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(54) SETTING VEHICLE SPEED DISPLAY DEVICE FOR CRUISE CONTROL UNIT

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SPECIFICATION

1. Title of Invention

SETTING VEHICLE SPEED DISPLAY DEVICE FOR CRUISE CONTROL UNIT

2. SCOPE OF CLAIMS

(1) Setting vehicle speed display device for a cruise control unit characterized by being provided with a display surface having the first display section which displays travel speed and the second display section having a plurality of display elements arranged in an array in the vicinity of this display section and displaying constant travel speed set by the setting manipulation of the occupant, a timer which starts by the set signal provided by setting manipulation and transmits the output only for a fixed period of time, an oscillator which transmits a pulse signal repeating in a short cycle by a sustained signal output by this timer, subsequent signal forming circuit which detects the off point of the timer and turns to ON state, and a display circuit which drives the display element of the second display section corresponding to the speed set by said setting manipulation with the output of said subsequent signal forming circuit after first driving with the output of the oscillator.

(2) A set vehicle speed display device for cruise control unit characterized by: being provided with a display surface having a first display section which displays travel speed and a second display section having a plurality of display elements arranged in an array in the vicinity of this display section and displaying constant travel speed set by the setting manipulation of the

occupant, a timer which starts by the set signal provided by the setting manipulation and transmits the output only for a fixed period of time, an oscillator which transmits the pulse signal repeating in a short cycle by the sustained signal output by this timer, subsequent signal forming circuit which detects the off point of said timer and turns to ON state, and a display circuit which drives the display element of the second display section corresponding to the speed set by the setting manipulation with the output of said subsequent signal forming circuit after first driving with the output of the oscillator; and the second display section being made to display only the speed range possible by said setting manipulation.

(3) A set vehicle speed display device for cruise control unit according to Claim 1 or Claim 2 of the Scope of Claims, wherein said subsequent signal forming circuit is made to transmit a sustained signal with the ON state.

- (4) A set vehicle speed display device for cruise control unit according to Claim 1 or Claim 2 of the Scope of Claims, wherein said subsequent signal forming circuit is made to transmit a pulse signal with low frequency by the output signal of the oscillator.
- (5) A set vehicle speed display device for cruise control unit according to any of Claim 1 through Claim 4 of the Scope of Claims, wherein said first display section is made to be a digital display.
- (6) A set vehicle speed display device for cruise control unit according to Claim 1 of the Scope of Claims, wherein said second display section is made to also display the actual vehicle speed while driving.

3. DETAILED DESCRIPTION OF INVENTION

(Industrial Field of Application)

This invention pertains to a cruise control unit, especially relating to the improvement of display device of the cruise control unit of a vehicle.

(Prior Art)

A cruise control unit is known, which combines an electronic control circuit in the negative pressure servo, etc. of the vehicle engine, stores a desired set vehicle speed signal in this control circuit, inputs the actual vehicle speed signal during driving obtained by the speed sensor, and controls a constant travel speed by comparing both signals.

Generally, with this type of device, the cruise control state is temporarily released in the case of speed reduction by brake operation while in cruise control. And normally, a return function by switch operation (resume switch) of the occupant is provided in order to automatically return to the original set vehicle speed.

However, with the conventional cruise control unit, when setting manipulation was performed for cruise control, or when this set status was temporarily released after setting, this set vehicle speed was not displayed. More specifically, though the memory was stored in the control circuit, no display was made at all on the driver seat side.

As a result, since the set vehicle speed was not explicit even when resume operation was performed; this caused the driver to feel a sense of insecurity.

Moreover, though there were those which displayed the set vehicle speed by digital numerical display, it was difficult to see because the speed display was in a separate section, and especially, grasping the state of change with the vehicle speed was extremely difficult.

(Purpose of Invention)

This invention has been conducted in order to eliminate disadvantages of the prior art as described above, and the purpose is to provide the set vehicle speed display device for a cruise control unit which can display a set vehicle speed even after temporary release of cruise control and resolve a sense of insecurity felt by the driver.

(Composition of Invention)

In order to achieve this purpose, according to this invention, a display surface having the first display section which displays travel speed and a second display section having a plurality of display elements arranged intermittently in an array in the vicinity of this display section and displaying constant travel speed set by the setting manipulation of the occupant, a timer which starts by the set signal provided by said setting manipulation and transmits the output only for a fixed period of time, an oscillator which transmits the pulse signal repeating in a short cycle by the sustained signal output by this timer, subsequent signal forming circuit which detects the off point of said timer and turns to on state, and a display circuit which drives the display element of

said second display section corresponding to the speed set by said setting manipulation with the output of the subsequent signal forming circuit after first driving with the output of the oscillator are provided.

