US007241034B2

(12) **United States Patent**
Smith et al.

(10) **Patent No.: US 7,241,034 B2**
(45) **Date of Patent: Jul. 10, 2007**

(54) **AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS**

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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 0 days.

(21) Appl. No.: **10/285,312**

(22) Filed: **Oct. 31, 2002**

(65) **Prior Publication Data**

US 2003/0107898 A1 Jun. 12, 2003

Related U.S. Application Data

(60) Provisional application No. 60/369,447, filed on Apr. 2, 2002, provisional application No. 60/356,703, filed on Feb. 13, 2002, provisional application No. 60/335,409, filed on Oct. 31, 2001.

(51) **Int. Cl.**
B60Q 1/00 (2006.01)
B60R 22/00 (2006.01)

(52) **U.S. Cl.** **362/465**; 701/49

(58) **Field of Classification Search** 362/37, 362/465–466; 315/82; 701/49
See application file for complete search history.

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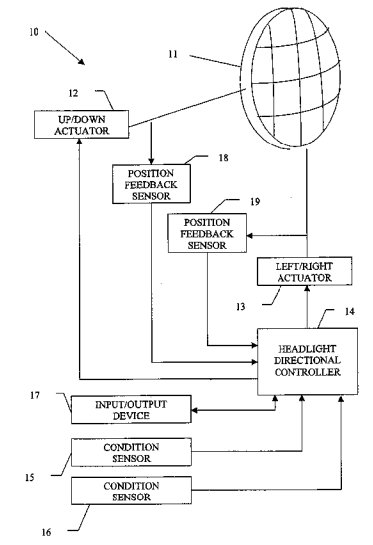
(57) **ABSTRACT**

A structure and method for operating a directional control system for vehicle headlights that is capable of altering the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. One or more operating condition sensors may be provided that generate signals that are representative of a condition of the vehicle, such as road speed, steering angle, pitch, suspension height, rate of change of road speed, rate of change of steering angle, rate of change of pitch, and rate of change of suspension height of the vehicle. A controller is responsive to the sensor signal for generating an output signal. An actuator is adapted to be connected to the headlight to effect movement thereof in accordance with the output signal. The controller can include a table that relates values of sensed operating condition to values of the output signal. The controller is responsive to the sensor signal for looking up the output signal in the table.

5 Claims, 7 Drawing Sheets



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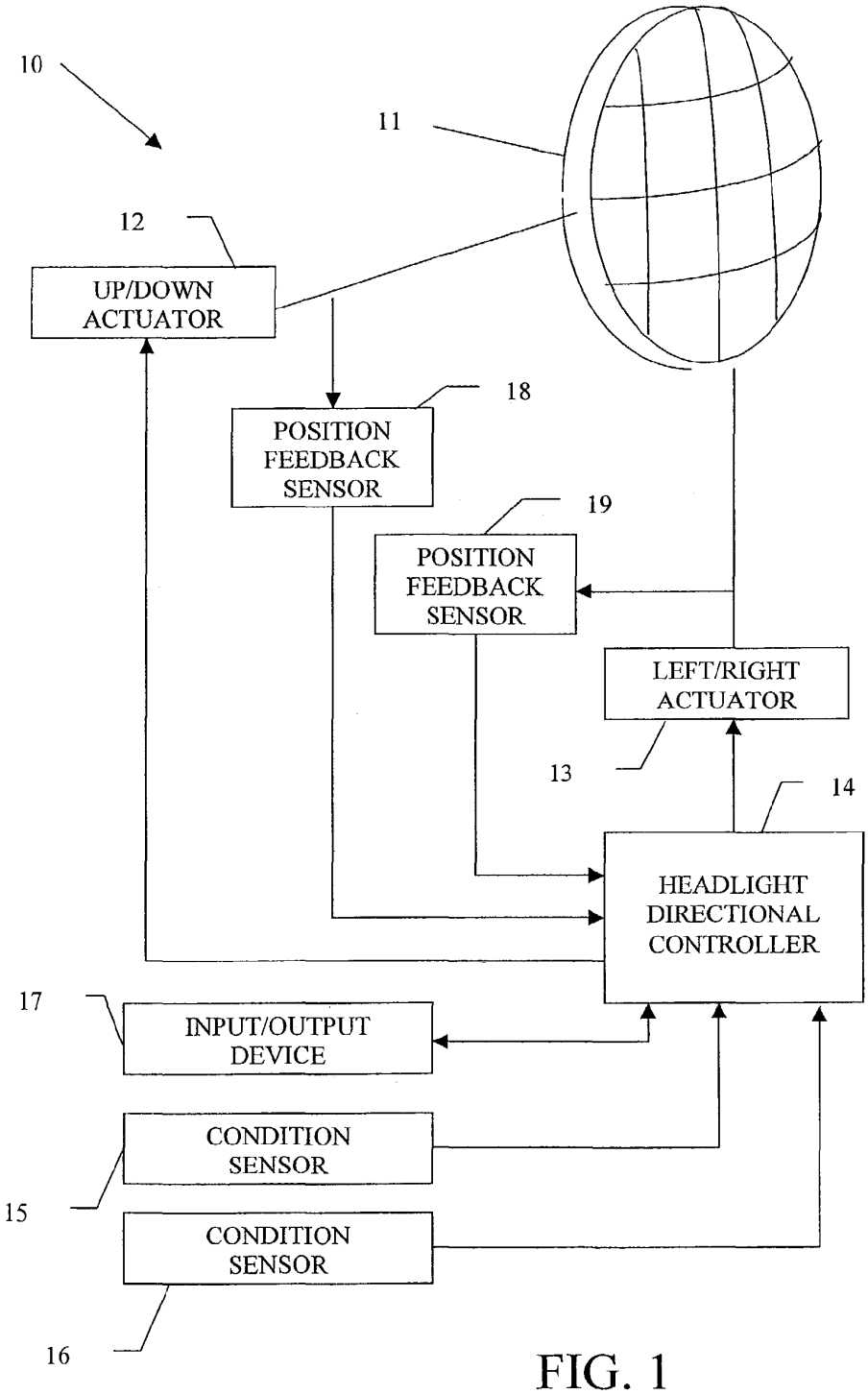

10
11
12
UP/DOWN ACTUATOR
18
POSITION FEEDBACK SENSOR
19
POSITION FEEDBACK SENSOR
LEFT/RIGHT ACTUATOR
13
14
HEADLIGHT DIRECTIONAL CONTROLLER
17
INPUT/OUTPUT DEVICE
CONDITION SENSOR
15
CONDITION SENSOR
16

FIG. 1

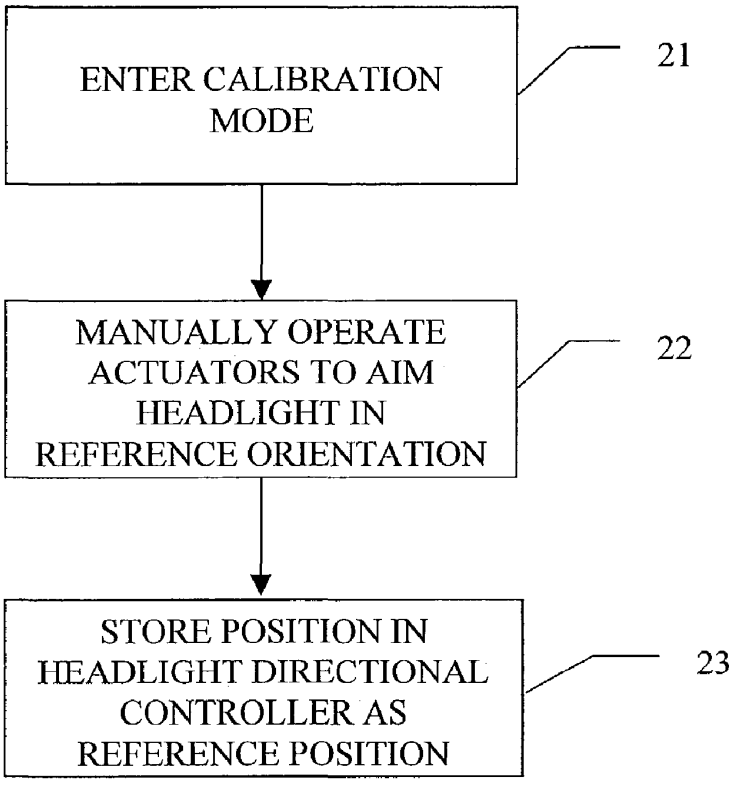

ENTER CALIBRATION MODE
21
20
MANUALLY OPERATE ACTUATORS TO AIM HEADLIGHT IN REFERENCE ORIENTATION
22
STORE POSITION IN HEADLIGHT DIRECTIONAL CONTROLLER AS REFERENCE POSITION
23

FIG. 2

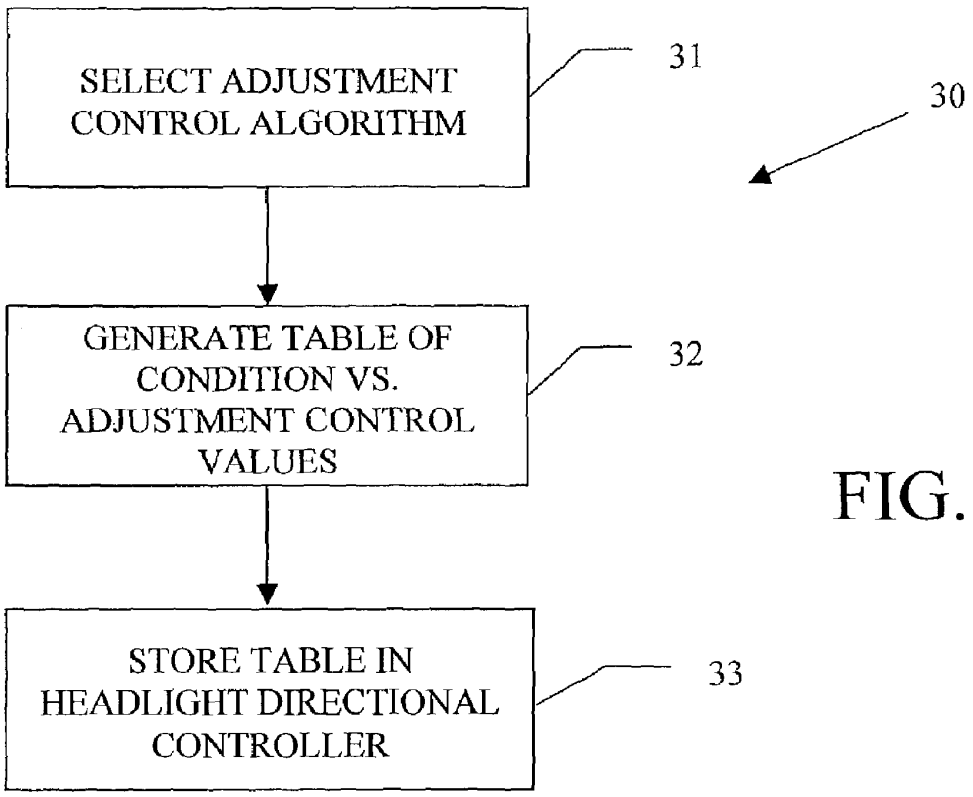
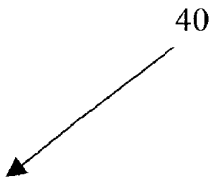

SELECT ADJUSTMENT CONTROL ALGORITHM
31
30
GENERATE TABLE OF CONDITION VS. ADJUSTMENT CONTROL VALUES
32
STORE TABLE IN HEADLIGHT DIRECTIONAL CONTROLLER
33

FIG. 3



SENSED CONDITION (STEERING ANGLE) VALUES	UP/DOWN ADJUSTMENT FACTORS	LEFT/RIGHT ADJUSTMENT FACTORS
+6°	-3.00°	+4.50°
+5°	-2.50°	+3.75°
+4°	-2.00°	+3.00°
+3°	-1.50°	+2.25°
+2°	-1.00°	+1.50°
+1°	-0.50°	+0.75°
0°	0.00°	0.00°
-1°	-0.50°	-0.75°
-2°	-1.00°	-1.50°
-3°	-1.50°	-2.25°
-4°	-2.00°	-3.00°
-5°	-2.50°	-3.75°
-6°	-3.00°	-4.50°

FIG. 4

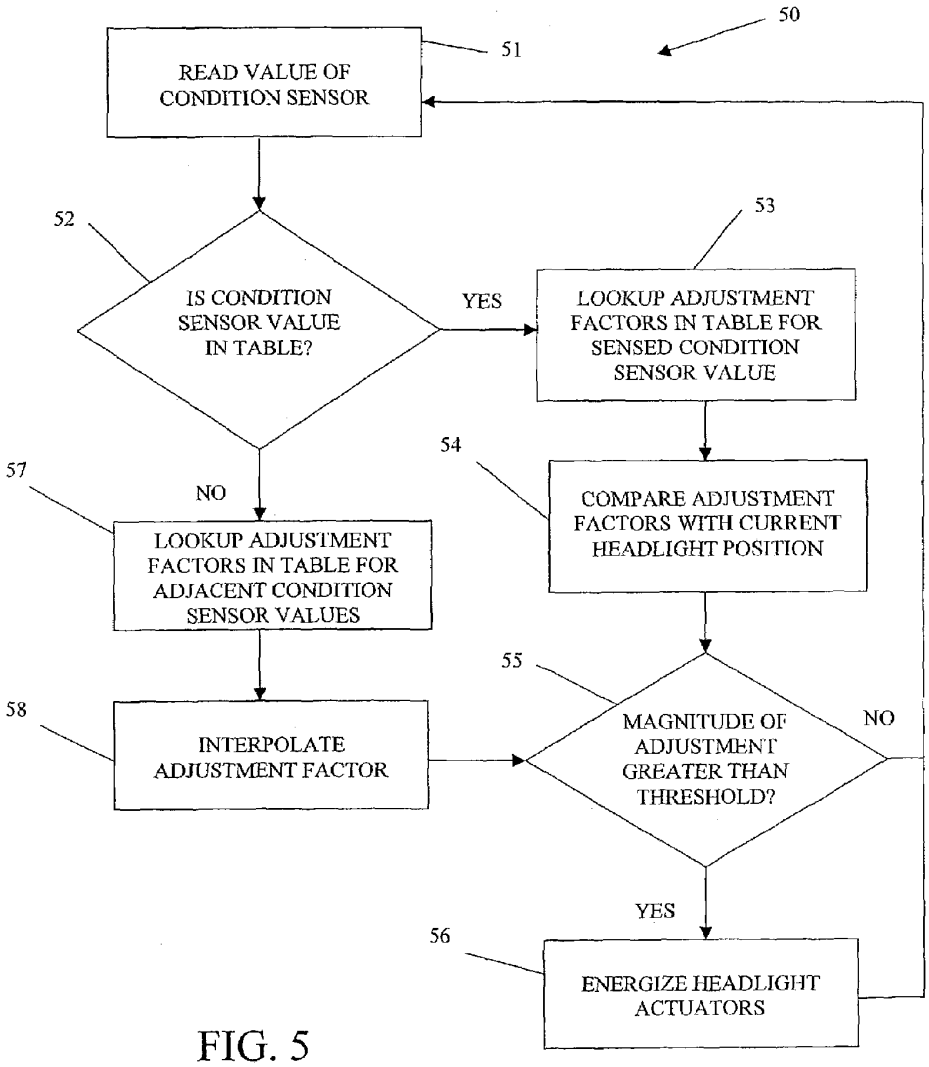

50
READ VALUE OF CONDITION SENSOR
51
IS CONDITION SENSOR VALUE IN TABLE?
52
YES
LOOKUP ADJUSTMENT FACTORS IN TABLE FOR SENSED CONDITION SENSOR VALUE
53
COMPARE ADJUSTMENT FACTORS WITH CURRENT HEADLIGHT POSITION
54
MAGNITUDE OF ADJUSTMENT GREATER THAN THRESHOLD?
55
NO
YES
ENERGIZE HEADLIGHT ACTUATORS
56
NO
LOOKUP ADJUSTMENT FACTORS IN TABLE FOR ADJACENT CONDITION SENSOR VALUES
57
INTERPOLATE ADJUSTMENT FACTOR
58

FIG. 5

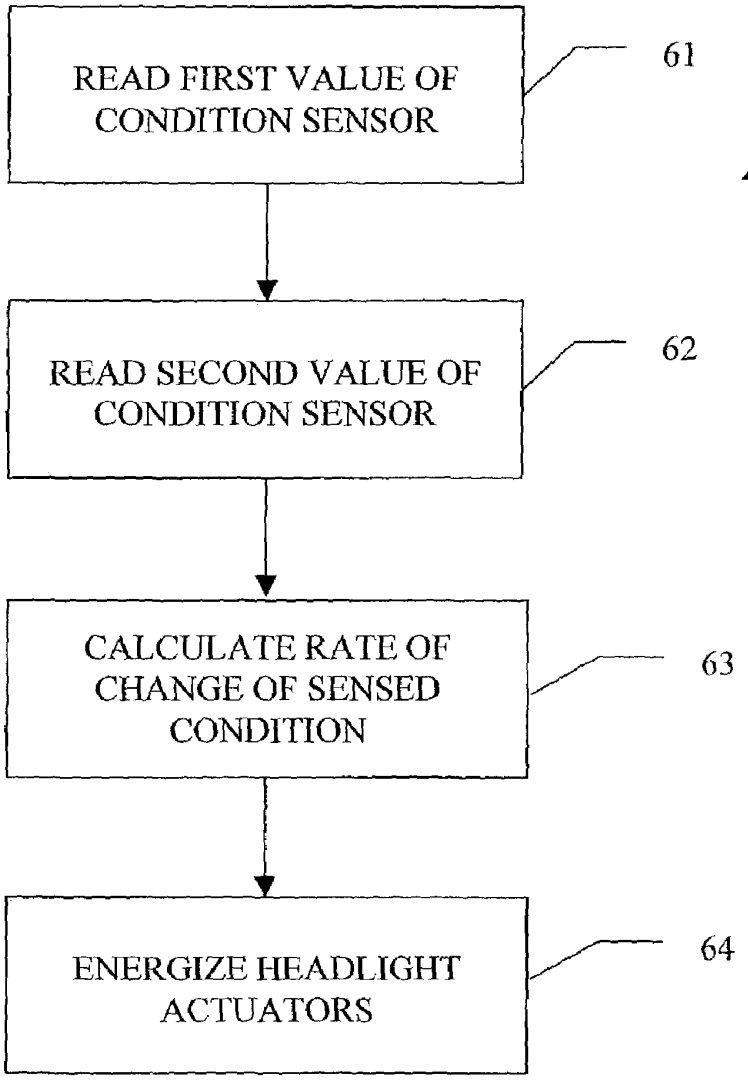

READ FIRST VALUE OF CONDITION SENSOR
61
60
READ SECOND VALUE OF CONDITION SENSOR
62
CALCULATE RATE OF CHANGE OF SENSED CONDITION
63
ENERGIZE HEADLIGHT ACTUATORS
64

FIG. 6

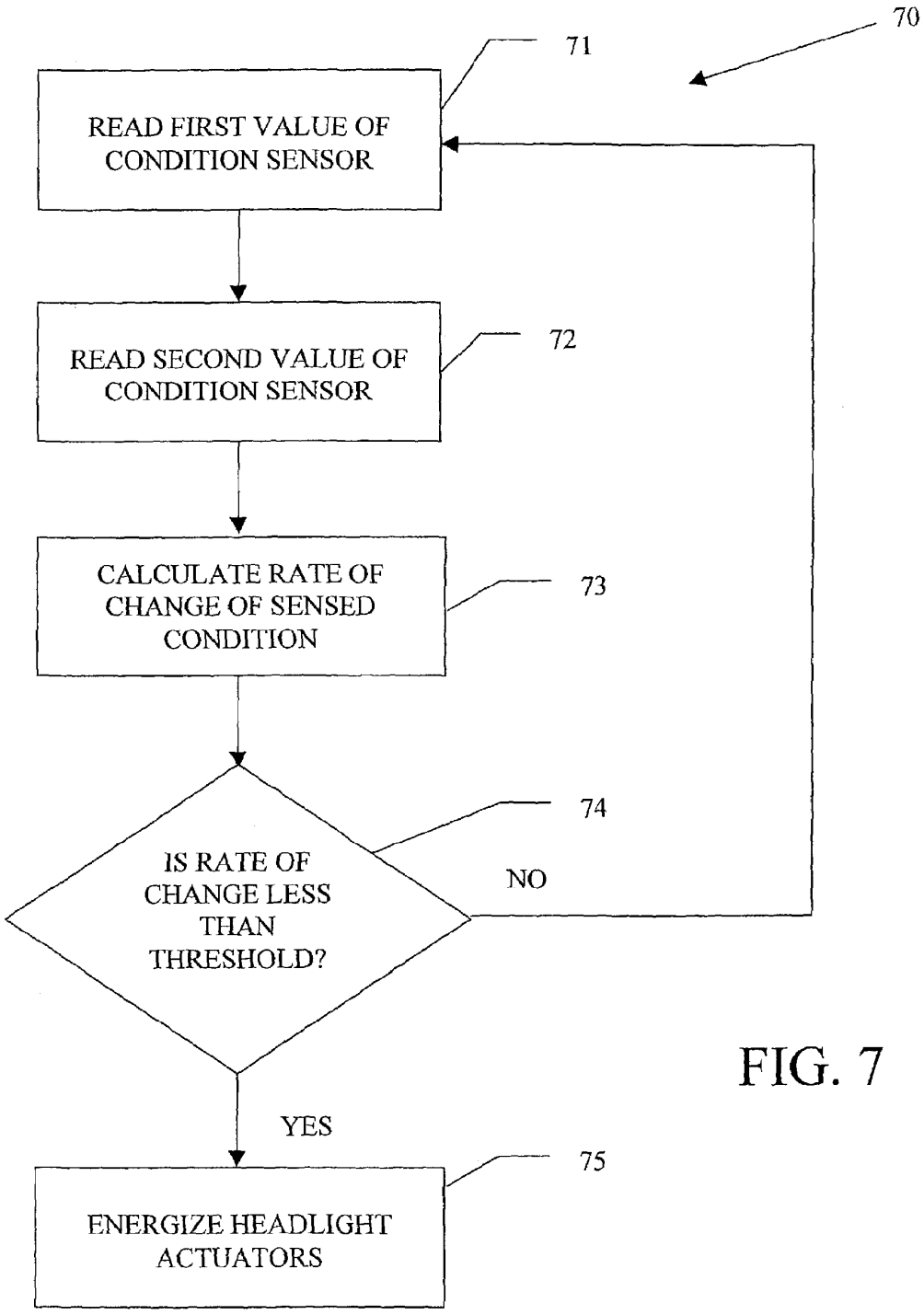

70
71
READ FIRST VALUE OF CONDITION SENSOR
72
READ SECOND VALUE OF CONDITION SENSOR
73
CALCULATE RATE OF CHANGE OF SENSED CONDITION
74
IS RATE OF CHANGE LESS THAN THRESHOLD?
NO
YES
75
ENERGIZE HEADLIGHT ACTUATORS

FIG. 7

AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application Nos. 60/335,409, filed Oct. 31, 2001; 60/356,703, filed Feb. 13, 2002; and 60/369,447, filed Apr. 2, 2002, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

This invention relates in general to headlights that are provided on vehicles for illuminating dark road surfaces or other areas in the path of movement. In particular, this invention relates to an automatic directional control system for such vehicle headlights.

