the present invention essentially comprises a speed limit indicator comprising a speed limit display and an attached speedometer.

Also, the invention comprises a method of determining speed, the relevant speed limit, and displaying same, which comprises the steps of: upload current information to regional speed limit database, determine the vehicle's location and speed using a global positioning system receiver, obtain the speed limit for the vehicle's current location from the database, compare the vehicle's speed to the speed limit, generate a tone if the vehicle is speeding, send the speed limit to the display control unit, and modify the speed limit display to reflect which speeds are below the speed limit and which speeds exceed the speed limit.

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