(Effect(s) of Invention)

By the composition described above, according to this invention, the set vehicle speed display device for the cruise control unit which will result in the following effects can be provided.

- (1) In the second display section, the set speed of cruise control state is displayed, resolving a sense of insecurity of felt by the driver.
- (2) Since the set speed and actual speed display are set up in the vicinity of the speed display in a separate analog display, confirmation of the set speed and the relationship with the constant speed can be easily grasped.

- (3) Since the display changes as, for example, the flashing time differs during and after the setting manipulation, attention of the driver will increase.
- (4) Since there is a target display at the time of resume operation, the driver can easily confirm the set vehicle speed, thus providing a sense of security.
- (5) Since only the speed range possible to set the cruise control state is displayed, resume operation or setting up a target of the setting manipulation again can be easily performed by the driver.
- (6) Generally, the set switch completes its setting when the switch is pressed and let go, but since the setting is not completed when pressing the switch, this results in a difference of the timing; and even at this time, flashing is displayed simultaneously with the completion of the setting so that the timing of the setting when the switch is let go can be informed to the vehicle.
- (7) Since the set vehicle speed and actual vehicle speed are displayed, the difference between the set vehicle speed and the actual vehicle speed are clearly captured, and furthermore, because the set vehicle speed flashes, both can be clearly captured.

(Embodiment(s) of the Invention)

In the following, according to the attached drawing, the embodiments of this invention will be explained. In each drawing, the same codes indicate the same items.

Figure 1 is a schematic drawing of an embodiment of the present invention.

According to the Figure, the timer (10), reference oscillation circuit (11), frequency divider (23), the AND gate 12, subsequent signal forming circuit (13), the OR gate 14, the actual vehicle speed display drive circuit (15), selection circuit (16), and display circuit (17) are shown. In addition, the actual vehicle speed display drive circuit (15) is composed of the timing control circuit (18), AND gate (19), counter (20), and register (21).

Timer (10) starts by the set signal (a) of the cruise control unit and transmits the output signal (b) only for a fixed period of time. For example, it can be composed of a monostable multi-vibrator or a digital counter.

The reference oscillation circuit (11) transmits the so-called clock signal (g) and has a duty ratio which makes it visually easy to see the flashing of the display (described below). This clock signal, by vehicle speed signal (1) which, via timing control circuit (18), is input into one side of the AND gate (19) and counter circuit (20), and the actual vehicle speed is displayed on circuit display signal (17). Moreover, the output signal of reference oscillation circuit (11) is output as minute signal (c) of frequency divider (23) and input into one side of the AND gate (12).

Therefore, if set signal (a), output signal b of timer 10, and clock signal are, for example, as shown in (a), (b), and (c) of Figure 2, the output signal (d) of the AND gate (12) is as shown in the same Figure (d).

Moreover, if clock signal g of reference oscillation circuit 11, signal h of timing control circuit (18), and vehicle speed signal (I) are as shown in (g), (h), and (l) of Figure 2, the output signal (j) of the AND gate (12) is as shown in the same Figure (d).

Subsequent signal forming circuit (13) detects the point where the output signal turns into an off state (logic "0") and forms a subsequent signal (e) which is in on state (logic "1") (Figure 2 (a)). This on state is turned into the off state by the reset signal (R) described below, and can be composed of flip-flop or bi-stable multi-vibrator, for example.

The OR gate (14) makes the output signal (d) of the AND gate (12) and output signal (e) of subsequent signal forming circuit (13) as input signal. Therefore, for example, according to the examples of the Figure, output signal (f) of the OR gate (14) is as shown in Figure (f).

The selection circuit (16) prioritizes and displays signal (f) of the OR gate (14), and in the second display section, in the case set vehicle speed and the actual vehicle speed are displayed overlapped with one light-emitting means described below, or when the actual vehicle speed is higher than the set vehicle speed, the set vehicle speed is displayed blinking.

As has been clear from actual vehicle speed display drive circuit (15), which is already described, counts with counter (20) the pulse numbers of the vehicle speed signal (l), in the duration of the fixed period of time (corresponding to the signal of Figure 2 (h)) provided in

timing control circuit (18), and temporarily holds in register (21) for synchronization control.

Display circuit (17), for example, consists of the display section consisting of a plurality of light-emitting segments and the drive circuit of the segments. The light-emitting segment, for example, can use various kinds such as fluorescent tube, LED, and liquid crystal, and it goes without saying that the entire composition of the display circuit including the drive circuit differs based on this. Moreover, naturally, without using light-emitting segments, other display device such as CRT can be used.

Figure 3 has the display section of such display circuit (15) and shows one example of the display surface arranged in the driver seat.

This display surface (30) has the first display section (31) which displays travel speed and the second display section (32) having a plurality of display elements (32 a) arranged intermittently in an array in the underside of this display section (31) and displaying the constant travel speed set by the setting manipulation of the occupant and the actual vehicle speed.