Virtually all land vehicles, and many other types of vehicles (such as boats and airplanes, for example), are provided with one or more headlights that are adapted to illuminate a portion of a dark road surface or other area in the path of movement of the vehicle to facilitate safe travel thereon. Typically, each headlight is mounted on or near the front end of the vehicle and is oriented in such a manner that a beam of light is projected forwardly therefrom. The angle at which the beam of light projects from the headlight can, for example, be characterized in a variety of ways, including (1) up and down relative to a horizontal reference position or plane and (2) left and right relative to a vertical reference position or plane. Such directional aiming angles are usually set at the time of assembly of the headlight into the vehicle so as to illuminate a predetermined portion of the road surface or other area in the path of movement of the vehicle.

In the past, these headlights have been mounted on the vehicle in fixed positions relative thereto such that the beams of light are projected therefrom at predetermined directional aiming angles relative to the vehicle. Although such fixed aiming angle headlight systems have and continue to function adequately, they cannot alter the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. For example, if the speed of the vehicle is increased, it would be desirable to adjust the aiming angle of the headlights upwardly such that an area that is somewhat farther in front of the vehicle is more brightly illuminated. On the other hand, if the speed of the vehicle is decreased, it would be desirable to adjust the aiming angle of the headlights downwardly such that an area that is somewhat closer in front of the vehicle is more brightly illuminated. Similarly, if the vehicle turns a corner, it would be desirable to adjust the aiming angle of the headlights either toward the left or toward the right (depending on the direction of the turn) such that an area that is somewhat lateral to the front of the vehicle is more brightly illuminated.

To accomplish this, it is known to provide a directional control system for vehicle headlights that is capable of automatically altering the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. A variety of such automatic directional control systems for vehicle headlights are known in the art. However, such known automatic headlight directional control systems have been found to be deficient for various reasons. Thus, it would be desirable to provide an improved structure for an automatic headlight directional control system that addresses such deficiencies.

SUMMARY OF THE INVENTION

This invention relates to an improved structure and method for operating a directional control system for vehicle headlights that is capable of automatically altering the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. One or more operating condition sensors may be provided that generate signals that are representative of an operating condition of the vehicle, such as road speed, steering angle, pitch, suspension height, rate of change of road speed, rate of change of steering angle, rate of change of pitch, and rate of change of suspension height of the vehicle. A controller is responsive to the sensor signal for generating an output signal. An actuator is adapted to be connected to the headlight to effect movement thereof in accordance with the output signal. The controller can include a table that relates values of sensed operating condition to values of the output signal. The controller is responsive to the sensor signal for looking up the output signal in the table.

Various objects and advantages of this invention will become apparent to those skilled in the art from the following detailed description of the preferred embodiments, when read in light of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of an automatic directional control system for a vehicle headlight in accordance with this invention.

FIG. **2** is a flow chart of an algorithm for calibrating the automatic directional control system illustrated in FIG. **1** so as to define an initial reference position for the headlight from which the headlight directional controller can implement directional angle adjustments.

FIG. **3** is a flow chart of an algorithm for generating a table that relates one or more sensed vehicle operating condition values to one or more headlight directional angle adjustment factors and for storing such table in the headlight directional controller illustrated in FIG. **1**.

FIG. **4** is an example of a table that can be generated and stored in the headlight directional controller in accordance with the table generating algorithm illustrated in FIG. **3**.

FIG. **5** is a flow chart of an algorithm for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with sensed condition values.

FIG. **6** is a flow chart of an algorithm for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with the rate of change of one or more of the sensed condition values.

FIG. **7** is a flow chart of an algorithm for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments, but only when the rate of change of one or more of the sensed condition values is less than (or greater than) a predetermined value.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, there is illustrated in FIG. **1** an automatic directional control system, indicated generally at **10**, for a vehicle headlight **11** in accordance with this invention. The illustrated headlight **11** is, of itself, conventional in the art and is intended to be representative of any

device that can be supported on any type of vehicle for the purpose of illuminating any area, such as an area in the path of movement of the vehicle. The headlight **11** is typically mounted on or near the front end of a vehicle (not shown) and is oriented in such a manner that a beam of light is projected therefrom. In a manner that is well known in the art, the headlight **11** is adapted to illuminate a portion of a dark road surface or other area in the path of movement of the vehicle to facilitate safe travel thereon.

The headlight **11** is adjustably mounted on the vehicle such that the directional orientation at which the beam of light projects therefrom can be adjusted relative to the vehicle. Any desired mounting structure can be provided to accomplish this. Typically, the headlight **11** is mounted on the vehicle such that the angle at which the beam of light projects therefrom can be adjusted both (1) up and down relative to a horizontal reference position or plane and (2) left and right relative to a vertical reference position or plane. Although this invention will be described and illustrated in the context of a headlight that is adjustable in both the up/down direction and the left/right direction, it will be appreciated that this invention may be practiced with any headlight **11** that is adjustable in any single direction or multiple directions of movement, whether up/down, left/right, or any other direction.

To effect movement of the illustrated headlight **11** relative to the vehicle, an up/down actuator **12** and a left/right actuator **13** are provided. The actuators **12** and **13** are conventional in the art and may, for example, be embodied as servo motors, step motors, or any other electronically controlled mechanical actuators. It has been found to be desirable to use microstepping motors for the actuators **12** and **13**. Such microstepping motors are known in the art and consist of conventional step motors that have appropriate hardware (i.e., driver integrated circuits) and software that allow the step motors to be operated in fractional step increments. The use of such microstepping motors has been found to be desirable because they can effect movements of the headlights in a somewhat faster, smoother, and quieter manner than conventional step motors, and further permit more precise positioning of the headlights **11**. In the illustrated embodiment, the up/down actuator **12** is mechanically connected to the headlight **11** such that the headlight **11** can be selectively adjusted up and down relative to a horizontal reference position or plane. Similarly, the illustrated left/right actuator **13** is mechanically connected to the headlight **11** such that the headlight **11** can be selectively adjusted left and right relative to a vertical reference position or plane.

A headlight directional controller **14** is provided for controlling the operations of the up/down actuator **12** and the left/right actuator **13** and, therefore, the angle at which the beam of light projects from the headlight **11** relative to the vehicle. The headlight directional controller **14** can be embodied as any control system, such as a microprocessor or programmable electronic controller, that is responsive to one or more sensed operating conditions of the vehicle for selectively operating the up/down actuator **12** and the left/right actuator **13**. To accomplish this, the automatic directional control system **10** can include, for example, a pair of condition sensors **15** and **16** that are connected to the headlight directional controller **14**. The condition sensors **15** and **16** are conventional in the art and are responsive to respective sensed operating conditions of the vehicle for generating electrical signals to the headlight directional controller **14**. However, if desired, only a single one of the condition sensors **15** and **16** need be provided. Alternatively, additional condition sensors (not shown) may be provided if desired to generate electrical signals that are representative of any other operating conditions of the vehicle. A conventional input/output device **17** is connected to (or can be connected to) the headlight directional controller **14** for facilitating communication therewith in the manner described below.

If desired, a first position feedback sensor **18** may be provided for the up/down actuator **12**, and a second position feedback sensor **19** may be provided for the left/right actuator **13**. The position feedback sensors **18** and **19** are conventional in the art and are adapted to generate respective electrical signals that are representative of the actual up/down and left/right positions of the headlight **11**. Thus, the first position feedback sensor **18** is responsive to the actual up/down position of the headlight **11** (as determined by a portion of the up/down actuator **12**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. Similarly, the second position feedback sensor **19** is responsive to the actual left/right position of the headlight **11** (as determined by a portion of the left/right actuator **13**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. The position feedback sensors **18** and **19** can be embodied as any conventional sensor structures, such as Hall effect sensors, that are responsive to movements of the headlight **11** (or to the movements of the respective actuators **12** and **13** that are connected to move the headlight **11**) for generating such signals.

Alternatively, the position feedback sensors **18** and **19** can be embodied as respective devices that generate electrical signals whenever the headlight **11** has achieved respective predetermined up/down or left/right positions. This can be accomplished, for example, using a conventional optical interrupter (not shown) for each of the actuators **12** and **13**. Each of the optical interrupters includes a flag or other component that is mounted on or connected to the headlight **11** for movement therewith. Each of the optical interrupters further includes an optical source and sensor assembly. As the headlight **11** is moved by the actuators **12** and **13**, the flag moves therewith relative to the optical source and sensor assembly between a first position, wherein the flag permits light emitted from the source from reaching the sensor, and a second position, wherein the flag prevents light emitted from the source from reaching the sensor. When the flag is in the first position relative to the optical source and sensor assembly, the sensor is permitted to receive light emitted from the source. As a result, a first signal is generated from the optical source and sensor assembly to the headlight directional controller **14**. Conversely, when the flag is in the second position relative to the optical source and sensor assembly, the sensor is not permitted to receive light emitted from the source. As a result, a second signal is generated from the optical source and sensor assembly to the headlight directional controller **14**. Thus, the edge of the flag defines a transition between the first and second positions of the flag relative to the optical source and sensor assembly and, therefore, defines a predetermined up/down or left/right position of the headlight **11**. The nature of the signal generated from the optical source and sensor assembly to the headlight directional controller **14** (i.e., the first signal or the second signal) can also be used to determine on which side of the predetermined position (the left side or the right side, for example) that the headlight **11** is positioned. The purpose for such position feedback sensors **18** and **19** will be discussed below.

FIG. **2** is a flow chart of an algorithm, indicated generally at **20**, for calibrating the automatic directional control system illustrated in FIG. **1** so as to define an initial reference position or positions for the headlight **11** from which the headlight directional controller **14** can implement directional angle adjustments. As mentioned above, the headlight **11** is mounted on the vehicle such that the angle at which the beam of light projects therefrom can be adjusted both up and down relative to a horizontal reference position or plane and left and right relative to a vertical reference position or plane. To insure accurate positioning of the headlight **11**, it is desirable that a reference position or positions be initially established by the headlight directional controller **14**. Subsequent directional angle adjustments can be made by the headlight directional controller **14** from the pre-established reference position or positions established by this calibration algorithm **20**.

To accomplish this, the calibration algorithm **20** has a first step **21** wherein the headlight directional controller **14** is caused to enter a calibration mode of operation. In the calibration mode of operation, the headlight directional controller **14** is responsive to input signals from the input/output device **17** (or from another source, if desired) for causing manual operation of the up/down actuator **12** and the left/right actuator **13**. Thus, while the headlight directional controller **14** is in the calibration mode of operation, an operator of the input/output device **17** can manually effect either up/down movement of the headlight **11**, left/right movement of the headlight **11**, or both, as desired.

In a second step **22** of the calibration algorithm **20**, the up/down actuator **12** and the left/right actuator **13** are manually operated to aim the headlight **11** in a predetermined reference orientation. This can be accomplished by use of the input/output device **17** that, as mentioned above, is connected to (or can be connected to) the headlight directional controller **14**. Traditionally, the aiming of a headlight **11** has been accomplished by parking the vehicle on a surface near a wall or other vertical structure, providing a reference target at a predetermined location on the wall or other structure, and mechanically adjusting the mounting structure of the headlight **11** such that the center of the beam therefrom is projected at the reference target. In this invention, the vehicle is parked on a surface near a wall or other vertical structure, and a reference target is provided at a predetermined location on the wall or other structure, as described above. Next, in accordance with the second step **22** of this calibration algorithm **20**, the input/output device **17** is operated to generate electrical signals to the headlight directional controller **14**. In response to such electrical signals, the headlight directional controller **14** operates the up/down actuator **12** and the left/right actuator **13** to move the headlight **11** such that center of the beam projecting therefrom is aimed at the reference target. When the beam from the headlight **11** is so aimed, then the headlight **11** is determined to be oriented in the initial reference position from which the headlight directional controller **14** can subsequently implement directional angle adjustments.

In a third step **23** of the calibration algorithm **20**, once this initial reference position for the headlight **11** has been achieved, such position is stored in the headlight directional controller **14** as the predetermined initial reference position. This can be accomplished by means of the position feedback sensors **18** and **19**. As discussed above, the position feedback sensors **18** and **19** are adapted to generate respective electrical signals that are representative of the actual up/down and left/right positions of the headlight **11** or of the predetermined positions for the headlight. Thus, the first position feedback sensor **18** is responsive to the actual up/down position of the headlight **11** (as determined by the up/down actuator **12**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. Similarly, the second position feedback sensor **19** is responsive to the actual left/right position of the headlight **11** (as determined by the left/right actuator **13**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. Accordingly, the third step **23** of the calibration algorithm **20** can be performed by causing the headlight directional controller **14** to read the signals from the position feedback sensors **18** and **19** and store the current up/down and left/right positions of the headlight **11** as the initial reference positions from which the headlight directional controller **14** can subsequently implement directional angle adjustments.

The current position of the headlight **11** is preferably stored in the non-volatile memory of the headlight directional controller **14** for reference during normal operation of the automatic directional control system **10** described below. Thus, when the automatic directional control system **10** is initially activated (such as when the electrical system of the vehicle is initially turned on), the headlight directional controller **14** can position the headlight **11** at or near the calibrated position utilizing the signals comparing the current position of the headlight **11** (as determined by the signals generated by the position feedback sensors **18** and **19**) with the predetermined reference position determined by the calibration algorithm **20**.

FIG. **3** is a flow chart of an algorithm, indicated generally at **30**, for generating a table that relates the sensed condition values from the condition sensors **15** and **16** to the headlight directional angle adjustment factors that will be implemented by the headlight directional controller **14**, and further for storing such table in the headlight directional controller **14** illustrated in FIG. **1**. As used herein, the term "table" is intended to be representative of any collection or association of data that relates one or more of the sensed condition values to one or more of the headlight directional angle adjustment factors. The table of data can be generated, stored, and expressed in any desired format. For example, this table of data can be generated, stored, and expressed in a conventional spreadsheet format, such as shown in FIG. **4**, which will be discussed in detail below.

In a first step **31** of the table generating algorithm **30**, an adjustment control algorithm is selected. The adjustment control algorithm can be, generally speaking, any desired relationship that relates one or more operating conditions of the vehicle to one or more angular orientations of the headlight **11**. A variety of such relationships are known in the art, and this invention is not intended to be limited to any particular relationship. Typically, such relationships will be expressed in terms of a mathematical equation or similar relationship that can be readily processed using a microprocessor or similar electronic computing apparatus, such as the above-described headlight directional controller **14**. The particular adjustment control algorithm that is selected may, if desired, vary from vehicle to vehicle in accordance with a variety of factors, including relative size and performance characteristics of the vehicle or any other desired condition.

As mentioned above, a plurality of operating conditions may be sensed by the condition sensors **15** and **16** and provided to the headlight directional controller **14** for use with the adjustment control mechanism. For example, the condition sensors **15** and **16** may generate electrical signals to the headlight directional controller **14** that are represen-

tative of the road speed, the steering angle, and the pitch of the vehicle (which can, for example, be determined by sensing the front and rear suspension heights of the vehicle or by a pitch or level sensor). Additionally, the time derivative of these operating conditions (i.e., the rate of change of the road speed, steering angle, and pitch of the vehicle) can be sensed or calculated. However, any other operating condition or conditions of the vehicle may be sensed and provided to the headlight directional controller **14**.

In a second step **32** of the table generating algorithm **30**, the table is generated using the adjustment control algorithm selected in the first step **31**. The table can be generated in any desired manner. For example, let it be assumed that the selected adjustment control algorithm relates a single sensed operating condition to each of the angular adjustment control values for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. The table can be generated by initially selecting a first discrete sensed operating condition value that might be encountered during operation of the vehicle. Then, the selected adjustment control algorithm is solved using such first discrete sensed operating condition value to obtain the corresponding adjustment control values for the up/down and left/right orientation of the headlight **11**. Then, the first discrete sensed operating condition value and the corresponding adjustment control values are stored in the table. This process can be repeated for any desired number of other discrete sensed operating condition values that might be encountered during operation of the vehicle.

As mentioned above, FIG. **4** is a representative example of a table, indicated generally at **40**, that can be generated in accordance with the second step **32** of the table generating algorithm **30** illustrated in FIG. **3**. As shown therein, a series of discrete sensed operating condition values (degrees of steering angles, for example) is related to the angular adjustment control values (degrees of movement from the associated up/down and left/right reference positions or planes, for example) for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. For the purposes of illustration only, let it be assumed that (1) a positive steering angle value represents steering toward left, while a negative steering angle value represents steering toward the right, (2) a positive up/down adjustment factor represents aiming the headlight **11** upwardly, while a negative up/down adjustment factor represents aiming the headlight **11** downwardly, and (3) a positive left/right adjustment factor represents aiming the headlight **11** toward the left, while a negative left/right adjustment factor represents aiming the headlight **11** toward the right.

Thus, in accordance with the selected adjustment control algorithm, a sensed steering angle of +6° results in an up/down adjustment factor of −3.00° and a left/right adjustment factor of +4.50°. Similarly, a sensed steering angle of +5° results in an up/down adjustment factor of −2.50° and a left/right adjustment factor of +3.75°, and so on as shown in the table **40**. The illustrated table **40** relates thirteen different sensed steering angle values to their corresponding adjustment control values for both the up/down and left/right orientation of the headlight **11**. However, the table **40** can include a greater or lesser number of such sensed operating condition values, together with their corresponding adjustment control values. Furthermore, although the illustrated table **40** relates only a single sensed operating condition value (steering angle) to the corresponding adjustment control values for both the up/down and left/right orientation of the headlight **11**, the selected adjustment control algorithm may, as mentioned above, be responsive to a plurality of sensed operating condition values for determining the corresponding adjustment control values. Alternatively, as will be discussed further below, a plurality of tables **40** can be generated, one for each of the plurality of sensed operating condition values. The size and extent of the table **40** or tables can be varied to accommodate any desired number of such sensed operating conditions.

Referring back to FIG. **3**, in a third step **33** of the table generating algorithm **30**, the table **40** generated in the second step **32** is stored in the memory of the headlight directional controller **14** illustrated in FIG. **1**. The contents of the table **40** can be communicated serially to the headlight directional controller **14** by means of the input/output device **17** illustrated in FIG. **1** or in any other desired manner. Regardless of how it is communicated, the table **40** is preferably stored in a non-volatile memory of the headlight directional controller **14** for subsequent use in the manner described further below when the vehicle is operated.

As mentioned above, it may be desirable to vary the algorithm that is selected for use in implementing the headlight directional angle adjustment factors. The generation of the table **40** and the storage of such table **40** in the memory of the headlight directional controller **14** allow a designer of the automatic directional control system **10** to quickly and easily alter the response characteristics of the system **10** as desired, without the need for direct access to the computer code or software that is used to operate the headlight directional controller **14**. Rather, to effect such alterations, a designer can simply change some or all of the data points that are contained within the table **40**. As will be described in detail below, the headlight directional controller **14** will use whatever data points that are contained within the table **40** in determining the need for adjustments in the angular orientation of the headlight **11**. This structure also reduces the amount of processing power that is necessary for the headlight directional controller **14** because it can operate on a relatively simple look-up basis using the table **40**, rather than having to calculate relatively high order equations that may be used to determine the data points contained within the table **40**.

FIG. **5** is a flow chart of an algorithm, indicated generally at **50**, for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with one or more of the sensed condition values from the condition sensors **15** and **16**. In a first step **51** of the operating algorithm **50**, the values of one or more of the condition sensors **15** and **16** are read by the headlight directional controller **14**. Then, the operating algorithm **50** enters a decision point **52**, wherein it is determined whether the value or values of the condition sensors **15** and **16** that have been read by the headlight directional controller **14** are specifically contained in the table **40**. For example, using the table **40** illustrated in FIG. **4**, if the headlight directional controller **14** has read a steering angle value of −2°, then it is determined that the value of the condition sensor **15** is specifically contained within the table **40**. In this instance, the operating algorithm **50** branches from the decision point **52** to an instruction **53**, wherein the adjustment factors contained in the table **40** that correspond to the sensed condition value are looked up and stored in the headlight directional controller **14**.

The operating algorithm **50** next enters an instruction **54** wherein the value of the magnitude of the adjustment factor (i.e., the desired position for the headlight **11**) is compared with the current position of the headlight **11**. This step **54** of the operating algorithm **50** is optional and can be performed if one or more of the position feedback sensors **18** and **19** are

provided in the automatic directional control system **10** to generate respective electrical signals that are representative of the actual up/down and left/right positions of the headlight **11**, as described above. This step **54** of the operating algorithm **50** can be performed to determine how much of an adjustment is necessary to move the headlight **11** from its current position, as determined by the position feedback sensors **18** and **19**, to the desired position, as defined by the adjustment factor obtained from the table **40**. To accomplish this, the value of the adjustment factor may, for example, be subtracted from the current position of the headlight **11** to determine the magnitude of the difference therebetween and, therefore, the magnitude of the adjustment that is necessary to move the headlight **11** from its current position to the desired position. However, this step **54** of the operating algorithm **50** can be accomplished in any other desired manner.