The first display section (31), for example, is formed by 3 groups consisting of one group of 7 fluorescent tube segments (31a), and in the Figure, 50 km /h is displayed.

The second display section (32) consists of the display element (32a) such as LED arranged intermittently horizontally in line and scale (33) which is displayed in the lower part and displays the set vehicle speed. In the Figure, radiator (32b) corresponding to the set vehicle speed of display element (32a) flashes, indicating that in the vicinity of 80 km/h is the set vehicle speed and the actual vehicle speed is in the vicinity of 50 km/h. On the second display section (32), only the speed range (30 km/h to 110 km/h) possible for cruise control is indicated. This speed range is prescribed from the practical convenience of the travel.

In this embodiment, subsequent signal forming circuit described in "Scope of Claims" matches the sustained signal forming circuit (13).

Next, the operation of this Embodiment will be explained by referring to Figure 2. As can be seen from the description above, signals (a) to (j) in Figure 1 correspond to signals (a) to (j) in Figure 2.

As shown in Figure 3, for example, suppose the driver performs setting manipulation of the cruise control when the speed reaches 80 km/h speed per hour.

By this operation, set signal (a) is provided and the timer transmits output signal (b) for a fixed period of time (about 5 seconds are appropriate). While timer (10) is in operation, sustained signal (13) does not operate and, therefore, the output signal (d) of the AND gate (12) is input to display circuit (15). As a result, with the minute cycle period of signal (c) of frequency divider (23), the radiator (32b) of the second display section flashes, bringing the set vehicle speed to the attention of the driver.

When timer (10) stops operation, the sustained signal forming circuit (13) starts to be in on state. However, one side of the input logic of the AND gate (12) becomes "0" so that output logic also becomes "0." Therefore, by the output signal (e) of circuit (3), radiator (32b) sustains lighting, thus sustaining the display of the set vehicle speed.

This sustained state finishes by the reset signal provided to the sustained signal forming circuit (13) by the resetting manipulation of the cruise control display device or cancel operation of the memory.

To sum up the discussion, at the time of setting the cruise control unit, the display of the set speed flashes for a few seconds, and afterwards, the set speed lights constantly. The signal waveform (f) of Figure 3 (f) shows this state.

However, in the above case, though the actual vehicle speed is constantly displayed in the display circuit via selection circuit (16) by actual vehicle speed display drive circuit (15), at the time of setting, the output signal (f) of the AND gate (14) is prioritized and the display element corresponding to set vehicle speed flashes.

Figure 4 shows other embodiments of this invention.

According to the same Figure, this differs from the embodiment of Figure 1 in that frequency divider (40) and one more AND gate (42) are provided. More specifically, the output signal (b) of timer (10) is provided to the input port of one side of the AND gate (12) and the sustained signal forming circuit (13), and the output signal (c) of reference oscillation circuit (11) is provided to the input port of the other side of the AND gate (12) and the frequency divider (40). The frequency divider 40 provides the output signal of low frequency from several tenths to fractions of the oscillating frequency of the reference oscillation circuit (11).

The output signal (d) of the AND gate (12) is supplied to the input port of one side of the OR gate (14) as is.

Output signal f of sustained signal forming circuit (13) and output signal of the frequency divider (40) will be the input of the AND gate (41). The output signal (g) of this AND gate (41) will be the other input of the OR gate (14).

Next, the operation of this Embodiment will be explained referring to Figure 5. Similar to the description above, signals a to h in each section correspond respectively to the wave form of signals (a) to (h) in Figure 5.

When set signal (a) is provided to the cruise control unit, timer (10) starts similar to the embodiment in Figure 1 and the on state is sustained for a fixed period of time. As a result, in the AND gate (12), between the output signal (b) of timer (10) and output clock signal (c) of reference oscillation circuit (11), the AND condition is established according to the cycle of the clock, and the output signal (d) as shown in Figure 5 (d) is transmitted.

At this time, frequency divider (40), as shown in Figure 5 (a), outputs the minute signal (a) at a frequency of $\frac{1}{4}$ of the clock signal (c). However, sustained signal forming circuit (13) is not in operation and the logic of output signal (f) is "0."

Therefore, the AND condition of the AND gate (40) is not established and the output logic of this gate (41) is "0." As a result, the output signal (d) of the AND gate (12) is provided to the display circuit (15) through the OR gate, and the radiator specified by display element (32a) (Figure 3) flashes at the cycles of the clock signal (c).

Afterwards, when timer (10) turns into an off state, the AND condition of the AND gate (12) is not established and the output signal disappears. On the other hand, since sustained signal forming circuit (13) starts and the logic of output signal (f) becomes "1," the AND condition of the AND gate (41) is established and the output signal (g), as shown in Figure 5 (g), is transmitted.