Next, the operating algorithm **50** enters a decision point **55**, wherein it is determined whether the magnitude of the adjustment that is necessary to move the headlight **11** from its current position to the desired position is greater than a predetermined minimum threshold. This step in the operating algorithm **50** is also optional, but may be desirable to prevent the actuators **12** and **13** from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition or conditions, such as relatively small bumps in the road. For example, if the current position of the headlight **11** is relatively close to the desired position, then it may be undesirable to effect any movement thereof. This step **55** will prevent the actuators **12** and **13** from being operated unless the current position of the headlight **11** is relatively far from the desired position. As another example, if the condition sensors **15** and **16** are respectively responsive to the front and rear suspension heights of the vehicle for the purpose of determining the pitch thereof, then the headlight directional controller **14** may be programmed to be responsive only to changes in the suspension heights that occur at frequencies that are lower than the suspension rebound frequency of the vehicle (thereby ignoring relatively high frequency changes in suspension height that are likely the result of bumps in the road). However, relatively high frequency changes in the suspension heights could also be monitored to assist in deciphering relatively rough suspension changes from other suspension changes.

In any event, the provision of the predetermined minimum threshold functions as a filter or dead band that minimizes or eliminates undesirable "hunting" of the actuators **12** and **13** for relatively small magnitudes of movement of the headlight **11**. If the magnitude of the adjustment factor is not greater than the predetermined minimum threshold, then the operation of the actuators **12** and **13** is considered to be undesirable. Thus, the operating algorithm **50** branches from the decision point **55** back to the instruction **51**, wherein the above-described steps of the operating algorithm **50** are repeated.

If, on the other hand, the magnitude of the adjustment factor is greater than the predetermined minimum threshold, then the operation of the actuators **12** and **13** is considered to be desirable. Thus, the operating algorithm **50** branches from the decision point **55** to an instruction **56**, wherein either or both of the actuators **12** and **13** are actuated to effect movement of the headlight **11**. For example, using the table **40** illustrated in FIG. **4**, if the headlight directional controller **14** has read a steering angle value of −2°, then the headlight directional controller **14** will look up an up/down adjustment factor of −1.00° and a left/right adjustment factor of −1.50° from the table **40**. The headlight directional controller **14** operates the actuators **12** and **13** to adjust the angular orientation of the headlight **11** to achieve the noted adjustment factors.

In some instances, the amounts of movement that are to be implemented by the two actuators **12** and **13** will be the same (i.e., the amount of up/down movement of the headlight **11** will be the same as the amount of left/right movement). More frequently, however, the amounts of movement that are to be implemented by the two actuators **12** and **13** will be different from one another. In the latter instances, it may be desirable to operate the two actuators **12** and **13** at two different speeds such that the overall movement of the headlight **11** is relatively uniform. For example, if the amount of movement that is to be implemented by the up/down actuator **12** is twice as large as the amount of movement that is to be implemented by the left/right actuator **13**, then it may be desirable to operate the up/down actuator **12** at one-half of the speed of the left/right actuator **13** so that the movements of both actuators **12** and **13** (and, therefore, the overall movement of the headlight **11**) will start and stop at approximately the same time. Similarly, if the vehicle is provided with two different headlights **11**, as is commonly found, then it may be desirable to control the respective movements of such different headlights **11** in such a manner that they both start and stop at approximately the same time. This can be accomplished, for example, by providing a single headlight directional controller **14** for not only controlling, but also coordinating the movements of both of the headlights **11** in response to the sensed operating conditions.

Such operations can be performed in an open loop manner if desired, wherein the actuators **12** and **13** are operated to achieve predetermined amounts of movement. For example, the actuators **12** and **13** can be embodied as step motors that are operated a predetermined number of steps to achieve predetermined amounts of movement. Alternatively, the actuators **12** and **13** can be operated for predetermined periods of time to achieve the predetermined amounts of movement. However, more desirably, the operations of the actuators **12** and **13** are performed in a closed loop manner. To accomplish this, the actuators **12** and **13** are operated until either or both of the position feedback sensors **18** and **19** generate signals indicate that the headlight **11** has actually achieved the predetermined amounts of movement or desired position. In either event, the operating algorithm **50** then branches back to the instruction **51**, wherein the above-described steps of the algorithm **50** are repeated.

Referring back to the decision point **52**, if the value or values of the condition sensors **15** and **16** that have been read by the headlight directional controller **14** are not specifically contained in the table **40**, then the operating algorithm **50** branches from the decision point **52** to an instruction **57**, wherein the adjustment factors that are specifically contained in the table **40** that correspond to the adjacent sensed condition values are looked up and stored in the headlight directional controller **14**. For example, using the table **40** illustrated in FIG. **4**, if the headlight directional controller **14** has read a steering angle value of −1.5°, then it is determined that the value of the condition sensor **15** is not specifically contained within the table **40**. Rather than simply default to the closest value that is contained within the table **40**, the two adjustment factors specifically contained in the table **40** that are adjacent to the sensed condition value (namely, the adjustment factors for the steering angle values of −1° and −2°) are looked up and stored in the headlight directional controller **14**.

The operating algorithm **50** next enters an instruction **58**, wherein the actual adjustment factors to be implemented by the headlight directional controller **14** are interpolated or otherwise calculated from the stored adjustment factors that are adjacent to the sensed condition value. For example, as mentioned above, if the actual sensed steering angle value is −1.5°, then the headlight directional controller **14** looks up the adjustment factors for the steering angle values of −1° and −2°. The up/down adjustment factor for a steering angle value of −1° is −0.50 while the up/down adjustment factor for a steering angle value of −2° is −1.00°. If the calculation that is performed by the headlight directional controller **14** is a simple arithmetic mean, then the interpolated up/down adjustment factor would be −0.75°. Similarly, the left/right adjustment factor for a steering angle value of −1° is −0.75°, while the left/right adjustment factor for a steering angle value of −2° is −1.50°. If the calculation that is performed by the headlight directional controller **14** is a simple arithmetic mean, then the interpolated left/right adjustment factor would be −1.13°. Thereafter, the operating algorithm **50** branches to the decision point **55**, and the remainder of the operating algorithm **50** is performed as described above.

The interpolation that is performed by the headlight directional controller **14** can be accomplished in any desired manner. The performance of the simple arithmetic mean described above is intended to be representative of any mathematical or other function that can be performed to calculate, derive, or otherwise obtain adjustment factors that are not present in the table **40**. Furthermore, although this interpolation has been described in the context of using only the two condition values that are directly adjacent to the actual sensed condition value, it will be appreciated that the adjustment values for any single condition value or combination of sensed condition values may be selected for the interpolation. For example, several of the condition values both above and below the sensed condition value can be read from the table **40** to derive a trend line or other good estimate of the adjustment factors that are not present in the table **40**. Performance of this interpolation does not require any significant increase in the amount of processing power that is necessary for the headlight directional controller **14**.

The above discussion has assumed the use of a single table **40** that provides adjustment values based upon a single sensed operating condition (steering angle of the vehicle, in the illustrated embodiment). However, as discussed above, this invention may be practiced by sensing a plurality of operating conditions of the vehicle. For example, let it be assumed that both steering angle and vehicle road speed are sensed by the condition sensors **15** and **16**. As previously discussed, the adjustment control algorithm that is selected in the first step **31** of the table generating algorithm **30** can be designed to accommodate multiple sensed conditions. Alternatively, however, a first table (such as the table **40** illustrated in FIG. **4**) may be generated that relates the steering angle of the vehicle to the angular adjustment control values for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. A second, similar table (not shown) may also be generated that relates the road speed of the vehicle to the angular adjustment control values for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. Thus, for a given steering angle and road speed of the vehicle, the first and second tables may provide differing angular adjustment control values. To address this, the interpolation step **57** of the operating algorithm **50** can be performed to interpolate a single composite adjustment value that is based upon the two different values provided in the first and second tables for the pair of sensed operating conditions. This interpolation can be performed in the same manner as described above for each of the actuators **12** and **13**.

A variety of control strategies can be implemented using the automatic directional control system **10** described above. For example, the pitch of the vehicle can change as a result of a variety of factors, including acceleration, deceleration, and weight distribution of the vehicle. These pitch variations can alter the angle at which the beam of light projects from the headlight **11** in the up and down direction relative to a horizontal reference position or plane. The automatic directional control system **10** can be responsive to such pitch variations for operating the up/down actuator **12** to maintain the angle at which the beam of light projects from the headlight **11** in the up and down direction relatively constant to the horizontal reference position or plane.

As discussed above, the angle at which the beam of light projects from the headlight **11** in the left and right direction relative to a vertical reference position or plane can be adjusted in accordance with the sensed steering angle. However, the angle at which the beam of light projects from the headlight **11** in the up and down direction relative to a horizontal reference position or plane can also be adjusted in accordance with the sensed steering angle. This can be done to lower the headlight beams as the vehicle is turning a corner. The advantages of this are not only to better illuminate the road surface in the path of movement of the vehicle, but also to reduce headlight glare to other vehicles as the turn is negotiated.

Lastly, many vehicles on the road today have halogen lamps or other lights that are aimed to illuminate the sides of the roads in front of the vehicle during the turn. These other lights are activated by the manual operation of the turn signals of the vehicle. The automatic directional control system **10** of this invention can be responsive to one or more operating conditions of the vehicle to automatically activate these other lights on the vehicle. For example, the automatic directional control system **10** of this invention can be responsive to a steering angle in excess of a predetermined magnitude for automatically activating these other lights on the vehicle. This can be effective to extend the angular range of illumination of the road surface.

FIG. **6** is a flow chart of an algorithm, indicated generally at **60**, for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with the rate of change of one or more of the sensed condition values. As mentioned above, the headlight directional controller **14** can be operated to automatically implement directional angle adjustments in accordance with one or more of the sensed condition values or in accordance with the rate of change of one or more of the sensed condition values.

To accomplish this, the algorithm **60** has a first step **61** wherein the values of one or more of the condition sensors **15** and **16** are initially read by the headlight directional controller **14**. Then, the algorithm **60** enters a second step **62** wherein the values of one or more of the condition sensors **15** and **16** are subsequently read a second time by the headlight directional controller **14**. The second reading of the condition sensors **15** and **16** occurs a predetermined amount of time after the first reading thereof. Next, the algorithm enters a third step **63** wherein a rate of change of the sensed condition or conditions is calculated. The rate of change of the sensed condition can be calculated as the difference between the first and second readings divided by the amount of time therebetween or by any other desired means. For example, if the sensed condition is vehicle speed, then the difference between the first sensed vehicle speed and the second sensed vehicle speed, divided by the amount of time therebetween, would yield a number that is repre-

sentative of the acceleration of the vehicle. In a final step **64** of the algorithm **60**, either or both of the actuators **12** and **13** are actuated to effect movement of the headlight **11** in accordance with the calculated rate of change of the sensed condition. Such movement of the headlight **11** can be effected in a manner that is similar to that described above.

FIG. **7** is a flow chart of an algorithm, indicated generally at **70**, for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments, but only when the rate of change of one or more of the sensed condition values is less than (or greater than) a predetermined value. As mentioned above, the headlight directional controller **14** can be operated to automatically implement directional angle adjustments in accordance with one or more of the sensed condition values. In this variation of the invention, the headlight directional controller **14** automatically implements directional angle adjustments in response to the sensed condition values (or in response to the rate of change of the sensed condition values), but only when the rate of change of one or more of the sensed condition values is less than (or greater than) a predetermined value.

To accomplish this, the algorithm **70** has a first step **71** wherein the values of one or more of the condition sensors **15** and **16** are initially read by the headlight directional controller **14**. Then, the algorithm **70** enters a second step **72** wherein the values of one or more of the condition sensors **15** and **16** are subsequently read a second time by the headlight directional controller **14**. The second reading of the condition sensors **15** and **16** occurs a predetermined amount of time after the first reading thereof. Next, the algorithm enters a third step **73** wherein a rate of change of the sensed condition or conditions is calculated. The rate of change of the sensed condition can be calculated as the difference between the first and second readings divided by the amount of time therebetween or by any other desired means. For example, if the sensed condition is suspension height, then the difference between the first sensed suspension height and the second sensed suspension height, divided by the amount of time therebetween, would yield a number that is representative of the rate of change of the suspension height of the vehicle.

In a fourth step **74** of the algorithm **70**, a determination is made as to whether the rate of change of the sensed condition value is less than a predetermined threshold value. If the rate of change of the sensed condition value is less than this predetermined threshold value, then the algorithm **70** branches from the decision point **74** to a final step **75** of the algorithm **70**, wherein either or both of the actuators **12** and **13** are actuated to effect movement of the headlight **11** in accordance with the calculated rate of change of the sensed condition. Such movement of the headlight **11** can be effected in a manner that is similar to that described above. If, however, the rate of change of the sensed condition value is not less than this predetermined threshold value, then the algorithm **70** branches from the decision point **74** back to the first step **71**, wherein the algorithm **70** is repeated. This threshold sensing algorithm **70** can function to prevent the headlight directional controller **14** from being operated to automatically implement directional angle adjustments when the rate of change of the suspension height of the vehicle changes more rapidly than the system can effect corrective changes. For example, if the vehicle is operated on a bumpy road, the algorithm **70** will prevent the headlight directional controller **14** from attempting to correct for every single bump that is encountered. However, for relatively low frequency or rates of change in the suspension height of the vehicle, such as can occur when accelerating, decelerating, and weight changes, the headlight directional controller **14** will be operated in the normal manner to effect corrective actions, as described above.

As mentioned above, the input/output device **17** is connected to (or can be connected to) the headlight directional controller **14** for facilitating communication therewith, and the input/output device **17** can be used for calibrating the automatic directional control system illustrated in FIG. **1** so as to define an initial reference position or positions for the headlight **11** from which the headlight directional controller **14** can implement directional angle adjustments. Additionally, however, the input/output device **17** can be employed as a diagnostic tool. To accomplish this, the input/output device **17** can be embodied as a conventional microprocessor or similar electronically programmable device that can be connected to the headlight directional controller **14** to read fault codes that may be generated during the operation thereof. The headlight directional controller **14** can be programmed to generate fault codes whenever a fault condition or other anomaly occurs or is detected. Such fault codes can be stored in the headlight directional controller **14** until the input/output device **17** is subsequently connected thereto. When so connected, the input/output device **17** can read such codes and display them for an operator. As a result, the operator can take whatever corrective actions are necessary to address the fault condition or anomaly. The input/output device **17** can also be programmed to clear the fault codes from the headlight directional controller **14** after they are read.

In accordance with the provisions of the patent statutes, the principle and mode of operation of this invention have been explained and illustrated in its preferred embodiments. However, it must be understood that this invention may be practiced otherwise than as specifically explained and illustrated without departing from its spirit or scope.

What is claimed is:

1. An automatic directional control system for a vehicle headlight comprising:

a sensor that is adapted to generate a signal that is representative of a condition of the vehicle, said sensed condition includes one or more of road speed, steering angle, pitch, and suspension height of the vehicle;

a controller that is responsive to said sensor signal for generating an output signal only when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition; and

an actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal.

2. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the road speed of the vehicle.

3. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the steering angle of the vehicle.

4. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the pitch of the vehicle.

5. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the suspension height of the vehicle.

* * * * *

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	James E. Smith
Filer:	Patrick Edgar Caldwell
Attorney Docket Number:	SVIPGP109RE

Filed as Large Entity

ex parte reexam Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Request for ex parte reexamination	1812	1	2520	2520
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**2520**

Electronic Acknowledgement Receipt	
EFS ID:	7685275
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	James E. Smith
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	25-MAY-2010
Filing Date:	
Time Stamp:	16:49:08
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$2520
RAM confirmation Number	3107
Deposit Account	504964
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Receipt of Original Ex Parte Reexam Request	7241034_109_Re-Exam_25-May-2010.pdf	47718 b2cc4f0988c7660883336f4ebdcb2f54169d6fb3	no	3
Warnings:					
Information:					
2	Reexam Miscellaneous Incoming Letter	7241034_109_Re-Exam_Exhibit_A_25-May-2010.pdf	37189 1a518646f9510333682c056f3eb84cea8c496a51	no	3
Warnings:					
Information:					
3	Reexam Miscellaneous Incoming Letter	4733333_Shibata.pdf	435319 136b253d6a1fd782bd19cb1d31346fa9308e8212	no	24
Warnings:					
Information:					
4	Copy of patent for which reexamination is requested	7241034_Smith_filing.pdf	2428532 a140454c40f612a3362b93828621af5145c872bd	no	16
Warnings:					
Information:					
5	Fee Worksheet (PTO-875)	fee-info.pdf	29975 0aa5b819fcce8ea15db80204591310c02dded73b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2978733		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Requester's Name and Address: THE CALDWELL FIRM, LLC
P.O. BOX 59655
DEPT. SVIPGP
DALLAS, TX 75229

Patent Number: 7,241,034 Request Receipt Date: 05/25/10

Control Number:90/011,011
Date Mailed: 05/26/10

NOTICE OF FAILURE TO COMPLY WITH *EX PARTE* REEXAMINATION REQUEST FILING REQUIREMENTS (37 CFR 1.510(c))

The Central Reexamination Unit (CRU) in the United States Patent and Trademark Office (USPTO) has received a request for *ex parte* reexamination. The request cannot be processed, because the below-identified filing date requirements for an *ex parte* reexamination request have not been satisfied. If a fully compliant response is not received within 30 days of the mailing date of this notice, the request will be treated as a prior art citation under 37 CFR 1.501 or closed from public view, at the Office's option. A **filing date** will **NOT** be assigned to the request until the deficiencies noted below are corrected (37 CFR 1.510(d)):

The following items required by **37 CFR 1.510(a) and (b)** are missing:

☐ 1. The *ex parte s* reexamination filing fee under 37 CFR 1.20(c)(1) – see attached Form PTO-2057.

☐ 2. An identification of the patent by its patent number, and of every claim of the patent for which reexamination is requested.

☐ 3. A citation of the patents and printed publications that are presented to raise a substantial new question of patentability.

☒ 4. A statement pointing out each substantial new question of patentability based on the cited patents & printed publications, and a detailed explanation of the pertinency and manner of applying the patents & printed publications to every claim for which reexamination is requested.

☐ 5. A legible copy of every patent or printed publication (other than U.S. patents or U.S. patent publications) relied upon or referred to in (3) and (4) above, accompanied by an English language translation of all the necessary and pertinent parts of any non-English language document.

☐ 6. A legible copy of the entire patent including the front face, drawings, and specification/claims (in **double** column format) for which reexamination is requested, and a legible copy of any disclaimer, certificate of correction, or reexamination certificate issued in the patent. All copies must have each page plainly written on only one side of a sheet of paper.

☐ 7. A certification by the third party requester that a copy of the request has been served in its entirety on the patent owner at the address provided for in 37 CFR 1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy of the request must be supplied to the Office.

☐ 8. Other:

☒ Explanation of above item(s): See Attachment.

Any written correspondence in response to this notice must include a submission pursuant to the attached instructions. **The instructions for a detailed explanation for an *ex parte* reexamination request differ from those for an *inter partes* reexamination request.** Any written correspondence in response to this notice should be mailed to the Central Reexamination Unit (CRU), ATTN: "Box *Ex Parte* Reexam" at the USPTO address indicated at the top of this notice. Any "replacement documents" may be facsimile transmitted to the CRU at the FAX number indicated below. A REPLACEMENT STATEMENT AND EXPLANATION UNDER 37 CFR 1.510(b)(1) and (2) MAY NOT BE FACSIMILE TRANSMITTED.

Patent Reexamination Specialist, Central Reexamination Unit
(571) 272- 7740 ; FAX No. (571) 273-9900

cc: Patent Owner's Name and Address:

ATTACHMENT TO PTOL-2077

Control Number: 90/011,011
Patent Number: 7,241,034
Request Receipt Date: May 25, 2010

Please read the instructions that accompany this Notice and Attachment.

The Request for *Ex Parte* Reexamination filed on May 25, 2010 does not comply with the filing requirement of an *ex parte* reexamination proceeding under 37 CFR 1.510(b)(1)(2).

Reexamination was requested for U.S. Patent No. 7,241,034 (in this instance Claims 1 and 3 are requested). The request does not provide a "statement pointing out ***each*** substantial new question of patentability based on the prior patents and printed publications" for each cited document, as is required by 37 CFR 1.510(b)(1). Nor does request provide a "detailed explanation of the pertinency and manner of applying the cited prior art to ***every claim for which reexamination is requested***," as is required by 37 CFR 1.510 (b)(2).

In this instance, the request does not provide an explanation of how the reference cited on the Information Disclosure Statement (IDS) may apply, in a proposed rejection under 35 USC §102 or §103 to each of claims. The request must clearly set forth in detail what Patent Owner considers the "substantial new question of patentability" to be in view of the prior patents and printed publications. Ideally, the required explanation can be provided using an appropriately detailed claim chart that compares, limitation by limitation, each claim for which reexamination is requested with the relevant teachings of each reference cited in the request. See the sample request for reexamination in MPEP § 2214.

The request has failed to provide the requisite identification and explanation in compliance with 37 CFR 1.510(b)(1), of what substantial new questions of patentability (SNQs) are being raised by the cited prior art documents under 37 CFR 1.510(b). The request fails to clearly explain how each asserted SNQ is substantially different from those raised in the previous examination of the patent before the Office. As pointed out in MPEP 2216:

> "It is not sufficient that a request for reexamination merely proposes one or more rejections of a patent claim or claims as a basis for reexamination. It must first be demonstrated that a patent or printed publication that is relied upon in a proposed rejection presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during the prosecution of any other prior proceeding involving the patent for which reexamination is requested." [Emphasis added]

In implementing the statute, 37 CFR 1.510(b)(2) clearly requires that in addition to providing a statement pointing out each substantial new question of patentability, the reexamination requester must provide "a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination was requested.

It is to be understood that every limitation of each claim (covered by an identification of a substantial new question of patentability or proposed rejection) must be addressed by the request. In a patent owner requested reexamination, for each limitation of the claim, the request must:

(a) Apply at least one of the references to the limitation (i.e. point out how the reference meets/teaches the limitation);

(b) State that the limitation is not covered by the references; OR

(c) Say/admit that the limitation is known or old in the art, or similar language.

The patent owner must address all the claim limitations as using one of the avenues (a)-(c).

Since the request has not properly advanced (and explained) a substantial new question with respect to all of the '034 patent claims for which reexamination has been requested, the request fails to comply with the requirements for granting a filing date for a reexamination request.

Stated another way, the request does not provide a "detailed explanation of the pertinency and manner of applying the cited prior art" to every patent claim for which reexamination is requested, as is required by 37 CFR 1.510(b)(2).

For each identified substantial new question of patentability (SNQ), the request must explain how the cited documents identified for that SNQ are applied to meet/teach the patent claim limitations to thus establish the identified SNQ. *See* Clarification of Filing Date Requirements for *Ex Parte* and *Inter Partes* Reexamination Proceedings 71 *Fed. Reg.* 44219, (August 4, 2006)), at page 44221, second half of middle column.

If the requester were permitted to omit an explanation of how such documents cited in request are applied to the patent claims, an undue burden would be placed on the Office to address each document in the determination on the request, without an explanation of the relevance to the patent claims. Accordingly, such an omission is prohibited by law.

In accordance with 37 CFR 1.510(c), a filing date for the reexamination request will not be granted **at this time**.

Requester has the option to respond to this identification of defects in the request papers by applying the appropriate option(s) set forth below:

1) Providing an explanation of the manner and pertinence of applying each cited document to the patent claims for which reexamination is requested, as required by 37 CFR 1.510(b)(2). For each identification of a substantial new question of patentability, every limitation in each patent claim for which reexamination is requested must be addressed, using one of the above-discussed avenues (a)-(c) for the limitation.

2) Explicitly withdrawing the request to reexamine any patent claim for which an explanation as required by 1.510(b)(2) is not provided and replacing the presently-submitted listing of the claims for which reexamination is requested with a new listing of claims for which reexamination is requested, the new identification *being confined to those claims for which a discussion required by 37 CFR 1.510(b)(2) is provided.*

Failure to submit a proper response to this Notice may result in the termination of the request, with no filing date accorded.

All correspondence related to this ex parte reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at http://sportal.gov/authenticate/authenticateuserlocalepf.html.

By Mail to: Mail Stop Ex Parte Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By Hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

INSTRUCTIONS TO NOTICE OF FAILURE TO COMPLY WITH *EX PARTE* REEXAMINATION REQUEST FILING REQUIREMENTS (37 CFR 1.510(c))

HOW TO REPLY TO THIS NOTICE

Any written correspondence in response to this notice must include either a **replacement document**, or, **if item #4 is checked and/or it is otherwise specifically required by the Office, a paper containing a replacement statement and explanation under 37 CFR 1.510(b)(1) and (2)** that either replaces the originally-filed statement and explanation or provides a previously missing statement and explanation. A replacement document either replaces an originally-filed document, or provides a previously missing document, that contains part(s) of the request other than the statement and explanation as set forth in 37 CFR 1.510(b)(1) and (2). For example, a replacement to the originally-filed listing of cited patents and printed publications, PTO/SB/08 (formerly designated as PTO-1449) or its equivalent, is a replacement document.

If a paper containing a replacement statement and explanation, or a replacement document (other than a replacement certificate of service), is submitted by a third party requester, it must be **accompanied by a certification that a copy of the replacement statement and explanation under 37 CFR 1.510(b)(1) and (2), or that a copy of the replacement document, has been served** in its entirety on the patent owner at the address provided for in 37 CFR 1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy of the replacement statement and explanation (or replacement document) must be supplied to the Office.

REPLACEMENT STATEMENT AND EXPLANATION UNDER 37 CFR 1.510(b)(1) and (2) (ITEM #4 IS CHECKED)

The **statement and explanation under 37 CFR 1.510(b)(1) and (2)** (see item #4) must discuss **EVERY patent or printed publication cited in the information disclosure statement** in at least one proposed rejection or statement identifying a substantial new question of patentability (SNQ), AND in a corresponding detailed explanation (see the below discussion). Furthermore, **EVERY claim for which reexamination is requested** must be discussed in at least one proposed rejection or statement identifying an SNQ and in the corresponding detailed explanation. If item #4 is missing or incomplete, a paper containing a **replacement statement and explanation under 37 CFR 1.510(b)(1) and (2) is required.**

A paper containing a replacement statement and explanation under 37 CFR 1.510(b)(1) and (2) may NOT be facsimile transmitted. It must be received by first class mail or by USPS Express Mail.

If an originally-filed information disclosure statement cites patents or printed publications that are NOT discussed in at least one proposed rejection or statement identifying an SNQ AND in the corresponding detailed explanation **in the originally-filed request**, the requester must file either (a) a **replacement document, i.e., a replacement PTO/SB/08 (former PTO-1449)** or its equivalent, listing **ONLY** those patents and printed publications that are so discussed, or (b) a paper containing a **replacement statement and explanation under 37 CFR 1.510(b)(1) and (2).** If the first option is chosen, the replacement PTO/SB/08 or its equivalent should include a cover letter expressly withdrawing from the request any previously cited references that are being omitted by the replacement PTO/SB/08 or its equivalent. The requester may, if desired, file both a replacement PTO/SB/08 or its equivalent and a paper containing a replacement statement and explanation, if the replacement statement and explanation discusses EVERY patent or printed publication, cited in the replacement PTO/SB/08 or its equivalent, in at least one proposed rejection or statement identifying an SNQ and in the corresponding detailed explanation.

Requester is NOT required to, and should not, additionally file a replacement copy of any exhibits, references, etc., or other replacement parts of the request (i.e., replacement documents) if a defect requiring a replacement document is not specifically identified by this notice.

Examples of When a Replacement Statement and Explanation under 37 CFR 1.510(b)(1) and (2) Is Required:

1. The originally-filed request fails to discuss **EVERY** patent or printed publication cited in the originally-filed information disclosure statement in at least one proposed rejection or statement identifying an SNQ and in the corresponding detailed explanation, and the requester does not wish to file a replacement PTO/SB/08 (formerly designated as PTO-1449) or its equivalent listing ONLY those patents and printed publications that are so discussed.

2. The originally-filed request discusses every patent or printed publication cited in the information disclosure statement in at least one proposed rejection or statement identifying an SNQ, but **fails to discuss EVERY patent or printed publication cited in the information disclosure statement in a detailed explanation that corresponds to the proposed rejection or statement identifying an SNQ.**

3. The originally-filed request fails to discuss **EVERY CLAIM** for which reexamination is requested in at least one proposed rejection or statement identifying an SNQ, and in the corresponding detailed explanation.

Examples of Proposed Rejections and Statements Identifying a Substantial New Question of Patentability (SNQ)

Proposed rejections

Claims 1-3 are obvious over reference A in view of reference B.
Claims 4-6 are obvious over reference A in view of references B and C.
Claims 7-10 are obvious over reference Q in view of reference R.

Statements identifying a substantial new question of patentability

A substantial new question of patentability as to claims 1-3 is raised by reference A in view of reference B.
A substantial new question of patentability as to claims 4-6 is raised by reference A in view of references B and C.
A substantial new question of patentability as to claims 7-10 is raised by reference Q in view of reference R.

A proposed rejection or statement identifying an SNQ must be repeated with any *replacement* detailed explanation that corresponds to the proposed rejection or statement identifying an SNQ, in any paper containing a replacement statement and explanation under 37 CFR 1.510(b)(1) and (2).

In addition, the requester should include an explanation of *how the SNQ is raised.*

1. Assume that claim 1 of the patent recites, as one of the limitations, widget W. Requester would state that the XYZ reference, cited in the information disclosure statement, contains a teaching of widget W as recited in claim 1, and that this teaching was not present during the prior examination of the patent under reexamination (i.e., the teaching is "new"). Requester would also state that he believes that a reasonable examiner would consider this teaching important in determining whether or not the claims are patentable. For this reason, requester would state that this teaching by the XYZ reference raises a substantial new question of patentability (SNQ) with respect to at least claim 1 of the patent. Similarly, if dependent claim 6 adds widget H, the requester would state that the ABC reference, cited in the information disclosure statement, contains a teaching of widget H as recited in claim 6, that this teaching was not present during the prior concluded examination of the patent, that a reasonable examiner would consider this teaching important in determining whether or not the claims are patentable, and that this teaching raises an SNQ with respect to dependent claim 6 of the patent.

2. Assume that claim 1 of the patent recites, as one of its limitations, limitation W. Assume either that reference XYZ was applied in a rejection during the prior examination of the patent, or that the teachings of reference XYZ are purely cumulative to a reference cited in a rejection during the prior examination of the patent. Assume further that reference ABC teaches that limitation W would have been either inherent given the teachings of reference XYZ, or would have been obvious in view of the combination of XYZ and ABC. Reference ABC was cited in an information disclosure statement but was never discussed or applied in a rejection ***in combination with the XYZ reference*** during the prior examination of the patent under reexamination. **Requester would state** that reference XYZ was present during the prior examination of the patent under reexamination because it was applied in a rejection during the prosecution of the patent, and that reference ABC was cited in an information disclosure statement but never applied in a rejection (or never discussed), **in combination with the XYZ reference** during the prior examination of the patent under reexamination Requester would then state (1) that the ***combination*** of the XYZ reference and the ABC reference, both of which are cited in the information disclosure statement, contains a teaching of limitation W as recited in claim 1, (2) that this teaching provided by the **combination** of the XYZ and ABC references was not present during the prior examination of the patent under reexamination, (3) that a reasonable examiner would consider this teaching important in determining whether or not the claims are patentable, and (4) that this teaching raises an SNQ with respect to claim 1 of the patent.

Example of a Detailed Explanation

Assume, for example, that a requester believes that the XYZ reference, alone, anticipates claims 1-5. The requester would expressly propose a rejection of claims 1-5 under 35 USC 102(b) as being anticipated by the XYZ reference. In a claim chart, the requester would then show how **each limitation** of claims 1-5 is anticipated by the XYZ reference. If the requester believes that the XYZ reference, in view of the ABC reference, renders obvious claims 6-10, the requester would expressly propose a rejection of claims 6-10 under 35 USC 103 as being obvious over the XYZ reference in view of the ABC reference. In a claim chart, the requester would then show which limitations of claims 6-10 are taught by the XYZ reference, and which limitations of claims 6-10 are taught by the ABC reference. The requester should quote each pertinent teaching in the prior art reference, referencing each quote by page, column and line number, and any relevant figure numbers.

A **patent owner**, when filing a request for reexamination in an *ex parte* reexamination proceeding, may satisfy the requirement under 37 CFR 1.510(b) for supplying a detailed explanation by comparing, limitation-by-limitation, the claim(s) under reexamination with the teachings of each reference cited in the information disclosure statement and in the statement pointing out an SNQ. Each limitation of the claim(s) must be separately discussed. For each claim limitation, the patent owner must do one of the following: (a) show how at least one reference teaches or suggests the limitation, (b) admit that the limitation is "old", or (c) state that the limitation is believed to be missing from the reference. In a claim chart, the patent owner should quote each pertinent teaching in the prior art reference,

referencing each quote by page, column and line number, and any relevant figure numbers. Proposed applications of the cited references and/or proposed combinations of the cited references should separately identified. The patent owner is not required to

expressly propose a rejection of the claim(s) or provide a statement of why the claim(s) under reexamination would have been obvious over a proposed reference combination.

REPLACEMENT DOCUMENTS

If the originally-filed PTO/SB/08 (former PTO-1449) or its equivalent lists patents or printed publications that are NOT discussed in at least one proposed rejection or statement identifying an SNQ AND in the corresponding detailed explanation **in the originally-filed request**, the requester may file a paper containing a **replacement PTO/SB/08 (former PTO-1449) or its equivalent** listing **ONLY** those patents and printed publications that are so discussed. The replacement PTO/SB/08 or its equivalent should include a cover letter expressly withdrawing from the request any formerly cited references that are now being omitted by the replacement PTO/SB/08 or its equivalent. Similarly, if **any patent or printed publication discussed** in at least one proposed rejection or statement identifying an SNQ AND in the corresponding detailed explanation **in the originally-filed request is not listed in the originally-filed PTO/SB/08 (former PTO-1449)** or its equivalent, the requester must file a **replacement PTO/SB/08 (former PTO-1449)** or its equivalent listing all of the patents and printed publications, including the previously omitted reference(s), and provide copies of the missing references if copies were not provided with the originally-filed request

If a copy of a patent, printed publication, or an English-language translation of a patent or printed publication, that is cited in the PTO/SB/08 (former PTO-1449) or its equivalent, is illegible, missing, or incomplete (i.e., it does not contain all of the pages indicated in the PTO/SB/08 (former PTO-1449) or its equivalent), a replacement copy of the patent or printed publication is required.

If a copy of any disclaimer, certificate of correction, or reexamination certificate issued in the patent, or a copy of the entire patent for which reexamination is requested as described in item #6, is missing, or if the copy that was received by the Office was illegible or incomplete, a replacement document (i.e., a replacement copy of the disclaimer, certificate of correction, reexamination certificate, or entire patent under reexamination as described in item #6) is required.

If the requester fails to correctly identify the patent number or the claims for which reexamination is requested on the transmittal form for the request (PTO/SB/57, or an equivalent) as described in item #2, and the patent number and the claims for which reexamination is requested are correctly identified in the originally-filed request, a **replacement transmittal form** is required.

If a certificate of service on the patent owner, as described in item #7, is missing, or if the certificate of service received by the Office is inaccurate or incomplete, a replacement certificate of service is required.

Replacement documents may be facsimile transmitted. A paper containing a replacement statement and explanation may NOT be facsimile transmitted.

Electronic Acknowledgement Receipt	
EFS ID:	7856741
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	21-JUN-2010
Filing Date:	
Time Stamp:	15:49:45
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Receipt of Corrected Original Ex Parte Request	7241034_109_Re-Exam_21-Jun-2010.pdf	67563 11a37552e58888d2c873b7462dcdf8e0ede d8084	no	7

Warnings:
Information:

2	Reexam Miscellaneous Incoming Letter	7241034_109_Re-Exam_Exhibit_A_21-Jun-2010.pdf	64393 d843b1628a30dd4816708c1d8dccbcc16fe928e9	no	5
Warnings:					
Information:					
			Total Files Size (in bytes):	131956	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Requester's Name and Address: THE CALDWELL FIRM, LLC
P.O. BOX 59655
DEPT. SVIPGP
DALLAS, TX 75229

Patent Number: 7,241,034 Request Receipt Date: 05/25/10

Control Number:90/011,011
Date Mailed: 06/23/10

NOTICE OF FAILURE TO COMPLY WITH *EX PARTE* REEXAMINATION REQUEST FILING REQUIREMENTS (37 CFR 1.510(c))

The Central Reexamination Unit (CRU) in the United States Patent and Trademark Office (USPTO) has received a request for *ex parte* reexamination. The request cannot be processed, because the below-identified filing date requirements for an *ex parte* reexamination request have not been satisfied. If a fully compliant response is not received within 30 days of the mailing date of this notice, the request will be treated as a prior art citation under 37 CFR 1.501 or closed from public view, at the Office's option. A **filing date** will **NOT** be assigned to the request until the deficiencies noted below are corrected (37 CFR 1.510(d)):

The following items required by **37 CFR 1.510(a) and (b)** are missing:

☐ 1. The *ex parte s* reexamination filing fee under 37 CFR 1.20(c)(1) – see attached Form PTO-2057.

☐ 2. An identification of the patent by its patent number, and of every claim of the patent for which reexamination is requested.

☐ 3. A citation of the patents and printed publications that are presented to raise a substantial new question of patentability.

☒ 4. A statement pointing out each substantial new question of patentability based on the cited patents & printed publications, and a detailed explanation of the pertinency and manner of applying the patents & printed publications to every claim for which reexamination is requested.

☐ 5. A legible copy of every patent or printed publication (other than U.S. patents or U.S. patent publications) relied upon or referred to in (3) and (4) above, accompanied by an English language translation of all the necessary and pertinent parts of any non-English language document.

☐ 6. A legible copy of the entire patent including the front face, drawings, and specification/claims (in **double** column format) for which reexamination is requested, and a legible copy of any disclaimer, certificate of correction, or reexamination certificate issued in the patent. All copies must have each page plainly written on only one side of a sheet of paper.

☐ 7. A certification by the third party requester that a copy of the request has been served in its entirety on the patent owner at the address provided for in 37 CFR 1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy of the request must be supplied to the Office.

☐ 8. Other:

☒ Explanation of above item(s): See Attachment.

Any written correspondence in response to this notice must include a submission pursuant to the attached instructions. **The instructions for a detailed explanation for an *ex parte* reexamination request differ from those for an *inter partes* reexamination request.** Any written correspondence in response to this notice should be mailed to the Central Reexamination Unit (CRU), ATTN: "Box *Ex Parte* Reexam" at the USPTO address indicated at the top of this notice. Any "replacement documents" may be facsimile transmitted to the CRU at the FAX number indicated below. A REPLACEMENT STATEMENT AND EXPLANATION UNDER 37 CFR 1.510(b)(1) and (2) MAY NOT BE FACSIMILE TRANSMITTED.

Manuel Soldano

Patent Reexamination Specialist, Central Reexamination Unit
(571) 272- 7740 ; FAX No. (571) 273-9900

cc: Patent Owner's Name and Address:

ATTACHMENT TO PTOL-2077

Control Number: 90/011,011
Patent Number: 7,241,034
Request Receipt Date: May 25, 2010

Please read the instructions that accompany this Notice and Attachment.

The Request for *Ex Parte* Reexamination filed on May 25, 2010 does not comply with the filing requirement of an *ex parte* reexamination proceeding under 37 CFR 1.510(b)(1)(2).

The Replacement request dated June 21, 2010 corrected the errors pointed out in the Notice of Failure to Comply with Ex Parte Reexamination Request Filing Requirements dated May 26, 2010. There is one issue not address in the Notice dated May 26, 2010. On page 2 of the request for reexamination the following statement is unclear "Regarding at least Claims 1 and 3, Shibata was not of record in the Smith file." The phrase "at least" does not limit the number of claims for which the reexamination is being requested. The term "at least" urges the examiner to apply the cited art to the remainder of the claims that are requested, thus placing a burden of identifying the claims and applying the references to the remainder of the claims. See also pages (3 and 6). If a corrected request is filed, the requester must delete the phrase "at least" or otherwise, specifically set forth which claims reexamination is requested and provide the detailed explanation, as required by 37 CFR 1.510(b)(2), for every claim for which reexamination is requested. Since the request has not properly advanced (and explained) a substantial new question with respect to all of the '034 patent claims for which reexamination has been requested, the request fails to comply with the requirements for granting a filing date for a reexamination request.

Stated another way, the request does not provide a "detailed explanation of the pertinency and manner of applying the cited prior art" to every patent claim for which reexamination is requested, as is required by 37 CFR 1.510(b)(2).

For each identified substantial new question of patentability (SNQ), the request must explain how the cited documents identified for that SNQ are applied to meet/teach the patent claim limitations to thus establish the identified SNQ. *See* Clarification of Filing Date Requirements for *Ex Parte* and *Inter Partes* Reexamination Proceedings 71 *Fed. Reg.* 44219, (August 4, 2006)), at page 44221, second half of middle column.

If the requester were permitted to omit an explanation of how such documents cited in request are applied to the patent claims, an undue burden would be placed on the Office to address each document in the determination on the request, without an explanation of the relevance to the patent claims. Accordingly, such an omission is prohibited by law.

In accordance with 37 CFR 1.510(c), a filing date for the reexamination request will not be granted **at this time**.

Requester has the option to respond to this identification of defects in the request papers by applying the appropriate option(s) set forth below:

1) Providing an explanation of the manner and pertinence of applying each cited document to the patent claims for which reexamination is requested, as required by 37 CFR 1.510(b)(2). For each identification of a substantial new question of patentability, every limitation in each patent claim for which reexamination is requested must be addressed, using one of the above-discussed avenues (a)-(c) for the limitation.

2) Explicitly withdrawing the request to reexamine any patent claim for which an explanation as required by 1.510(b)(2) is not provided and replacing the presently-submitted listing of the claims for which reexamination is requested with a new listing of claims for which reexamination is requested, the new identification *being confined to those claims for which a discussion required by 37 CFR 1.510(b)(2) is provided.*

Failure to submit a proper response to this Notice may result in the termination of the request, with no filing date accorded.

All correspondence related to this ex parte reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at http://sportal.gov/authenticate/authenticateuserlocalepf.html.

By Mail to: Mail Stop Ex Parte Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By Hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

INSTRUCTIONS TO NOTICE OF FAILURE TO COMPLY WITH *EX PARTE* REEXAMINATION REQUEST FILING REQUIREMENTS (37 CFR 1.510(c))

HOW TO REPLY TO THIS NOTICE

Any written correspondence in response to this notice must include either a **replacement document**, or, **if item #4 is checked and/or it is otherwise specifically required by the Office, a paper containing a replacement statement and explanation under 37 CFR 1.510(b)(1) and (2)** that either replaces the originally-filed statement and explanation or provides a previously missing statement and explanation. A replacement document either replaces an originally-filed document, or provides a previously missing document, that contains part(s) of the request other than the statement and explanation as set forth in 37 CFR 1.510(b)(1) and (2). For example, a replacement to the originally-filed listing of cited patents and printed publications, PTO/SB/08 (formerly designated as PTO-1449) or its equivalent, is a replacement document.