Therefore, output signal (g) of the AND gate 41 is provided to display circuit (15) through the OR gate (14) without depending on the output signal (d) of the AND gate (12), and the radiator specified by display element (32a) (Figure 3) flashes at the cycle of frequency signal (e) of frequency divider 40. The completion of this flashing, similar to the embodiments described above, is by reset signal (R) of circuit 13.

To sum up the discussion, at the time of setting the cruise control unit, the display element of the set speed flashes for a few seconds by output signal (c) of reference oscillation circuit (11), and afterwards, the display element of set speed flashes at a slower cycle than before signal (e) of frequency divider (40). The signal waveform (h) of Figure 5 (h) shows this state.

As can be seen from this, in this embodiment, subsequent signal forming circuit described in "Scope of Claims" matches the sustained signal forming circuit (13), frequency divider (40), and the AND gate (41).

Figure 6 indicates an alternative embodiment of the embodiments of Figure 1 or Figure 4.

According to the same Figure, the input of timer (10) in Figure 1 or Figure 4 is not set signal a of the current setting time, indicating the case of previous set vehicle speed signal (m) which was stored in set vehicle speed memory circuit (60). This signal (m) is input to readout timer (10) through gate (61) by signal (r) by the resume operation and activates the device in the subsequent stage, similar to the embodiments described above.

In the embodiments described above, an example was taken from the case in which the display section of the display surface is the segment display, as shown in Figure 3. However, as described above, To display using CRT is widely known in the computer field, and for example, appropriately selecting video RAM or attribute RAM by the set signal of the cruise control unit to enable similar display is easy for those skilled in the art.

Therefore, "a plurality of display elements (32 a) arranged intermittently in an array" described in this Specification are not only those that exist explicitly on the display surface such as LED, but are arranged in an array in the shadow memory such as video RAM; therefore, the case in which this appears appropriately on the display surface at the time of display is also included.

And naturally, this type of display is made not only in the horizontal direction, as shown in Figure 3, but can be made in the vertical direction.

This invention is not limited to Embodiments and alternative Embodiment described above, but contains various types of contents, and especially, color change of the display of set speed by CRT display can be performed easily by using attribute RAM; thus, this type of content is also contained in this invention.

4. BRIEF DESCRIPTION OF FIGURES

Figure 1 is a schematic drawing of an embodiment of the present invention;

Figure 2 is a timing chart depicting the operation of the embodiment of Figure 1;

Figure 3 is an explanatory drawing of 1 essential embodiment depicting the display screen of the present invention;

Figure 4 is a schematic diagram of another embodiment of the present invention;

Figure 5 Figure 2 is a timing chart depicting the operation of the embodiment of Figure 4;

Figure 6 is a schematic drawing depicting a modified example of an embodiment of the present invention.

- 10 ... Timer, 11 ... Standard oscillator, 12 ... AND gate
- 13, 40, 41 ... Sustained signal forming circuit
- 14 ... OR gate, 15 ... Actual vehicle speed display drive circuit,
- 16 ... Selection circuit, 17 ... Display circuit, 31 ... First display section
- 32 ... Second display section, 32a ... Plurality of display sections