If a paper containing a replacement statement and explanation, or a replacement document (other than a replacement certificate of service), is submitted by a third party requester, it must be **accompanied by a certification that a copy of the replacement statement and explanation under 37 CFR 1.510(b)(1) and (2), or that a copy of the replacement document, has been served** in its entirety on the patent owner at the address provided for in 37 CFR 1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy of the replacement statement and explanation (or replacement document) must be supplied to the Office.

REPLACEMENT STATEMENT AND EXPLANATION UNDER 37 CFR 1.510(b)(1) and (2) (ITEM #4 IS CHECKED)

The **statement and explanation under 37 CFR 1.510(b)(1) and (2)** (see item #4) must discuss **EVERY patent or printed publication cited in the information disclosure statement** in at least one proposed rejection or statement identifying a substantial new question of patentability (SNQ), AND in a corresponding detailed explanation (see the below discussion). Furthermore, **EVERY claim for which reexamination is requested** must be discussed in at least one proposed rejection or statement identifying an SNQ and in the corresponding detailed explanation. If item #4 is missing or incomplete, a paper containing a **replacement statement and explanation under 37 CFR 1.510(b)(1) and (2) is required.**

A paper containing a replacement statement and explanation under 37 CFR 1.510(b)(1) and (2) may NOT be facsimile transmitted. It must be received by first class mail or by USPS Express Mail.

If an originally-filed information disclosure statement cites patents or printed publications that are NOT discussed in at least one proposed rejection or statement identifying an SNQ AND in the corresponding detailed explanation **in the originally-filed request**, the requester must file either (a) a **replacement document, i.e., a replacement PTO/SB/08 (former PTO-1449)** or its equivalent, listing **ONLY** those patents and printed publications that are so discussed, or (b) a paper containing a **replacement statement and explanation under 37 CFR 1.510(b)(1) and (2).** If the first option is chosen, the replacement PTO/SB/08 or its equivalent should include a cover letter expressly withdrawing from the request any previously cited references that are being omitted by the replacement PTO/SB/08 or its equivalent. The requester may, if desired, file both a replacement PTO/SB/08 or its equivalent and a paper containing a replacement statement and explanation, if the replacement statement and explanation discusses EVERY patent or printed publication, cited in the replacement PTO/SB/08 or its equivalent, in at least one proposed rejection or statement identifying an SNQ and in the corresponding detailed explanation.

Requester is NOT required to, and should not, additionally file a replacement copy of any exhibits, references, etc., or other replacement parts of the request (i.e., replacement documents) if a defect requiring a replacement document is not specifically identified by this notice.

Examples of When a Replacement Statement and Explanation under 37 CFR 1.510(b)(1) and (2) Is Required:

1. The originally-filed request fails to discuss **EVERY** patent or printed publication cited in the originally-filed information disclosure statement in at least one proposed rejection or statement identifying an SNQ and in the corresponding detailed explanation, and the requester does not wish to file a replacement PTO/SB/08 (formerly designated as PTO-1449) or its equivalent listing ONLY those patents and printed publications that are so discussed.

2. The originally-filed request discusses every patent or printed publication cited in the information disclosure statement in at least one proposed rejection or statement identifying an SNQ, but **fails to discuss EVERY patent or printed publication cited in the information disclosure statement in a detailed explanation that corresponds to the proposed rejection or statement identifying an SNQ.**

3. The originally-filed request fails to discuss **EVERY CLAIM** for which reexamination is requested in at least one proposed rejection or statement identifying an SNQ, and in the corresponding detailed explanation.

Examples of Proposed Rejections and Statements Identifying a Substantial New Question of Patentability (SNQ)

Proposed rejections

Claims 1-3 are obvious over reference A in view of reference B.
Claims 4-6 are obvious over reference A in view of references B and C.
Claims 7-10 are obvious over reference Q in view of reference R.

Statements identifying a substantial new question of patentability

A substantial new question of patentability as to claims 1-3 is raised by reference A in view of reference B.
A substantial new question of patentability as to claims 4-6 is raised by reference A in view of references B and C.
A substantial new question of patentability as to claims 7-10 is raised by reference Q in view of reference R.

A proposed rejection or statement identifying an SNQ must be repeated with any *replacement* detailed explanation that corresponds to the proposed rejection or statement identifying an SNQ, in any paper containing a replacement statement and explanation under 37 CFR 1.510(b)(1) and (2).

In addition, the requester should include an explanation of *how the SNQ is raised.*

1. Assume that claim 1 of the patent recites, as one of the limitations, widget W. Requester would state that the XYZ reference, cited in the information disclosure statement, contains a teaching of widget W as recited in claim 1, and that this teaching was not present during the prior examination of the patent under reexamination (i.e., the teaching is "new"). Requester would also state that he believes that a reasonable examiner would consider this teaching important in determining whether or not the claims are patentable. For this reason, requester would state that this teaching by the XYZ reference raises a substantial new question of patentability (SNQ) with respect to at least claim 1 of the patent. Similarly, if dependent claim 6 adds widget H, the requester would state that the ABC reference, cited in the information disclosure statement, contains a teaching of widget H as recited in claim 6, that this teaching was not present during the prior concluded examination of the patent, that a reasonable examiner would consider this teaching important in determining whether or not the claims are patentable, and that this teaching raises an SNQ with respect to dependent claim 6 of the patent.

2. Assume that claim 1 of the patent recites, as one of its limitations, limitation W. Assume either that reference XYZ was applied in a rejection during the prior examination of the patent, or that the teachings of reference XYZ are purely cumulative to a reference cited in a rejection during the prior examination of the patent. Assume further that reference ABC teaches that limitation W would have been either inherent given the teachings of reference XYZ, or would have been obvious in view of the combination of XYZ and ABC. Reference ABC was cited in an information disclosure statement but was never discussed or applied in a rejection ***in combination with the XYZ reference*** during the prior examination of the patent under reexamination. **Requester would state** that reference XYZ was present during the prior examination of the patent under reexamination because it was applied in a rejection during the prosecution of the patent, and that reference ABC was cited in an information disclosure statement but never applied in a rejection (or never discussed), **in combination with the XYZ reference** during the prior examination of the patent under reexamination Requester would then state (1) that the ***combination*** of the XYZ reference and the ABC reference, both of which are cited in the information disclosure statement, contains a teaching of limitation W as recited in claim 1, (2) that this teaching provided by the **combination** of the XYZ and ABC references was not present during the prior examination of the patent under reexamination, (3) that a reasonable examiner would consider this teaching important in determining whether or not the claims are patentable, and (4) that this teaching raises an SNQ with respect to claim 1 of the patent.

Example of a Detailed Explanation

Assume, for example, that a requester believes that the XYZ reference, alone, anticipates claims 1-5. The requester would expressly propose a rejection of claims 1-5 under 35 USC 102(b) as being anticipated by the XYZ reference. In a claim chart, the requester would then show how **each limitation** of claims 1-5 is anticipated by the XYZ reference. If the requester believes that the XYZ reference, in view of the ABC reference, renders obvious claims 6-10, the requester would expressly propose a rejection of claims 6-10 under 35 USC 103 as being obvious over the XYZ reference in view of the ABC reference. In a claim chart, the requester would then show which limitations of claims 6-10 are taught by the XYZ reference, and which limitations of claims 6-10 are taught by the ABC reference. The requester should quote each pertinent teaching in the prior art reference, referencing each quote by page, column and line number, and any relevant figure numbers.

A **patent owner**, when filing a request for reexamination in an *ex parte* reexamination proceeding, may satisfy the requirement under 37 CFR 1.510(b) for supplying a detailed explanation by comparing, limitation-by-limitation, the claim(s) under reexamination with the teachings of each reference cited in the information disclosure statement and in the statement pointing out an SNQ. Each limitation of the claim(s) must be separately discussed. For each claim limitation, the patent owner must do one of the following: (a) show how at least one reference teaches or suggests the limitation, (b) admit that the limitation is "old", or (c) state that the limitation is believed to be missing from the reference. In a claim chart, the patent owner should quote each pertinent teaching in the prior art reference,

referencing each quote by page, column and line number, and any relevant figure numbers. Proposed applications of the cited references and/or proposed combinations of the cited references should separately identified. The patent owner is not required to

expressly propose a rejection of the claim(s) or provide a statement of why the claim(s) under reexamination would have been obvious over a proposed reference combination.

REPLACEMENT DOCUMENTS

If the originally-filed PTO/SB/08 (former PTO-1449) or its equivalent lists patents or printed publications that are NOT discussed in at least one proposed rejection or statement identifying an SNQ AND in the corresponding detailed explanation **in the originally-filed request**, the requester may file a paper containing a **replacement PTO/SB/08 (former PTO-1449) or its equivalent** listing **ONLY** those patents and printed publications that are so discussed. The replacement PTO/SB/08 or its equivalent should include a cover letter expressly withdrawing from the request any formerly cited references that are now being omitted by the replacement PTO/SB/08 or its equivalent. Similarly, if **any patent or printed publication discussed** in at least one proposed rejection or statement identifying an SNQ AND in the corresponding detailed explanation **in the originally-filed request is not listed in the originally-filed PTO/SB/08 (former PTO-1449)** or its equivalent, the requester must file a **replacement PTO/SB/08 (former PTO-1449)** or its equivalent listing all of the patents and printed publications, including the previously omitted reference(s), and provide copies of the missing references if copies were not provided with the originally-filed request

If a copy of a patent, printed publication, or an English-language translation of a patent or printed publication, that is cited in the PTO/SB/08 (former PTO-1449) or its equivalent, is illegible, missing, or incomplete (i.e., it does not contain all of the pages indicated in the PTO/SB/08 (former PTO-1449) or its equivalent), a replacement copy of the patent or printed publication is required.

If a copy of any disclaimer, certificate of correction, or reexamination certificate issued in the patent, or a copy of the entire patent for which reexamination is requested as described in item #6, is missing, or if the copy that was received by the Office was illegible or incomplete, a replacement document (i.e., a replacement copy of the disclaimer, certificate of correction, reexamination certificate, or entire patent under reexamination as described in item #6) is required.

If the requester fails to correctly identify the patent number or the claims for which reexamination is requested on the transmittal form for the request (PTO/SB/57, or an equivalent) as described in item #2, and the patent number and the claims for which reexamination is requested are correctly identified in the originally-filed request, a **replacement transmittal form** is required.

If a certificate of service on the patent owner, as described in item #7, is missing, or if the certificate of service received by the Office is inaccurate or incomplete, a replacement certificate of service is required.

Replacement documents may be facsimile transmitted. A paper containing a replacement statement and explanation may NOT be facsimile transmitted.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Smith et al.	)
	)
Patent No. 7,241,034	) Atty. Docket No.: SVIPGP109RE
	)
ISSUE DATE: 07/10/2007	)
	)
For: AUTOMATIC DIRECTIONAL CONTROL	)
SYSTEM FOR VEHICLE HEADLIGHTS	) Date: 07/09/2010
	)
	)

SUBSTITUTE REQUEST FOR *EX PARTE*
REEXAMINATION OF U.S. PATENT NO. 7,241,034

Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir or Madam:

This substitute request is in response to the Notice of Failure to Comply with *Ex Parte* Reexamination Request Filing Requirements, mailed on 06/23/10. *Ex Parte* reexamination under 35 U.S.C. §§301 - 303 and 37 C.F.R. 1.510 is requested of United States Patent No. 7,241,034, which issued on 07/10/2007 to James E. Smith ("Smith"), from an application filed on 10/31/2002.

(1) Statement pointing out substantial new question of patentability based on prior patents and printed publications.

A substantial new question of patentability is presented by the following printed publication, U.S. Patent No. 4,733,333 by Shibata, filed 09-29-1986, titled "Cornering Lamp System for Vehicle" ("Shibata"). Regarding Claims 1 and 3, Shibata was not of record in the Smith file.

Shibata teaches a "cornering lamp system for a vehicle which changes direction of the headlamps." Shibata, Abstract (emphasis added). Shibata further teaches that the directional control is automatic. *See*, *e.g.*, Shibata, Col. 11, lines 35-52.

In addition, Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal." Shibata, Col. 11, lines 35-40 (emphasis added). Additionally, Shibata teaches "decoders/drivers 84 and 85 which input a count value output from the UP/DOWN counter 83, thus allowing only the level of an output terminal at a position corresponding to the count value to be set to '0'" and that "when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals from which a signal of '0' is output to output the signal from the output terminals 84i and 85i." Shibata, Col. 11, lines 35-52 (emphasis added). Thus, Shibata's decoder/driver (controller) is responsive to the steering angle sensor, and further outputs a signal only when said sensor signal changes by more than a predetermined minimum threshold amount, by forcing the counter to be a certain value before providing an output.

In addition, Shibata teaches "there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp." Shibata, Col. 15, lines 57-65 (emphasis added). By using the threshold (*i.e.*, the counter value), Shibata ensures that there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp. This prevents the Shibata actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition.

Shibata also teaches "[t]he headlamps are moved in discrete steps by use of a stepper motor." Shibata, Abstract (emphasis added). As shown in the figures from Shibata, the stepper motor is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal. *See* Shibata, Figs. 1A, 1B, and 3. Additionally, Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal." Shibata, Col. 11, lines 35-40 (emphasis added).

Because this disclosure of Shibata provides subject matter of the pending claims that was not disclosed in any of the prior art cited during the prosecution of the Smith patent, and a reasonable Examiner would consider this subject matter important in determining whether the claims are patentable, this technological disclosure of Shibata raises a substantial new question of patentability.

(2) Claims for which reexamination is requested, and Detailed Explanation of pertinency and manner of applying prior art to each claim.

The following is a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested. The following discussion is believed to be adequate because no *prima facie* case of unpatentability need be found in order to grant an order for rexexamination, only a substantial new question of patentability. *See* M.P.E.P. §2240.

Requestor hereby requests reexamination of Claims 1 and 3 of U.S. Patent No. 7,241,034 (Smith) in view of the attached prior art document, Shibata and in view of the attached Claim Analysis Chart (Exhibit A). Shibata was not of record in Smith. Moreover, as described above, Shibata is not duplicative of the prior art applied during the prosecution of Smith. In addition, Shibata is closer to the technological subject matter of Smith than any prior art that was cited or applied during the prosecution of Smith. Requestor asserts that Shibata raises a substantial new question of patentability under 35 U.S.C. §102(b), not previously presented in the prosecution of the issued patent, because Shibata teaches all of the limitations of Claim 1 and Claim 3. Requestor has attached a Claim Analysis Chart as Exhibit A. Exhibit A shows specifically where each limitation of each of Claims 1 and 3 is found in Shibata, along with an explanation of

how the prior art meets all the recited limitations. In addition to Exhibit A, Requestor presents the following discussion of certain highly pertinent applications of Shibata to the Smith claims.

Claim 1

With respect to Claim 1, and as shown in Exhibit A, Shibata teaches a "cornering lamp system for a vehicle which changes direction of the headlamps." Shibata, Abstract (emphasis added). This teaching meets Smith's claimed "automatic directional control system for a vehicle headlight." Smith, Claim 1, (emphasis added). Shibata further teaches that the directional control is automatic. *See*, *e.g.*, Shibata, Col. 11, lines 35-52.

In addition, Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal." Shibata, Col. 11, lines 35-40 (emphasis added). This teaching meets Smith's claimed "sensor that is adapted to generate a signal that is representative of a condition of the vehicle, said sensed condition includes one or more of road speed, steering angle, pitch, and suspension height of the vehicle." Smith, Claim 1, (emphasis added). Because Smith claims "one or more of," the Shibata reference meets the aforementioned claim limitation by teaching that the sensed condition includes a steering angle.

Additionally, Shibata teaches 'decoders/drivers 84 and 85 which input a count value output from the UP/DOWN counter 83, thus allowing only the level of an output terminal at a position corresponding to the count value to be set to "0"' and that "when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals from which a signal of "0" is output to output the signal from the output terminals 84i and 85i." Shibata, Col. 11, line 35-52 (emphasis added). This teaching meets Smith's claimed "controller that is responsive to said sensor signal for generating an output signal only when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition." Smith, Claim 1, (emphasis added).

Shibata's decoder/driver (controller) is responsive to the steering angle sensor, and further outputs a signal only when said sensor signal changes by more than a predetermined minimum threshold amount, by forcing the counter to be a certain value before providing an output. In addition, Shibata teaches "there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp." Shibata, Col. 15, lines 57-65 (emphasis added). This teaching meets Smith's claimed "prevent[ing] said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition." Smith, Claim 1, (emphasis added). By using the threshold (*i.e.*, the counter value), Shibata ensures that there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp. This prevents the actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition.

Shibata teaches "[t]he headlamps are moved in discrete steps by use of a stepper motor." Shibata, Abstract (emphasis added). This teaching meets Smith's claimed "actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal." Smith, Claim 1, (emphasis added). As shown in the figures from Shibata, the stepper motor is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal. See Shibata, Figs. 1A, 1B, and 3.

Accordingly, Shibata teaches all of the limitations of Claim 1.

Claim 3

As shown in Exhibit A, Shibata teaches all of the limitations of Claim 1 of Smith and all of the limitations of Claim 3 of Smith. Specifically, Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal." Shibata, Col. 11, lines 35-40 (emphasis added). This teaching meets Smith's claimed "automatic directional control system defined in claim 1 wherein said sensor generates a signal that is representative of the steering angle of the vehicle." Smith, Claim 3, (emphasis added).

Accordingly, Shibata teaches all of the limitations of Claim 1 and Claim 3. Thus, Requestor asserts that Claims 1 and 3 are considered to be anticipated by Shibata under 35 U.S.C. §102(b).

(3) Copy of patents and printed publications relied upon.

A copy of every patent relied upon or referred to in sections (1) through (2) of this request is attached. In this case, there is but one patent, Shibata.

(4) Copy of the entire patent for which reexamination is requested.

A copy of Smith is attached.

(5) Certificate of service.

A certificate of service is not required.

CONCLUSION

Based on the above discussion and attached exhibits, Requestor respectfully asserts that all elements of Claims 1 and 3 are anticipated under 35 U.S.C. §102(b) in view of the prior art as set forth herein. Accordingly, and in view of the substantial new question of patentability set forth herein, Requestor respectfully requests that the United States Patent and Trademark Office enter an order granting *ex parte* reexamination of U.S. Patent No. 7,241,034.

Respectfully submitted,

Dated: 9 Jul 2010
The Caldwell Firm, LLC
PO Box 59655

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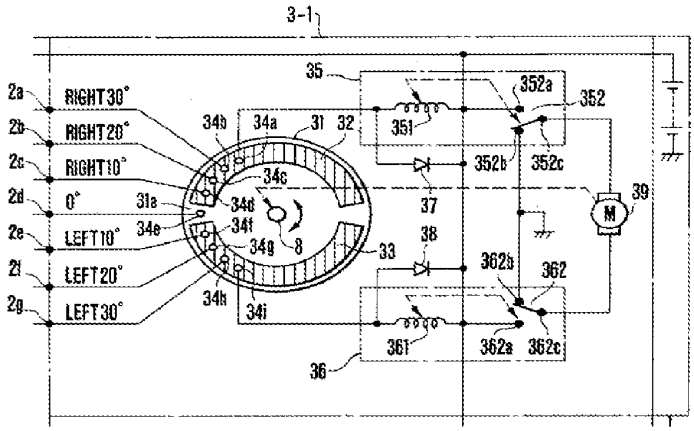
Exhibit A – 4,733,333 (Shibata)

U.S. Patent No. 7,241,034	**4,733,333 (Shibata)**
1. An automatic directional control system for a vehicle headlight comprising:	"A cornering lamp system for a vehicle which changes direction of the headlamps in conjunction with the operation of the vehicle's steering mechanism" (Abstract – emphasis added). Shibata teaches a "cornering lamp system for a vehicle which changes direction of the headlamps," which meets applicant's claimed "automatic directional control system for a vehicle headlight." Summary [cornering lamp system for a vehicle which changes direction of the headlamps (Shibata) = automatic directional control system for a vehicle (Smith)]
a sensor that is adapted to generate a signal that is representative of a condition of the vehicle, said sensed condition includes one or more of road speed, steering angle, pitch, and suspension height of the vehicle;	"The cornering lamp system in this embodiment includes a steering wheel rotation angle sensor 81 which output an electric signal comprising a pulse train having "1" and "0" pulses by turns in cooperation with the steering operation of the steering wheel" (Col. 11, lines 35-40 – emphasis added). Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal," which meets applicant's claimed "sensor that is adapted to generate a signal that is representative of a condition of the vehicle, said sensed condition includes one or more of road speed, steering angle, pitch, and suspension height of the vehicle" (emphasis added). Summary [steering wheel rotation angle sensor 81 which output an electric signal (Shibata) = sensor that is adapted to generate a signal (Smith)] [steering wheel rotation angle sensor 81 which output an electric signal (Shibata) = sensed condition includes one or more of … steering angle (Smith)]
a controller that is responsive to said sensor signal for generating an	"The cornering lamp system in this embodiment includes a steering wheel rotation angle sensor 81 which output an electric signal comprising a pulse

output signal only when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition;	train having "1" and "0" pulses by turns in cooperation with the steering operation of the steering wheel, an UP/DOWN switching circuit 82 which inputs the pulse like electric signal output from the steering wheel rotation angle sensor 81 to output an up signal and a down signal proportional to the angular displacement of the steering wheel from output terminals 82a and 82b, an UP/DOWN counter 83 which inputs the up and down signal output from the UP/DOWN [switching] circuit 82 to count up or down by the number of the up signal or the down signal thus input, and decoders/drivers 84 and 85 which input a count value output from the UP/DOWN counter 83, thus allowing only the level of an output terminal at a position corresponding to the count value to be set to "0". " (Col. 11, line 35-52 - emphasis added). "Now, when the steering wheel is rotated clockwise from such a condition, thus to initiate the right steering operation, the steering wheel rotation angle sensor 81 begins outputting a pulse like electric signal. As a result, an up signal corresponding to the steering amount of the steering wheel is input to the UP/DOWN counter 83 through the UP/DOWN switching circuit 82. Thus, the UP/DOWN counter 83 begins counting up from zero one by one. Then, when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals from which a signal of "0" is output to output the signal from the output terminals 84i and 85i." (Col. 13, line 35-48 - emphasis added) "The steering wheel has a play there may often happen the phenomena that such count down and up operations occur by. This is known in the art as the so called chattering phenomenon. However, according to the cornering lamp system in the present embodiment, even if such a chattering phenomenon would occur, there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp." (Col. 15, lines 57-65 - emphasis added) Shibata teaches 'decoders/drivers 84 and 85 which input a count

	value output from the UP/DOWN counter 83, thus allowing only the level of an output terminal at a position corresponding to the count value to be set to "0"' and that "when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals from which a signal of "0" is output to output the signal from the output terminals 84i and 85i," which meets applicant's claimed "controller that is responsive to said sensor signal for generating an output signal only when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition" (emphasis added). In addition, Shibata teaches "there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp" which meets applicant's claimed "prevent[ing] said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition" (emphasis added). [decoders/drivers 84 and 85 (Shibata) = controller (Smith)] [when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals (Shibata) = controller that is responsive to said sensor signal for generating an output signal only when said sensor signal changes by more than a predetermined minimum threshold amount (Smith)]
and an actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal.	"The headlamps are moved in discrete steps by use of a stepper motor." (Abstract - emphasis added)

	See item 39 of Fig. 6C  Shibata teaches "[t]he headlamps are moved in discrete steps by use of a stepper motor," which meets applicant's claimed "actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal" (emphasis added). Figure 6C from Shibata shows motor 39 connect to the headlight. Smith teaches that "[t]he actuators 12 and 13 are conventional in the art and may, for example, be embodied as servo motors, step motors, or any other electronically controlled mechanical actuators" (Col. 3, lines 28-31 – emphasis added). Accordingly, Shibata teaches applicant's claimed "actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal" (emphasis added).

3. The automatic directional control system defined in claim 1	See Claim 1 chart above.
wherein said sensor generates a signal that is representative of the steering angle of the vehicle.	"The cornering lamp system in this embodiment includes a steering wheel rotation angle sensor 81 which output an electric signal comprising a pulse train having "1" and "0" pulses by turns in cooperation with the steering operation of the steering wheel" (Col. 11, lines 35-40 – emphasis added). Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal," which meets applicant's claimed "said sensor generates a signal that is representative of the

	steering angle of the vehicle" (emphasis added). [steering wheel rotation angle sensor 81 which output an electric signal (Shibata) = sensor generates a signal that is representative of the steering angle of the vehicle (Smith)]

US007241034B2

(12) **United States Patent**
Smith et al.

(10) **Patent No.: US 7,241,034 B2**
(45) **Date of Patent: Jul. 10, 2007**

(54) **AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS**

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(73) Assignee: **Dana Corporation**, Toledo, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/285,312**

(22) Filed: **Oct. 31, 2002**

(65) **Prior Publication Data**

US 2003/0107898 A1 Jun. 12, 2003

Related U.S. Application Data

(60) Provisional application No. 60/369,447, filed on Apr. 2, 2002, provisional application No. 60/356,703, filed on Feb. 13, 2002, provisional application No. 60/335,409, filed on Oct. 31, 2001.

(51) **Int. Cl.**
B60Q 1/00 (2006.01)
B60R 22/00 (2006.01)

(52) **U.S. Cl.** **362/465**; 701/49

(58) **Field of Classification Search** 362/37, 362/465–466; 315/82; 701/49
See application file for complete search history.

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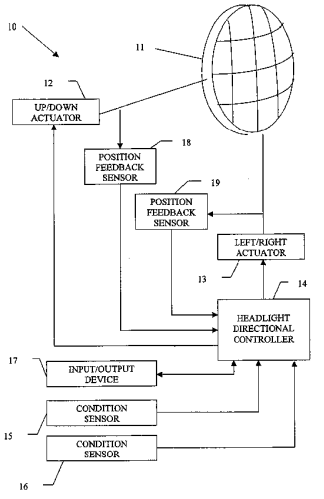
(74) *Attorney, Agent, or Firm*—MacMillan, Sobanski & Todd, LLC

(57) **ABSTRACT**

A structure and method for operating a directional control system for vehicle headlights that is capable of altering the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. One or more operating condition sensors may be provided that generate signals that are representative of a condition of the vehicle, such as road speed, steering angle, pitch, suspension height, rate of change of road speed, rate of change of steering angle, rate of change of pitch, and rate of change of suspension height of the vehicle. A controller is responsive to the sensor signal for generating an output signal. An actuator is adapted to be connected to the headlight to effect movement thereof in accordance with the output signal. The controller can include a table that relates values of sensed operating condition to values of the output signal. The controller is responsive to the sensor signal for looking up the output signal in the table.

5 Claims, 7 Drawing Sheets



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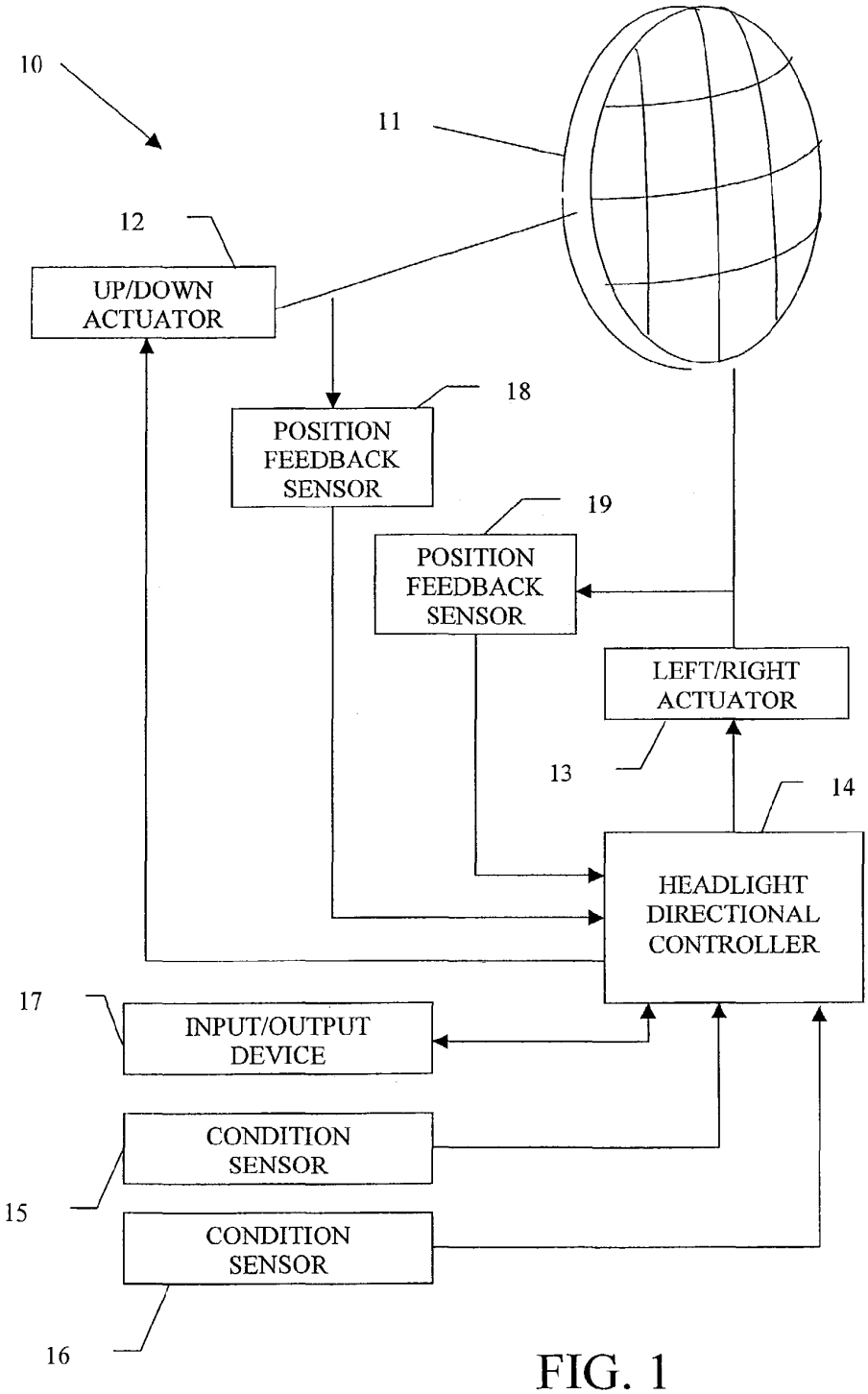

10
11
12
UP/DOWN ACTUATOR
18
POSITION FEEDBACK SENSOR
19
POSITION FEEDBACK SENSOR
LEFT/RIGHT ACTUATOR
13
14
HEADLIGHT DIRECTIONAL CONTROLLER
17
INPUT/OUTPUT DEVICE
CONDITION SENSOR
15
CONDITION SENSOR
16

FIG. 1

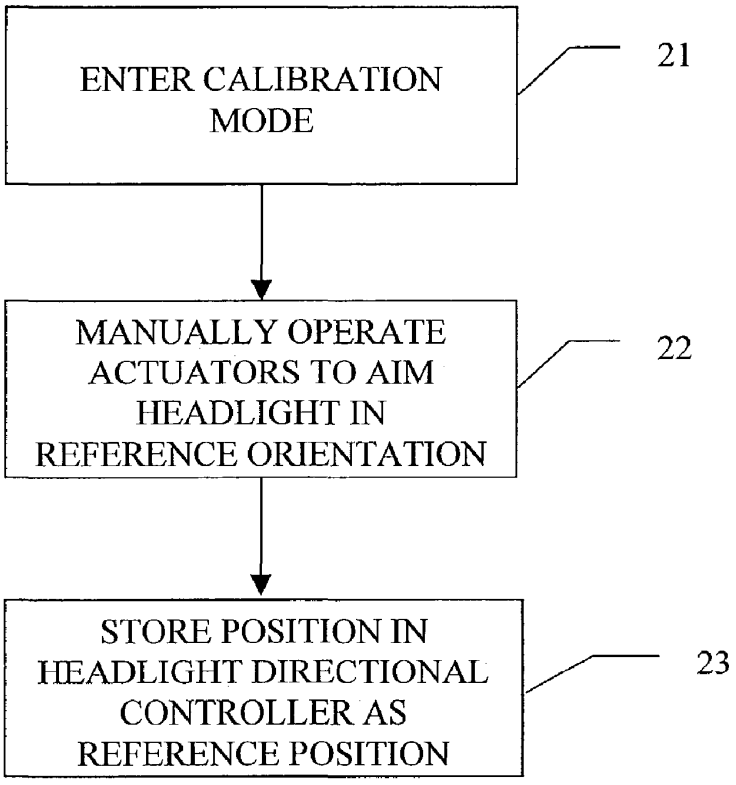

ENTER CALIBRATION MODE
21
20
MANUALLY OPERATE ACTUATORS TO AIM HEADLIGHT IN REFERENCE ORIENTATION
22
STORE POSITION IN HEADLIGHT DIRECTIONAL CONTROLLER AS REFERENCE POSITION
23

FIG. 2

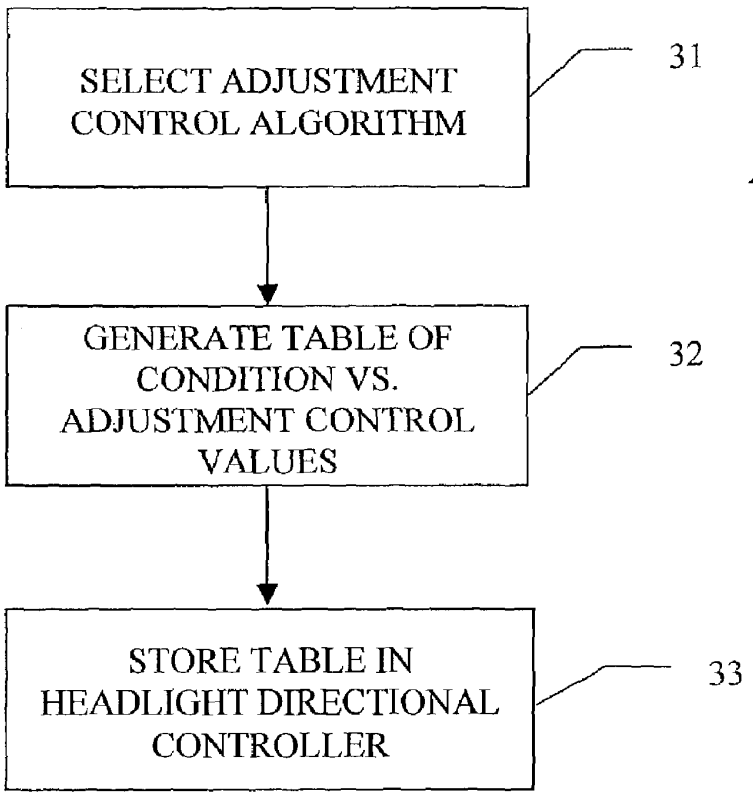
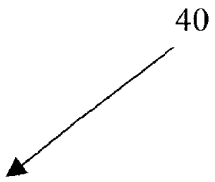

SELECT ADJUSTMENT CONTROL ALGORITHM
31
30
GENERATE TABLE OF CONDITION VS. ADJUSTMENT CONTROL VALUES
32
STORE TABLE IN HEADLIGHT DIRECTIONAL CONTROLLER
33

FIG. 3



SENSED CONDITION (STEERING ANGLE) VALUES	UP/DOWN ADJUSTMENT FACTORS	LEFT/RIGHT ADJUSTMENT FACTORS
+6°	-3.00°	+4.50°
+5°	-2.50°	+3.75°
+4°	-2.00°	+3.00°
+3°	-1.50°	+2.25°
+2°	-1.00°	+1.50°
+1°	-0.50°	+0.75°
0°	0.00°	0.00°
-1°	-0.50°	-0.75°
-2°	-1.00°	-1.50°
-3°	-1.50°	-2.25°
-4°	-2.00°	-3.00°
-5°	-2.50°	-3.75°
-6°	-3.00°	-4.50°

FIG. 4

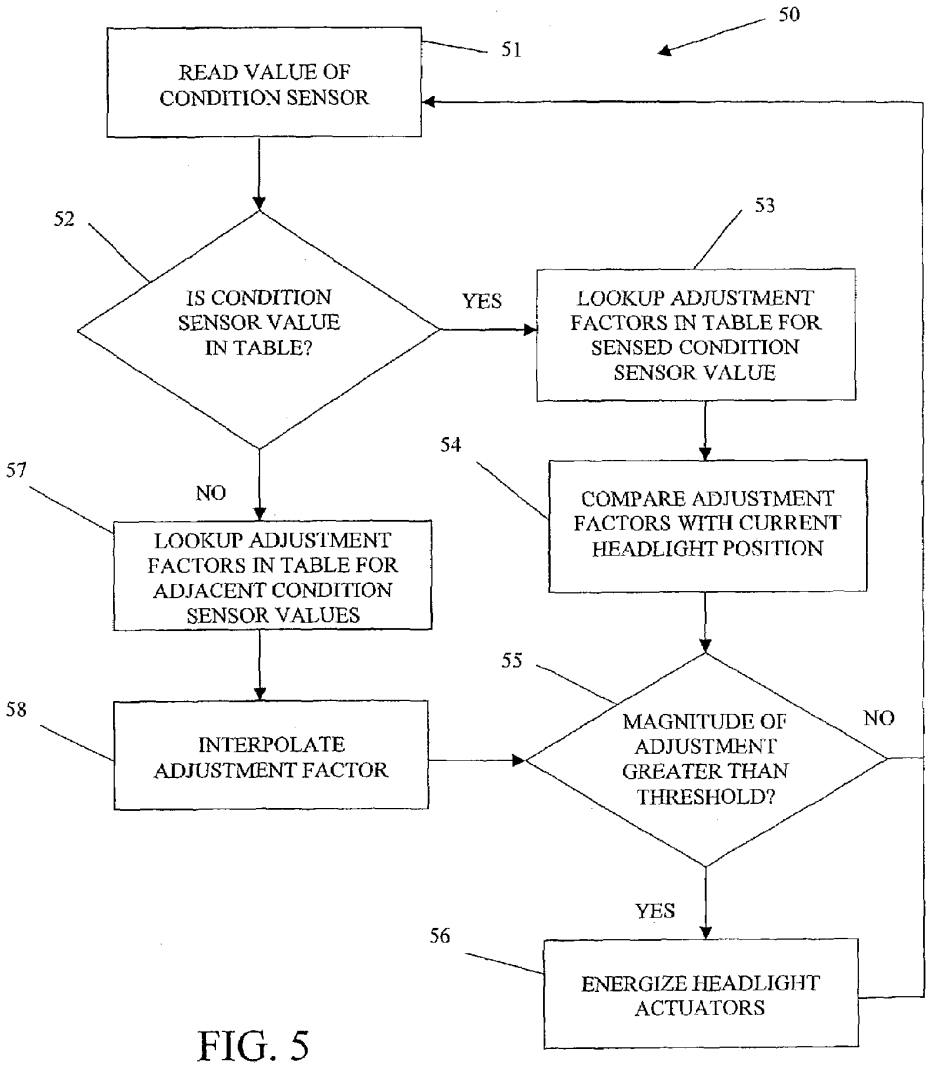

50
READ VALUE OF CONDITION SENSOR
51
IS CONDITION SENSOR VALUE IN TABLE?
52
YES
LOOKUP ADJUSTMENT FACTORS IN TABLE FOR SENSED CONDITION SENSOR VALUE
53
COMPARE ADJUSTMENT FACTORS WITH CURRENT HEADLIGHT POSITION
54
MAGNITUDE OF ADJUSTMENT GREATER THAN THRESHOLD?
55
NO
YES
ENERGIZE HEADLIGHT ACTUATORS
56
NO
LOOKUP ADJUSTMENT FACTORS IN TABLE FOR ADJACENT CONDITION SENSOR VALUES
57
INTERPOLATE ADJUSTMENT FACTOR
58

FIG. 5

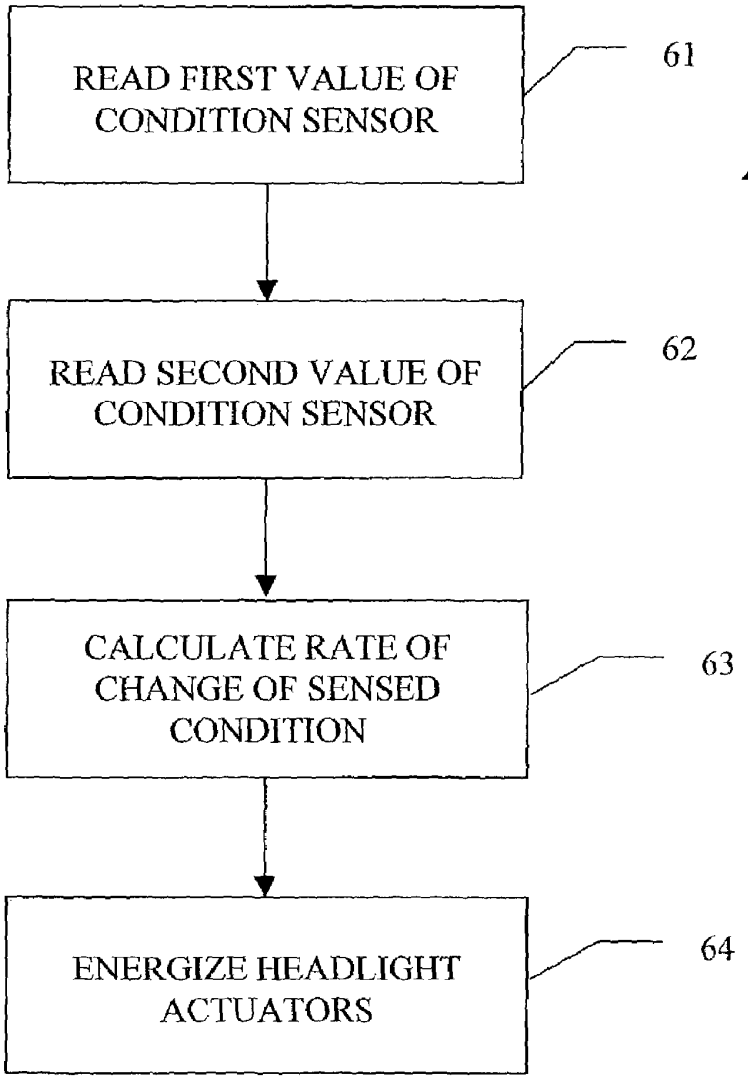

READ FIRST VALUE OF CONDITION SENSOR
61
60
READ SECOND VALUE OF CONDITION SENSOR
62
CALCULATE RATE OF CHANGE OF SENSED CONDITION
63
ENERGIZE HEADLIGHT ACTUATORS
64