第 1 図

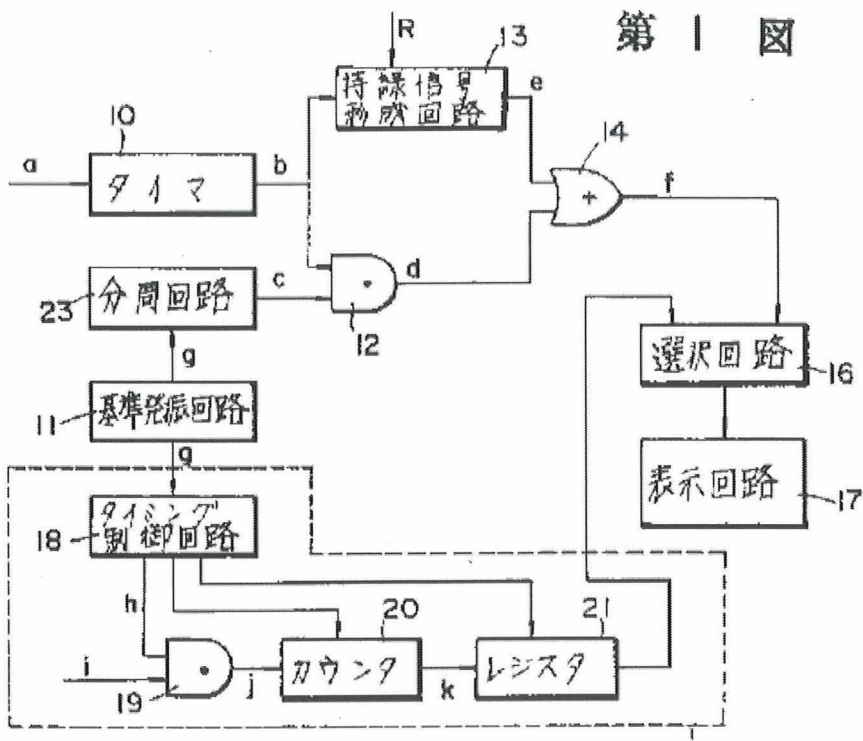


Figure 1	
(10) Timer	
(13) Sustained signal forming circuit	
(23) Frequency divider circuit	
(11) Reference oscillator circuit	
(16) Selection circuit	
(17) Display circuit	
(18) Timing control circuit	
(20) Counter	
(21) Register	

Figure 2

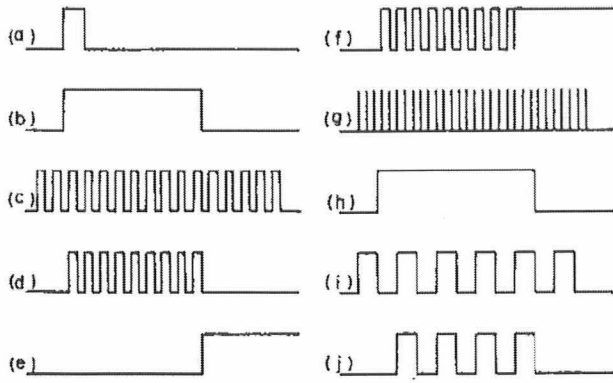


Figure 3

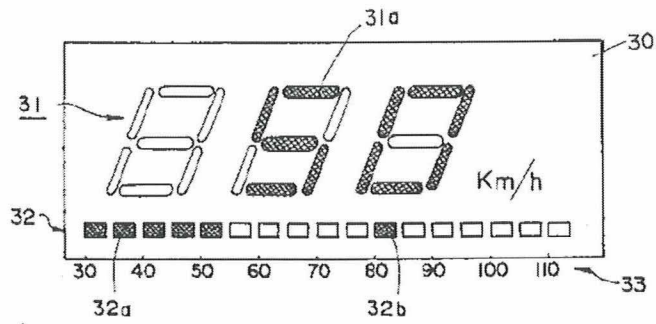
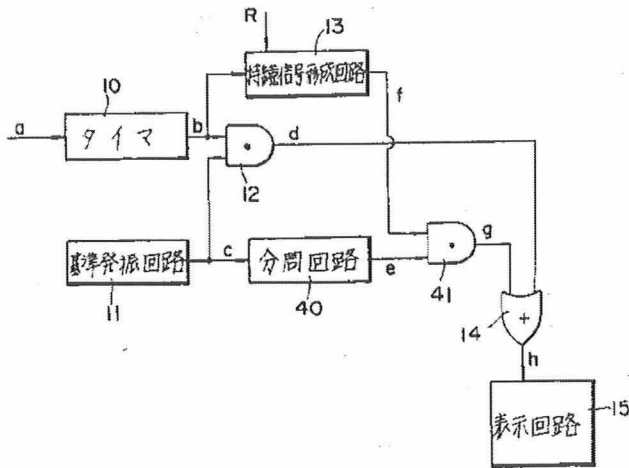
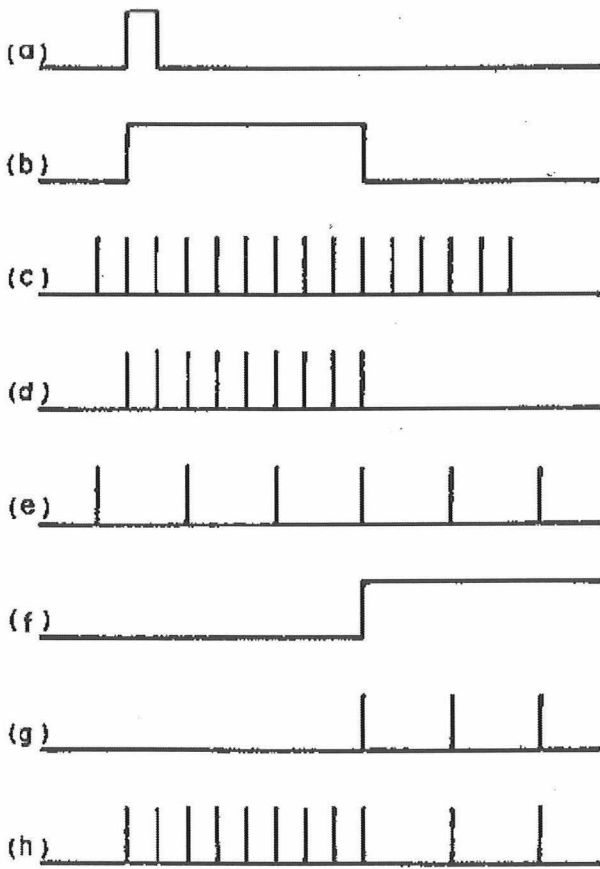