FIG. 6

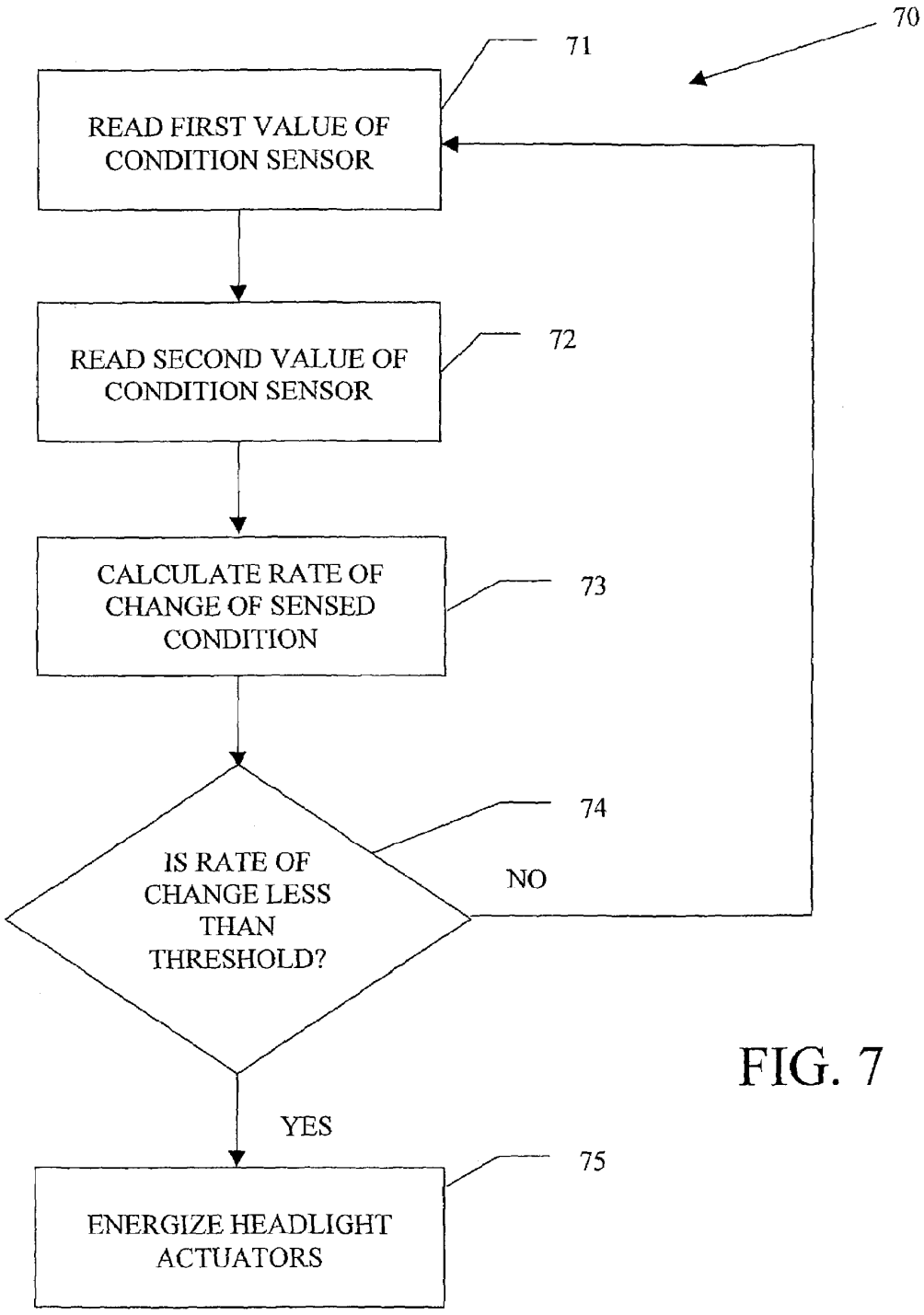

70
71
READ FIRST VALUE OF CONDITION SENSOR
72
READ SECOND VALUE OF CONDITION SENSOR
73
CALCULATE RATE OF CHANGE OF SENSED CONDITION
74
IS RATE OF CHANGE LESS THAN THRESHOLD?
NO
YES
75
ENERGIZE HEADLIGHT ACTUATORS

FIG. 7

AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application Nos. 60/335,409, filed Oct. 31, 2001; 60/356,703, filed Feb. 13, 2002; and 60/369,447, filed Apr. 2, 2002, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

This invention relates in general to headlights that are provided on vehicles for illuminating dark road surfaces or other areas in the path of movement. In particular, this invention relates to an automatic directional control system for such vehicle headlights.

Virtually all land vehicles, and many other types of vehicles (such as boats and airplanes, for example), are provided with one or more headlights that are adapted to illuminate a portion of a dark road surface or other area in the path of movement of the vehicle to facilitate safe travel thereon. Typically, each headlight is mounted on or near the front end of the vehicle and is oriented in such a manner that a beam of light is projected forwardly therefrom. The angle at which the beam of light projects from the headlight can, for example, be characterized in a variety of ways, including (1) up and down relative to a horizontal reference position or plane and (2) left and right relative to a vertical reference position or plane. Such directional aiming angles are usually set at the time of assembly of the headlight into the vehicle so as to illuminate a predetermined portion of the road surface or other area in the path of movement of the vehicle.

In the past, these headlights have been mounted on the vehicle in fixed positions relative thereto such that the beams of light are projected therefrom at predetermined directional aiming angles relative to the vehicle. Although such fixed aiming angle headlight systems have and continue to function adequately, they cannot alter the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. For example, if the speed of the vehicle is increased, it would be desirable to adjust the aiming angle of the headlights upwardly such that an area that is somewhat farther in front of the vehicle is more brightly illuminated. On the other hand, if the speed of the vehicle is decreased, it would be desirable to adjust the aiming angle of the headlights downwardly such that an area that is somewhat closer in front of the vehicle is more brightly illuminated. Similarly, if the vehicle turns a corner, it would be desirable to adjust the aiming angle of the headlights either toward the left or toward the right (depending on the direction of the turn) such that an area that is somewhat lateral to the front of the vehicle is more brightly illuminated.

To accomplish this, it is known to provide a directional control system for vehicle headlights that is capable of automatically altering the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. A variety of such automatic directional control systems for vehicle headlights are known in the art. However, such known automatic headlight directional control systems have been found to be deficient for various reasons. Thus, it would be desirable to provide an improved structure for an automatic headlight directional control system that addresses such deficiencies.

SUMMARY OF THE INVENTION

This invention relates to an improved structure and method for operating a directional control system for vehicle headlights that is capable of automatically altering the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. One or more operating condition sensors may be provided that generate signals that are representative of an operating condition of the vehicle, such as road speed, steering angle, pitch, suspension height, rate of change of road speed, rate of change of steering angle, rate of change of pitch, and rate of change of suspension height of the vehicle. A controller is responsive to the sensor signal for generating an output signal. An actuator is adapted to be connected to the headlight to effect movement thereof in accordance with the output signal. The controller can include a table that relates values of sensed operating condition to values of the output signal. The controller is responsive to the sensor signal for looking up the output signal in the table.

Various objects and advantages of this invention will become apparent to those skilled in the art from the following detailed description of the preferred embodiments, when read in light of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of an automatic directional control system for a vehicle headlight in accordance with this invention.

FIG. **2** is a flow chart of an algorithm for calibrating the automatic directional control system illustrated in FIG. **1** so as to define an initial reference position for the headlight from which the headlight directional controller can implement directional angle adjustments.

FIG. **3** is a flow chart of an algorithm for generating a table that relates one or more sensed vehicle operating condition values to one or more headlight directional angle adjustment factors and for storing such table in the headlight directional controller illustrated in FIG. **1**.

FIG. **4** is an example of a table that can be generated and stored in the headlight directional controller in accordance with the table generating algorithm illustrated in FIG. **3**.

FIG. **5** is a flow chart of an algorithm for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with sensed condition values.

FIG. **6** is a flow chart of an algorithm for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with the rate of change of one or more of the sensed condition values.

FIG. **7** is a flow chart of an algorithm for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments, but only when the rate of change of one or more of the sensed condition values is less than (or greater than) a predetermined value.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, there is illustrated in FIG. **1** an automatic directional control system, indicated generally at **10**, for a vehicle headlight **11** in accordance with this invention. The illustrated headlight **11** is, of itself, conventional in the art and is intended to be representative of any

device that can be supported on any type of vehicle for the purpose of illuminating any area, such as an area in the path of movement of the vehicle. The headlight **11** is typically mounted on or near the front end of a vehicle (not shown) and is oriented in such a manner that a beam of light is projected therefrom. In a manner that is well known in the art, the headlight **11** is adapted to illuminate a portion of a dark road surface or other area in the path of movement of the vehicle to facilitate safe travel thereon.

The headlight **11** is adjustably mounted on the vehicle such that the directional orientation at which the beam of light projects therefrom can be adjusted relative to the vehicle. Any desired mounting structure can be provided to accomplish this. Typically, the headlight **11** is mounted on the vehicle such that the angle at which the beam of light projects therefrom can be adjusted both (1) up and down relative to a horizontal reference position or plane and (2) left and right relative to a vertical reference position or plane. Although this invention will be described and illustrated in the context of a headlight that is adjustable in both the up/down direction and the left/right direction, it will be appreciated that this invention may be practiced with any headlight **11** that is adjustable in any single direction or multiple directions of movement, whether up/down, left/right, or any other direction.

To effect movement of the illustrated headlight **11** relative to the vehicle, an up/down actuator **12** and a left/right actuator **13** are provided. The actuators **12** and **13** are conventional in the art and may, for example, be embodied as servo motors, step motors, or any other electronically controlled mechanical actuators. It has been found to be desirable to use microstepping motors for the actuators **12** and **13**. Such microstepping motors are known in the art and consist of conventional step motors that have appropriate hardware (i.e., driver integrated circuits) and software that allow the step motors to be operated in fractional step increments. The use of such microstepping motors has been found to be desirable because they can effect movements of the headlights in a somewhat faster, smoother, and quieter manner than conventional step motors, and further permit more precise positioning of the headlights **11**. In the illustrated embodiment, the up/down actuator **12** is mechanically connected to the headlight **11** such that the headlight **11** can be selectively adjusted up and down relative to a horizontal reference position or plane. Similarly, the illustrated left/right actuator **13** is mechanically connected to the headlight **11** such that the headlight **11** can be selectively adjusted left and right relative to a vertical reference position or plane.

A headlight directional controller **14** is provided for controlling the operations of the up/down actuator **12** and the left/right actuator **13** and, therefore, the angle at which the beam of light projects from the headlight **11** relative to the vehicle. The headlight directional controller **14** can be embodied as any control system, such as a microprocessor or programmable electronic controller, that is responsive to one or more sensed operating conditions of the vehicle for selectively operating the up/down actuator **12** and the left/right actuator **13**. To accomplish this, the automatic directional control system **10** can include, for example, a pair of condition sensors **15** and **16** that are connected to the headlight directional controller **14**. The condition sensors **15** and **16** are conventional in the art and are responsive to respective sensed operating conditions of the vehicle for generating electrical signals to the headlight directional controller **14**. However, if desired, only a single one of the condition sensors **15** and **16** need be provided. Alternatively, additional condition sensors (not shown) may be provided if desired to generate electrical signals that are representative of any other operating conditions of the vehicle. A conventional input/output device **17** is connected to (or can be connected to) the headlight directional controller **14** for facilitating communication therewith in the manner described below.

If desired, a first position feedback sensor **18** may be provided for the up/down actuator **12**, and a second position feedback sensor **19** may be provided for the left/right actuator **13**. The position feedback sensors **18** and **19** are conventional in the art and are adapted to generate respective electrical signals that are representative of the actual up/down and left/right positions of the headlight **11**. Thus, the first position feedback sensor **18** is responsive to the actual up/down position of the headlight **11** (as determined by a portion of the up/down actuator **12**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. Similarly, the second position feedback sensor **19** is responsive to the actual left/right position of the headlight **11** (as determined by a portion of the left/right actuator **13**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. The position feedback sensors **18** and **19** can be embodied as any conventional sensor structures, such as Hall effect sensors, that are responsive to movements of the headlight **11** (or to the movements of the respective actuators **12** and **13** that are connected to move the headlight **11**) for generating such signals.

Alternatively, the position feedback sensors **18** and **19** can be embodied as respective devices that generate electrical signals whenever the headlight **11** has achieved respective predetermined up/down or left/right positions. This can be accomplished, for example, using a conventional optical interrupter (not shown) for each of the actuators **12** and **13**. Each of the optical interrupters includes a flag or other component that is mounted on or connected to the headlight **11** for movement therewith. Each of the optical interrupters further includes an optical source and sensor assembly. As the headlight **11** is moved by the actuators **12** and **13**, the flag moves therewith relative to the optical source and sensor assembly between a first position, wherein the flag permits light emitted from the source from reaching the sensor, and a second position, wherein the flag prevents light emitted from the source from reaching the sensor. When the flag is in the first position relative to the optical source and sensor assembly, the sensor is permitted to receive light emitted from the source. As a result, a first signal is generated from the optical source and sensor assembly to the headlight directional controller **14**. Conversely, when the flag is in the second position relative to the optical source and sensor assembly, the sensor is not permitted to receive light emitted from the source. As a result, a second signal is generated from the optical source and sensor assembly to the headlight directional controller **14**. Thus, the edge of the flag defines a transition between the first and second positions of the flag relative to the optical source and sensor assembly and, therefore, defines a predetermined up/down or left/right position of the headlight **11**. The nature of the signal generated from the optical source and sensor assembly to the headlight directional controller **14** (i.e., the first signal or the second signal) can also be used to determine on which side of the predetermined position (the left side or the right side, for example) that the headlight **11** is positioned. The purpose for such position feedback sensors **18** and **19** will be discussed below.

FIG. **2** is a flow chart of an algorithm, indicated generally at **20**, for calibrating the automatic directional control system illustrated in FIG. **1** so as to define an initial reference position or positions for the headlight **11** from which the headlight directional controller **14** can implement directional angle adjustments. As mentioned above, the headlight **11** is mounted on the vehicle such that the angle at which the beam of light projects therefrom can be adjusted both up and down relative to a horizontal reference position or plane and left and right relative to a vertical reference position or plane. To insure accurate positioning of the headlight **11**, it is desirable that a reference position or positions be initially established by the headlight directional controller **14**. Subsequent directional angle adjustments can be made by the headlight directional controller **14** from the pre-established reference position or positions established by this calibration algorithm **20**.

To accomplish this, the calibration algorithm **20** has a first step **21** wherein the headlight directional controller **14** is caused to enter a calibration mode of operation. In the calibration mode of operation, the headlight directional controller **14** is responsive to input signals from the input/output device **17** (or from another source, if desired) for causing manual operation of the up/down actuator **12** and the left/right actuator **13**. Thus, while the headlight directional controller **14** is in the calibration mode of operation, an operator of the input/output device **17** can manually effect either up/down movement of the headlight **11**, left/right movement of the headlight **11**, or both, as desired.

In a second step **22** of the calibration algorithm **20**, the up/down actuator **12** and the left/right actuator **13** are manually operated to aim the headlight **11** in a predetermined reference orientation. This can be accomplished by use of the input/output device **17** that, as mentioned above, is connected to (or can be connected to) the headlight directional controller **14**. Traditionally, the aiming of a headlight **11** has been accomplished by parking the vehicle on a surface near a wall or other vertical structure, providing a reference target at a predetermined location on the wall or other structure, and mechanically adjusting the mounting structure of the headlight **11** such that the center of the beam therefrom is projected at the reference target. In this invention, the vehicle is parked on a surface near a wall or other vertical structure, and a reference target is provided at a predetermined location on the wall or other structure, as described above. Next, in accordance with the second step **22** of this calibration algorithm **20**, the input/output device **17** is operated to generate electrical signals to the headlight directional controller **14**. In response to such electrical signals, the headlight directional controller **14** operates the up/down actuator **12** and the left/right actuator **13** to move the headlight **11** such that center of the beam projecting therefrom is aimed at the reference target. When the beam from the headlight **11** is so aimed, then the headlight **11** is determined to be oriented in the initial reference position from which the headlight directional controller **14** can subsequently implement directional angle adjustments.

In a third step **23** of the calibration algorithm **20**, once this initial reference position for the headlight **11** has been achieved, such position is stored in the headlight directional controller **14** as the predetermined initial reference position. This can be accomplished by means of the position feedback sensors **18** and **19**. As discussed above, the position feedback sensors **18** and **19** are adapted to generate respective electrical signals that are representative of the actual up/down and left/right positions of the headlight **11** or of the predetermined positions for the headlight. Thus, the first position feedback sensor **18** is responsive to the actual up/down position of the headlight **11** (as determined by the up/down actuator **12**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. Similarly, the second position feedback sensor **19** is responsive to the actual left/right position of the headlight **11** (as determined by the left/right actuator **13**, for example) for generating an electrical signal to the headlight directional controller **14** that is representative thereof. Accordingly, the third step **23** of the calibration algorithm **20** can be performed by causing the headlight directional controller **14** to read the signals from the position feedback sensors **18** and **19** and store the current up/down and left/right positions of the headlight **11** as the initial reference positions from which the headlight directional controller **14** can subsequently implement directional angle adjustments.

The current position of the headlight **11** is preferably stored in the non-volatile memory of the headlight directional controller **14** for reference during normal operation of the automatic directional control system **10** described below. Thus, when the automatic directional control system **10** is initially activated (such as when the electrical system of the vehicle is initially turned on), the headlight directional controller **14** can position the headlight **11** at or near the calibrated position utilizing the signals comparing the current position of the headlight **11** (as determined by the signals generated by the position feedback sensors **18** and **19**) with the predetermined reference position determined by the calibration algorithm **20**.

FIG. **3** is a flow chart of an algorithm, indicated generally at **30**, for generating a table that relates the sensed condition values from the condition sensors **15** and **16** to the headlight directional angle adjustment factors that will be implemented by the headlight directional controller **14**, and further for storing such table in the headlight directional controller **14** illustrated in FIG. **1**. As used herein, the term "table" is intended to be representative of any collection or association of data that relates one or more of the sensed condition values to one or more of the headlight directional angle adjustment factors. The table of data can be generated, stored, and expressed in any desired format. For example, this table of data can be generated, stored, and expressed in a conventional spreadsheet format, such as shown in FIG. **4**, which will be discussed in detail below.

In a first step **31** of the table generating algorithm **30**, an adjustment control algorithm is selected. The adjustment control algorithm can be, generally speaking, any desired relationship that relates one or more operating conditions of the vehicle to one or more angular orientations of the headlight **11**. A variety of such relationships are known in the art, and this invention is not intended to be limited to any particular relationship. Typically, such relationships will be expressed in terms of a mathematical equation or similar relationship that can be readily processed using a microprocessor or similar electronic computing apparatus, such as the above-described headlight directional controller **14**. The particular adjustment control algorithm that is selected may, if desired, vary from vehicle to vehicle in accordance with a variety of factors, including relative size and performance characteristics of the vehicle or any other desired condition.

As mentioned above, a plurality of operating conditions may be sensed by the condition sensors **15** and **16** and provided to the headlight directional controller **14** for use with the adjustment control mechanism. For example, the condition sensors **15** and **16** may generate electrical signals to the headlight directional controller **14** that are represen-

tative of the road speed, the steering angle, and the pitch of the vehicle (which can, for example, be determined by sensing the front and rear suspension heights of the vehicle or by a pitch or level sensor). Additionally, the time derivative of these operating conditions (i.e., the rate of change of the road speed, steering angle, and pitch of the vehicle) can be sensed or calculated. However, any other operating condition or conditions of the vehicle may be sensed and provided to the headlight directional controller **14**.

In a second step **32** of the table generating algorithm **30**, the table is generated using the adjustment control algorithm selected in the first step **31**. The table can be generated in any desired manner. For example, let it be assumed that the selected adjustment control algorithm relates a single sensed operating condition to each of the angular adjustment control values for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. The table can be generated by initially selecting a first discrete sensed operating condition value that might be encountered during operation of the vehicle. Then, the selected adjustment control algorithm is solved using such first discrete sensed operating condition value to obtain the corresponding adjustment control values for the up/down and left/right orientation of the headlight **11**. Then, the first discrete sensed operating condition value and the corresponding adjustment control values are stored in the table. This process can be repeated for any desired number of other discrete sensed operating condition values that might be encountered during operation of the vehicle.

As mentioned above, FIG. **4** is a representative example of a table, indicated generally at **40**, that can be generated in accordance with the second step **32** of the table generating algorithm **30** illustrated in FIG. **3**. As shown therein, a series of discrete sensed operating condition values (degrees of steering angles, for example) is related to the angular adjustment control values (degrees of movement from the associated up/down and left/right reference positions or planes, for example) for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. For the purposes of illustration only, let it be assumed that (1) a positive steering angle value represents steering toward left, while a negative steering angle value represents steering toward the right, (2) a positive up/down adjustment factor represents aiming the headlight **11** upwardly, while a negative up/down adjustment factor represents aiming the headlight **11** downwardly, and (3) a positive left/right adjustment factor represents aiming the headlight **11** toward the left, while a negative left/right adjustment factor represents aiming the headlight **11** toward the right.

Thus, in accordance with the selected adjustment control algorithm, a sensed steering angle of +6° results in an up/down adjustment factor of −3.00° and a left/right adjustment factor of +4.50°. Similarly, a sensed steering angle of +5° results in an up/down adjustment factor of −2.50° and a left/right adjustment factor of +3.75°, and so on as shown in the table **40**. The illustrated table **40** relates thirteen different sensed steering angle values to their corresponding adjustment control values for both the up/down and left/right orientation of the headlight **11**. However, the table **40** can include a greater or lesser number of such sensed operating condition values, together with their corresponding adjustment control values. Furthermore, although the illustrated table **40** relates only a single sensed operating condition value (steering angle) to the corresponding adjustment control values for both the up/down and left/right orientation of the headlight **11**, the selected adjustment control algorithm may, as mentioned above, be responsive to a plurality of sensed operating condition values for determining the corresponding adjustment control values. Alternatively, as will be discussed further below, a plurality of tables **40** can be generated, one for each of the plurality of sensed operating condition values. The size and extent of the table **40** or tables can be varied to accommodate any desired number of such sensed operating conditions.

Referring back to FIG. **3**, in a third step **33** of the table generating algorithm **30**, the table **40** generated in the second step **32** is stored in the memory of the headlight directional controller **14** illustrated in FIG. **1**. The contents of the table **40** can be communicated serially to the headlight directional controller **14** by means of the input/output device **17** illustrated in FIG. **1** or in any other desired manner. Regardless of how it is communicated, the table **40** is preferably stored in a non-volatile memory of the headlight directional controller **14** for subsequent use in the manner described further below when the vehicle is operated.