Figure 4



- (10) Timer
- (10) Timer
- (13) Sustained signal forming circuit
- (11) Standard oscillator circuit
- (40) Frequency divider circuit
- (15) Display circuit

Figure 5



Procedural Amendment (Form)

February 4, 1985 (seal)

Japan Patent Office Attention Mr. Manabu Shiga

1. Case Identification

(1983) S58 JP Patent Application: 159797

2. Title of Invention

SETTING VEHICLE SPEED DISPLAY DEVICE FOR CRUISE CONTROL UNIT

3. Person making amendment

Relationship to this case Patent Applicant

Name NISSAN SHATAI CO LTD

4. Agent

Address 5-19-807 1 Chome Shimo Meguro-ku, Meguro, Tokyo

Name (8512) Masamichi AYATA, Patent Attorney (official seal)

5. Date of invitation to amend

January 29, 1985 (Date of mailing)

6. Subject of Amendment

Section of BRIEF DESCRIPTION OF FIGURES OF SPECIFICATION

7. Content of amendment

Section of BRIEF DESCRIPTION OF FIGURES OF SPECIFICATION will be amended as follows:

Page 19, line 11 to line 12 "Figure 6 is a schematic drawing ... of the present invention" is deleted.

(Official seal, February 5, 1985)

Procedural Amendment (Voluntary)

March 15, 1985 (seal)

Japan Patent Office Attention Mr. Manabu Shiga

1. Case Identification

(1983) S58 JP Patent Application 159797

2. Title of Invention

SETTING VEHICLE SPEED DISPLAY DEVICE FOR CRUISE CONTROL UNIT

3. Person making amendment

Relationship to this case Patent Applicant

Name NISSAN SHATAI CO LTD

4. Agent

Address 5-19-807 1 Chome Shimo Meguro-ku, Meguro, Tokyo

Name (8512) Masamichi AYATA, Patent Attorney (official seal)

5. Parts amended

(1) Section of Title of Invention OF SPECIFICATION

(2) Section of SCOPE OF CLAIMS of SPECIFICATION

(3) Section of DETAILED DESCRIPTION OF INVENTION of SPECIFICATION

(4) Figure 1 and Figure 4 of the Drawings

6. Content of amendment

(1) "SETTING VEHICLE SPEED DISPLAY DEVICE FOR CRUISE CONTROL" in the section of Title of Invention OF SPECIFICATION will be amended as "SETTING VEHICLE SPEED DISPLAY DEVICE FOR CRUISE CONTROL UNIT" as in the attachment.

(2) Section of SCOPE OF CLAIMS of SPECIFICATION will be amended as in the attachment.

(3) Section of DETAILED DESCRIPTION OF INVENTION of SPECIFICATION will be amended as in the following:

1) In page 4, line 2 to line 3 of SPECIFICATION, "...stores a desired set vehicle speed signal in this control circuit, inputs the actual vehicle speed signal during driving obtained by the speed sensor, and controls a constant travel speed by comparing both signals" will be amended as follows: "...stores a desired set vehicle speed signal (speed signal which is set) in this control

circuit, inputs the actual vehicle speed signal during driving obtained by the speed sensor(travel speed signal), and controls a constant travel speed by comparing both signals.”

2) In page 4, line 18 of SPECIFICATION, “this set vehicle speed” will be amended as “the speed which is set (set speed).”

3) In page 4, line 19 of SPECIFICATION, “set vehicle speed” will be amended as “set vehicle speed.”

4) In page 5, line 3 of SPECIFICATION, “because the speed display” will be amended as “because the speed display (actual vehicle speed display)”

5) In page 5, line 4 of SPECIFICATION, “especially...with the vehicle speed” will be amended as “especially...with the actual vehicle speed.”

6) In page 5, line 16 of SPECIFICATION, “intermittently in an array in the vicinity” will be amended as “in an array in the vicinity.”

7) In page 6, line 14 to line 15 of SPECIFICATION, “set speed” will be amended as “set vehicle speed.”

8) In page 6, line 17 to line 19 of SPECIFICATION, “set speed and actual speed display are set up ... in a separate analog display, confirmation of the set speed and the relationship with the constant speed can be easily grasped.” will be amended as follows: “set vehicle speed and actual vehicle speed display are set up... in a separate analog display, confirmation of the set vehicle speed and the relationship with the actual vehicle speed can be easily grasped.”

9) In page 7, line 16 of SPECIFICATION, “vehicle” will be amended as “driver.”

10) In page 8, line 1 of SPECIFICATION, “are clearly captured, and furthermore” will be amended as “can be clearly captured, and furthermore.”

11) In page 9, line 5 to line 6 of SPECIFICATION, “...by vehicle speed signal (1) ... is input into... and the actual vehicle speed is displayed on circuit display signal (17).” will be amended as follows: “ ...by vehicle speed signal (1) ... is input into... and by the vehicle speed signal (1) input into the other side of the AND gate (19), the actual vehicle speed is displayed on circuit display signal (17).”

12) In page 11, line 13 of SPECIFICATION, “display circuit (15)” will be amended as “display circuit (17).”

13) In page 11, line 15 of SPECIFICATION, “displays travel speed” will be amended as “displays travel speed (actual travel speed).”

14) In page 11, line 19 of SPECIFICATION, “speed ... and the actual vehicle speed” will be amended as “speed ... (set vehicle speed) actual vehicle speed.”

15) In page 12, line 10 of SPECIFICATION, “the actual vehicle speed is... 50 km/h” will be amended as “the actual vehicle speed is... 50 km/h.”

16) In page 12, line 18 of SPECIFICATION, “by referring to Figure 2” will be amended as “by referring to Figure 2.”

17) In page 13, line 7 of SPECIFICATION, “signal 13” will be amended as “signal forming circuit.”

- 18) In page 14, line 3 of SPECIFICATION, "display circuit (15)" will be amended as "display circuit (17)."
- 19) In page 14, line 3 of SPECIFICATION, "set speed" will be amended as "set vehicle speed."
- 20) In page 14, line 4 of SPECIFICATION, "set speed" will be amended as "set vehicle speed."
- 21) In page 14, line 5 of SPECIFICATION, "Figure 3" will be amended as "Figure 2."
- 22) In page 14, line 9 of SPECIFICATION, "AND gate 14" will be amended as "OR gate 14."
- 23) In page 18, line 6 to line 7 of SPECIFICATION, "is provided to the display circuit (15) ...and the radiator specified by display element (32a)" will be amended as "is provided to the display circuit (17) ...and the radiator specified by display element (32a)" will be amended as "
- 24) In page 16, line 17 of SPECIFICATION, "is provided to display circuit (15) ... by display element (32a)" will be amended as "is provided to display circuit (17) ... by display element (32a)"
- 25) In page 17, line 3 of SPECIFICATION, "set speed" will be amended as "set vehicle speed."
- 26) In page 17, line 4 of SPECIFICATION, "set speed" will be amended as "set vehicle speed."
- 27) In page 17, line 13 of SPECIFICATION, "Figure 6" to page 18, line 1 " activates... described above" will be deleted.
- 28) In page 18, line 10 of SPECIFICATION, "intermittently in an array" will be amended as "in an array."

(4) Figure 1 of Drawings "[sic] signal forming circuit" will be amended as "sustained signal forming circuit" and the code "15" will be amended to "17" as shown in the attachment.

2. SCOPE OF CLAIMS

- 1) A setting vehicle speed display device for a cruise control unit characterized by being provided with a display surface having the first display section which displays travel speed and the second display section having a plurality of display elements arranged in an array in the vicinity of this display section and displaying constant travel speed set by the setting manipulation of the occupant, a timer which starts by the set signal provided by setting manipulation and transmits the output only for a fixed period of time, an oscillator which transmits a pulse signal repeating in a short cycle by a sustained signal output by this timer, subsequent signal forming circuit which detects the off point of the timer and turns to ON state, and a display circuit which drives the display element of the second display section corresponding to the speed set by said setting manipulation with the output of said subsequent signal forming circuit after first driving with the output of the oscillator.
- 2) Setting vehicle speed display device for the cruise control unit according to Claim 1 of the Scope of Claims, wherein said subsequent signal forming circuit is a circuit which transmits the sustained signal with ON state.
- 3) Setting vehicle speed display device for the cruise control unit according to Claim 1 of the Scope of Claims, wherein said subsequent signal forming circuit is a circuit which transmits pulse signal of low frequency by the output of said oscillator.

- 4) Setting vehicle speed display device for the cruise control unit according to any of Claim 1 through Claim 3 of the Scope of Claims, wherein the display of said first display section a digital display.
- 5) Setting vehicle speed display device for the cruise control unit according to Claim 1 of the Scope of Claims, wherein said second display section is also a display section which displays the actual vehicle speed while driving.
- 6) A setting vehicle speed display device for a cruise control unit characterized by: being provided with a display surface having the first display section which displays travel speed and the second display section having a plurality of display elements arranged in an array in the vicinity of this display section and displaying constant travel speed set by the setting manipulation of the occupant, a timer which starts by the set signal provided by setting manipulation and transmits the output only for a fixed period of time, an oscillator which transmits a pulse signal repeating in a short cycle by a sustained signal output by this timer, subsequent signal forming circuit which detects the off point of the timer and turns to ON state, and a display circuit which drives the display element of a second display section corresponding to the speed set by the setting manipulation with the output of the subsequent signal forming circuit after first driving with the output of the oscillator; and said second display section displaying only the speed range possible to perform said setting manipulation.
- 7) Setting vehicle speed display device for cruise control unit according to Claim 6 of the Scope of Claims, wherein said subsequent signal forming circuit is a circuit which transmits the sustained signal with ON state.
- 8) Setting vehicle speed display device for cruise control unit according to Claim 6 of the Scope of Claims, wherein said subsequent signal forming circuit is a circuit which transmits pulse signal of low frequency by the output of the oscillator.
- 9) Setting vehicle speed display device for cruise control unit according to any of Claim 6 through Claim 8 of the Scope of Claims, wherein the display of the first display section is a digital display.

第 1 図

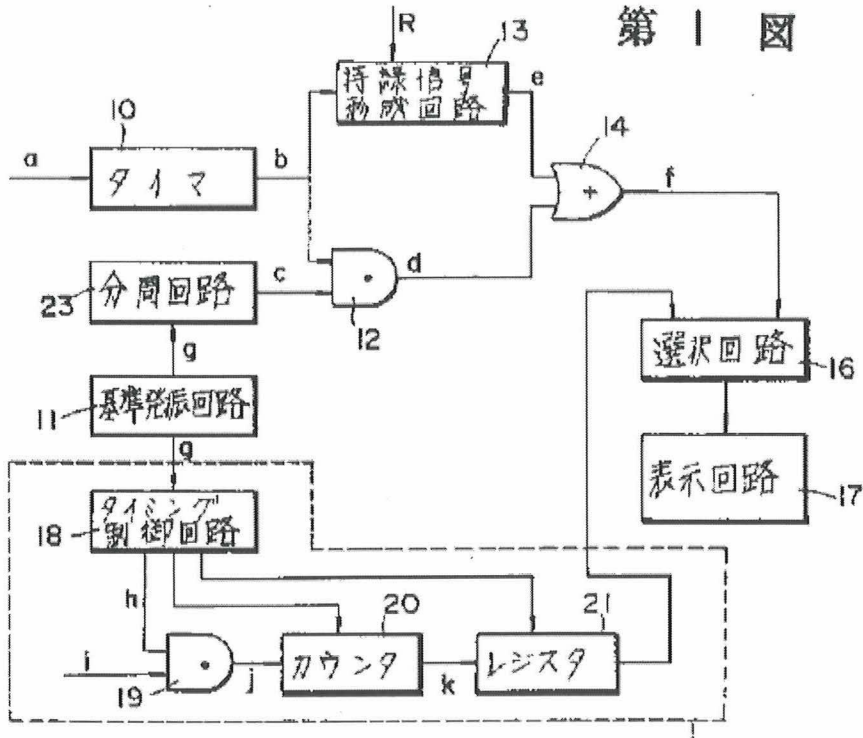


Figure 1	
(10) Timer	
(13) Sustained signal forming circuit	
(23) Frequency divider circuit	
(11) Reference oscillator circuit	
(16) Selection circuit	
(17) Display circuit	
(18) Timing control circuit	
(20) Counter	
(21) Register	



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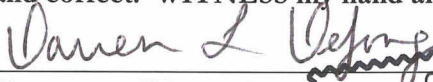
To Whom It May Concern:

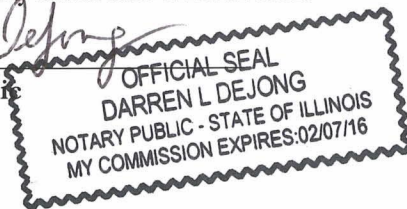
I, Lily Huberman, M.A., a translator and linguist, attest that I am the owner and President of Atlas Translation Services, Inc., and that Fred Moosreiner, a professional translator and interpreter fluent in the English and Japanese languages, translated the enclosed/attached Japanese patent document S60-161226.

To the best of my knowledge and belief I hereby certify that the document has been accurately translated.


Lily Huberman, President
Atlas Translation Services, Inc.
Tax. No. 36-42-20900

State of IL County of Cook
On 11-25-13 before me, Darren L. DeJong, Notary Public, personally appeared Lily Huberman, who proved to me to be the person whose name is subscribed to the within instrument and executed the same in her authorized capacity. I certify under penalty of perjury that the foregoing paragraph is true and correct. WITNESS my hand and official seal.


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