As mentioned above, it may be desirable to vary the algorithm that is selected for use in implementing the headlight directional angle adjustment factors. The generation of the table **40** and the storage of such table **40** in the memory of the headlight directional controller **14** allow a designer of the automatic directional control system **10** to quickly and easily alter the response characteristics of the system **10** as desired, without the need for direct access to the computer code or software that is used to operate the headlight directional controller **14**. Rather, to effect such alterations, a designer can simply change some or all of the data points that are contained within the table **40**. As will be described in detail below, the headlight directional controller **14** will use whatever data points that are contained within the table **40** in determining the need for adjustments in the angular orientation of the headlight **11**. This structure also reduces the amount of processing power that is necessary for the headlight directional controller **14** because it can operate on a relatively simple look-up basis using the table **40**, rather than having to calculate relatively high order equations that may be used to determine the data points contained within the table **40**.

FIG. **5** is a flow chart of an algorithm, indicated generally at **50**, for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with one or more of the sensed condition values from the condition sensors **15** and **16**. In a first step **51** of the operating algorithm **50**, the values of one or more of the condition sensors **15** and **16** are read by the headlight directional controller **14**. Then, the operating algorithm **50** enters a decision point **52**, wherein it is determined whether the value or values of the condition sensors **15** and **16** that have been read by the headlight directional controller **14** are specifically contained in the table **40**. For example, using the table **40** illustrated in FIG. **4**, if the headlight directional controller **14** has read a steering angle value of −2°, then it is determined that the value of the condition sensor **15** is specifically contained within the table **40**. In this instance, the operating algorithm **50** branches from the decision point **52** to an instruction **53**, wherein the adjustment factors contained in the table **40** that correspond to the sensed condition value are looked up and stored in the headlight directional controller **14**.

The operating algorithm **50** next enters an instruction **54** wherein the value of the magnitude of the adjustment factor (i.e., the desired position for the headlight **11**) is compared with the current position of the headlight **11**. This step **54** of the operating algorithm **50** is optional and can be performed if one or more of the position feedback sensors **18** and **19** are

provided in the automatic directional control system **10** to generate respective electrical signals that are representative of the actual up/down and left/right positions of the headlight **11**, as described above. This step **54** of the operating algorithm **50** can be performed to determine how much of an adjustment is necessary to move the headlight **11** from its current position, as determined by the position feedback sensors **18** and **19**, to the desired position, as defined by the adjustment factor obtained from the table **40**. To accomplish this, the value of the adjustment factor may, for example, be subtracted from the current position of the headlight **11** to determine the magnitude of the difference therebetween and, therefore, the magnitude of the adjustment that is necessary to move the headlight **11** from its current position to the desired position. However, this step **54** of the operating algorithm **50** can be accomplished in any other desired manner.

Next, the operating algorithm **50** enters a decision point **55**, wherein it is determined whether the magnitude of the adjustment that is necessary to move the headlight **11** from its current position to the desired position is greater than a predetermined minimum threshold. This step in the operating algorithm **50** is also optional, but may be desirable to prevent the actuators **12** and **13** from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition or conditions, such as relatively small bumps in the road. For example, if the current position of the headlight **11** is relatively close to the desired position, then it may be undesirable to effect any movement thereof. This step **55** will prevent the actuators **12** and **13** from being operated unless the current position of the headlight **11** is relatively far from the desired position. As another example, if the condition sensors **15** and **16** are respectively responsive to the front and rear suspension heights of the vehicle for the purpose of determining the pitch thereof, then the headlight directional controller **14** may be programmed to be responsive only to changes in the suspension heights that occur at frequencies that are lower than the suspension rebound frequency of the vehicle (thereby ignoring relatively high frequency changes in suspension height that are likely the result of bumps in the road). However, relatively high frequency changes in the suspension heights could also be monitored to assist in deciphering relatively rough suspension changes from other suspension changes.

In any event, the provision of the predetermined minimum threshold functions as a filter or dead band that minimizes or eliminates undesirable "hunting" of the actuators **12** and **13** for relatively small magnitudes of movement of the headlight **11**. If the magnitude of the adjustment factor is not greater than the predetermined minimum threshold, then the operation of the actuators **12** and **13** is considered to be undesirable. Thus, the operating algorithm **50** branches from the decision point **55** back to the instruction **51**, wherein the above-described steps of the operating algorithm **50** are repeated.

If, on the other hand, the magnitude of the adjustment factor is greater than the predetermined minimum threshold, then the operation of the actuators **12** and **13** is considered to be desirable. Thus, the operating algorithm **50** branches from the decision point **55** to an instruction **56**, wherein either or both of the actuators **12** and **13** are actuated to effect movement of the headlight **11**. For example, using the table **40** illustrated in FIG. **4**, if the headlight directional controller **14** has read a steering angle value of −2°, then the headlight directional controller **14** will look up an up/down adjustment factor of −1.00° and a left/right adjustment factor of −1.50° from the table **40**. The headlight directional controller **14** operates the actuators **12** and **13** to adjust the angular orientation of the headlight **11** to achieve the noted adjustment factors.

In some instances, the amounts of movement that are to be implemented by the two actuators **12** and **13** will be the same (i.e., the amount of up/down movement of the headlight **11** will be the same as the amount of left/right movement). More frequently, however, the amounts of movement that are to be implemented by the two actuators **12** and **13** will be different from one another. In the latter instances, it may be desirable to operate the two actuators **12** and **13** at two different speeds such that the overall movement of the headlight **11** is relatively uniform. For example, if the amount of movement that is to be implemented by the up/down actuator **12** is twice as large as the amount of movement that is to be implemented by the left/right actuator **13**, then it may be desirable to operate the up/down actuator **12** at one-half of the speed of the left/right actuator **13** so that the movements of both actuators **12** and **13** (and, therefore, the overall movement of the headlight **11**) will start and stop at approximately the same time. Similarly, if the vehicle is provided with two different headlights **11**, as is commonly found, then it may be desirable to control the respective movements of such different headlights **11** in such a manner that they both start and stop at approximately the same time. This can be accomplished, for example, by providing a single headlight directional controller **14** for not only controlling, but also coordinating the movements of both of the headlights **11** in response to the sensed operating conditions.

Such operations can be performed in an open loop manner if desired, wherein the actuators **12** and **13** are operated to achieve predetermined amounts of movement. For example, the actuators **12** and **13** can be embodied as step motors that are operated a predetermined number of steps to achieve predetermined amounts of movement. Alternatively, the actuators **12** and **13** can be operated for predetermined periods of time to achieve the predetermined amounts of movement. However, more desirably, the operations of the actuators **12** and **13** are performed in a closed loop manner. To accomplish this, the actuators **12** and **13** are operated until either or both of the position feedback sensors **18** and **19** generate signals indicate that the headlight **11** has actually achieved the predetermined amounts of movement or desired position. In either event, the operating algorithm **50** then branches back to the instruction **51**, wherein the above-described steps of the algorithm **50** are repeated.

Referring back to the decision point **52**, if the value or values of the condition sensors **15** and **16** that have been read by the headlight directional controller **14** are not specifically contained in the table **40**, then the operating algorithm **50** branches from the decision point **52** to an instruction **57**, wherein the adjustment factors that are specifically contained in the table **40** that correspond to the adjacent sensed condition values are looked up and stored in the headlight directional controller **14**. For example, using the table **40** illustrated in FIG. **4**, if the headlight directional controller **14** has read a steering angle value of −1.5°, then it is determined that the value of the condition sensor **15** is not specifically contained within the table **40**. Rather than simply default to the closest value that is contained within the table **40**, the two adjustment factors specifically contained in the table **40** that are adjacent to the sensed condition value (namely, the adjustment factors for the steering angle values of −1° and −2°) are looked up and stored in the headlight directional controller **14**.

The operating algorithm **50** next enters an instruction **58**, wherein the actual adjustment factors to be implemented by the headlight directional controller **14** are interpolated or otherwise calculated from the stored adjustment factors that are adjacent to the sensed condition value. For example, as mentioned above, if the actual sensed steering angle value is −1.5°, then the headlight directional controller **14** looks up the adjustment factors for the steering angle values of −1° and −2°. The up/down adjustment factor for a steering angle value of −1° is −0.50 while the up/down adjustment factor for a steering angle value of −2° is −1.00°. If the calculation that is performed by the headlight directional controller **14** is a simple arithmetic mean, then the interpolated up/down adjustment factor would be −0.75°. Similarly, the left/right adjustment factor for a steering angle value of −1° is −0.75°, while the left/right adjustment factor for a steering angle value of −2° is −1.50°. If the calculation that is performed by the headlight directional controller **14** is a simple arithmetic mean, then the interpolated left/right adjustment factor would be −1.13°. Thereafter, the operating algorithm **50** branches to the decision point **55**, and the remainder of the operating algorithm **50** is performed as described above.

The interpolation that is performed by the headlight directional controller **14** can be accomplished in any desired manner. The performance of the simple arithmetic mean described above is intended to be representative of any mathematical or other function that can be performed to calculate, derive, or otherwise obtain adjustment factors that are not present in the table **40**. Furthermore, although this interpolation has been described in the context of using only the two condition values that are directly adjacent to the actual sensed condition value, it will be appreciated that the adjustment values for any single condition value or combination of sensed condition values may be selected for the interpolation. For example, several of the condition values both above and below the sensed condition value can be read from the table **40** to derive a trend line or other good estimate of the adjustment factors that are not present in the table **40**. Performance of this interpolation does not require any significant increase in the amount of processing power that is necessary for the headlight directional controller **14**.

The above discussion has assumed the use of a single table **40** that provides adjustment values based upon a single sensed operating condition (steering angle of the vehicle, in the illustrated embodiment). However, as discussed above, this invention may be practiced by sensing a plurality of operating conditions of the vehicle. For example, let it be assumed that both steering angle and vehicle road speed are sensed by the condition sensors **15** and **16**. As previously discussed, the adjustment control algorithm that is selected in the first step **31** of the table generating algorithm **30** can be designed to accommodate multiple sensed conditions. Alternatively, however, a first table (such as the table **40** illustrated in FIG. **4**) may be generated that relates the steering angle of the vehicle to the angular adjustment control values for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. A second, similar table (not shown) may also be generated that relates the road speed of the vehicle to the angular adjustment control values for adjusting both the up/down orientation and the left/right orientation of the headlight **11**. Thus, for a given steering angle and road speed of the vehicle, the first and second tables may provide differing angular adjustment control values. To address this, the interpolation step **57** of the operating algorithm **50** can be performed to interpolate a single composite adjustment value that is based upon the two different values provided in the first and second tables for the pair of sensed operating conditions. This interpolation can be performed in the same manner as described above for each of the actuators **12** and **13**.

A variety of control strategies can be implemented using the automatic directional control system **10** described above. For example, the pitch of the vehicle can change as a result of a variety of factors, including acceleration, deceleration, and weight distribution of the vehicle. These pitch variations can alter the angle at which the beam of light projects from the headlight **11** in the up and down direction relative to a horizontal reference position or plane. The automatic directional control system **10** can be responsive to such pitch variations for operating the up/down actuator **12** to maintain the angle at which the beam of light projects from the headlight **11** in the up and down direction relatively constant to the horizontal reference position or plane.

As discussed above, the angle at which the beam of light projects from the headlight **11** in the left and right direction relative to a vertical reference position or plane can be adjusted in accordance with the sensed steering angle. However, the angle at which the beam of light projects from the headlight **11** in the up and down direction relative to a horizontal reference position or plane can also be adjusted in accordance with the sensed steering angle. This can be done to lower the headlight beams as the vehicle is turning a corner. The advantages of this are not only to better illuminate the road surface in the path of movement of the vehicle, but also to reduce headlight glare to other vehicles as the turn is negotiated.

Lastly, many vehicles on the road today have halogen lamps or other lights that are aimed to illuminate the sides of the roads in front of the vehicle during the turn. These other lights are activated by the manual operation of the turn signals of the vehicle. The automatic directional control system **10** of this invention can be responsive to one or more operating conditions of the vehicle to automatically activate these other lights on the vehicle. For example, the automatic directional control system **10** of this invention can be responsive to a steering angle in excess of a predetermined magnitude for automatically activating these other lights on the vehicle. This can be effective to extend the angular range of illumination of the road surface.

FIG. **6** is a flow chart of an algorithm, indicated generally at **60**, for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments in accordance with the rate of change of one or more of the sensed condition values. As mentioned above, the headlight directional controller **14** can be operated to automatically implement directional angle adjustments in accordance with one or more of the sensed condition values or in accordance with the rate of change of one or more of the sensed condition values.

To accomplish this, the algorithm **60** has a first step **61** wherein the values of one or more of the condition sensors **15** and **16** are initially read by the headlight directional controller **14**. Then, the algorithm **60** enters a second step **62** wherein the values of one or more of the condition sensors **15** and **16** are subsequently read a second time by the headlight directional controller **14**. The second reading of the condition sensors **15** and **16** occurs a predetermined amount of time after the first reading thereof. Next, the algorithm enters a third step **63** wherein a rate of change of the sensed condition or conditions is calculated. The rate of change of the sensed condition can be calculated as the difference between the first and second readings divided by the amount of time therebetween or by any other desired means. For example, if the sensed condition is vehicle speed, then the difference between the first sensed vehicle speed and the second sensed vehicle speed, divided by the amount of time therebetween, would yield a number that is repre-

sentative of the acceleration of the vehicle. In a final step **64** of the algorithm **60**, either or both of the actuators **12** and **13** are actuated to effect movement of the headlight **11** in accordance with the calculated rate of change of the sensed condition. Such movement of the headlight **11** can be effected in a manner that is similar to that described above.

FIG. **7** is a flow chart of an algorithm, indicated generally at **70**, for operating the headlight directional controller illustrated in FIG. **1** to automatically implement directional angle adjustments, but only when the rate of change of one or more of the sensed condition values is less than (or greater than) a predetermined value. As mentioned above, the headlight directional controller **14** can be operated to automatically implement directional angle adjustments in accordance with one or more of the sensed condition values. In this variation of the invention, the headlight directional controller **14** automatically implements directional angle adjustments in response to the sensed condition values (or in response to the rate of change of the sensed condition values), but only when the rate of change of one or more of the sensed condition values is less than (or greater than) a predetermined value.

To accomplish this, the algorithm **70** has a first step **71** wherein the values of one or more of the condition sensors **15** and **16** are initially read by the headlight directional controller **14**. Then, the algorithm **70** enters a second step **72** wherein the values of one or more of the condition sensors **15** and **16** are subsequently read a second time by the headlight directional controller **14**. The second reading of the condition sensors **15** and **16** occurs a predetermined amount of time after the first reading thereof. Next, the algorithm enters a third step **73** wherein a rate of change of the sensed condition or conditions is calculated. The rate of change of the sensed condition can be calculated as the difference between the first and second readings divided by the amount of time therebetween or by any other desired means. For example, if the sensed condition is suspension height, then the difference between the first sensed suspension height and the second sensed suspension height, divided by the amount of time therebetween, would yield a number that is representative of the rate of change of the suspension height of the vehicle.

In a fourth step **74** of the algorithm **70**, a determination is made as to whether the rate of change of the sensed condition value is less than a predetermined threshold value. If the rate of change of the sensed condition value is less than this predetermined threshold value, then the algorithm **70** branches from the decision point **74** to a final step **75** of the algorithm **70**, wherein either or both of the actuators **12** and **13** are actuated to effect movement of the headlight **11** in accordance with the calculated rate of change of the sensed condition. Such movement of the headlight **11** can be effected in a manner that is similar to that described above. If, however, the rate of change of the sensed condition value is not less than this predetermined threshold value, then the algorithm **70** branches from the decision point **74** back to the first step **71**, wherein the algorithm **70** is repeated. This threshold sensing algorithm **70** can function to prevent the headlight directional controller **14** from being operated to automatically implement directional angle adjustments when the rate of change of the suspension height of the vehicle changes more rapidly than the system can effect corrective changes. For example, if the vehicle is operated on a bumpy road, the algorithm **70** will prevent the headlight directional controller **14** from attempting to correct for every single bump that is encountered. However, for relatively low frequency or rates of change in the suspension height of the vehicle, such as can occur when accelerating, decelerating, and weight changes, the headlight directional controller **14** will be operated in the normal manner to effect corrective actions, as described above.

As mentioned above, the input/output device **17** is connected to (or can be connected to) the headlight directional controller **14** for facilitating communication therewith, and the input/output device **17** can be used for calibrating the automatic directional control system illustrated in FIG. **1** so as to define an initial reference position or positions for the headlight **11** from which the headlight directional controller **14** can implement directional angle adjustments. Additionally, however, the input/output device **17** can be employed as a diagnostic tool. To accomplish this, the input/output device **17** can be embodied as a conventional microprocessor or similar electronically programmable device that can be connected to the headlight directional controller **14** to read fault codes that may be generated during the operation thereof. The headlight directional controller **14** can be programmed to generate fault codes whenever a fault condition or other anomaly occurs or is detected. Such fault codes can be stored in the headlight directional controller **14** until the input/output device **17** is subsequently connected thereto. When so connected, the input/output device **17** can read such codes and display them for an operator. As a result, the operator can take whatever corrective actions are necessary to address the fault condition or anomaly. The input/output device **17** can also be programmed to clear the fault codes from the headlight directional controller **14** after they are read.

In accordance with the provisions of the patent statutes, the principle and mode of operation of this invention have been explained and illustrated in its preferred embodiments. However, it must be understood that this invention may be practiced otherwise than as specifically explained and illustrated without departing from its spirit or scope.

What is claimed is:

1. An automatic directional control system for a vehicle headlight comprising:

a sensor that is adapted to generate a signal that is representative of a condition of the vehicle, said sensed condition includes one or more of road speed, steering angle, pitch, and suspension height of the vehicle;

a controller that is responsive to said sensor signal for generating an output signal only when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition; and

an actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal.

2. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the road speed of the vehicle.

3. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the steering angle of the vehicle.

4. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the pitch of the vehicle.

5. The automatic directional control system defined in claim **1** wherein said sensor generates a signal that is representative of the suspension height of the vehicle.

* * * * *

Electronic Acknowledgement Receipt	
EFS ID:	7983702
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Customer Number:	92045
Filer:	Patrick Edgar Caldwell/Lindsey Caldwell
Filer Authorized By:	Patrick Edgar Caldwell
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	09-JUL-2010
Filing Date:	
Time Stamp:	13:08:04
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Receipt of Corrected Original Ex Parte Request	7241034__109__Re-Exam_v3_09-Jul-2010.pdf	67448 85cd5ef899bd892525705144a69e7e089469d0ef	no	7
Warnings:					
Information:					

2	Reexam Miscellaneous Incoming Letter	7241034__109__Re-Exam_Exhibit_A_v3_09-Jul-2010.pdf	64407 bd0d5a9d3303a9fd8b1ddacbf8b2b6b5e6ae6ab7	no	5
Warnings:					
Information:					
3	Copy of patent for which reexamination is requested	7241034_Smith_filing.pdf	2428532 a140454c40f612a3362b93828621af5145c872bd	no	16
Warnings:					
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		Total Files Size (in bytes):	2560387		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Application Number	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/011,011	7,241,034
	Examiner	Art Unit
	***	3992

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90011011	7,241,034
	Examiner	Art Unit
	***	3992

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original									
	1									
	2									
	3									
	4									
	5									

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90011011	7,241,034
	Examiner	Art Unit
	***	3992

ORIGINAL		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
362	465.000		

CROSS REFERENCE(S)	
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

(Assistant Examiner) (Date)	Total Claims Allowed:	
(Primary Examiner) (Date)	O.G. Print Claim(s)	O.G. Print Figure

U.S. Patent and Trademark Office

Part of Paper No. 20100715

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90011011	7,241,034
	Certificate Date	Certificate Number

Requester Correspondence Address: ☒ **Patent Owner** ☐ **Third Party**

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LITIGATION REVIEW ☐	(examiner initials)	(date)
Case Name		Director Initials

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90011011	7,241,034
	Examiner	Art Unit
	***	3992

SEARCHED			
Class	Subclass	Date	Examiner
362	465.000		

SEARCH NOTES		
Search Notes	Date	Examiner

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Bib Data Sheet

CONFIRMATION NO. 3919

SERIAL NUMBER	FILING OR 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/011,011	07/10/2010 RULE	362	3992	SVIPGP109RE

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PATENT OWNER, Residence Not Provided;

**** CONTINUING DATA ***************************

This application is a REX of 10/285,312 10/31/2002 PAT 7,241,034
which claims benefit of 60/335,409 10/31/2001
and claims benefit of 60/356,703 02/13/2002
and claims benefit of 60/369,447 04/02/2002

**** FOREIGN APPLICATIONS *********************

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ yes ☐ no			5	1
35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance				
Verified and Acknowledged Examiner's Signature Initials				

ADDRESS
92045

TITLE
AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
2520	No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Litigation Search Report CRU 3999

Reexam Control No. 90/011,011

TO: MARK REINHART Location: CRU Art Unit: 3992 Date: 07/10/10	From: MANUEL SALDANA Location: CRU 3999 MDW 7C55 Phone: (571) 272-7740 MANUEL.SALDANA@uspto.gov

Search Notes

Litigation was found for US Patent Number: **7,241,034.**
DOCKET 6:10CV78 (CLOSED 05/18/10).

1) I performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.

2) I performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.

3) I performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.

4) I performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.

5) I performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Date of Printing: Jul 10, 2010

KEYCITE

C US PAT 7241034 AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS, Assignee: Dana Corporation (Jul 10, 2007)

History

Direct History

=> 1 **AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS,** US PAT 7241034, 2007 WL 1978614 (U.S. PTO Utility Jul 10, 2007) (NO. 10/285312)

Patent Family

2 AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR A VEHICLE HEADLIGHT USES SENSOR TO GENERATE SIGNAL REPRESENTATIVE OF CONDITION OF VEHICLE, CONTROLLER RESPONSIVE TO SENSOR SIGNAL TO GENERATE OUTPUT SIGNAL AND ACTUATOR TO EFFECT, Derwent World Patents Legal 2003-543647

Assignments

3 Action: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS). Number of Pages: 002, (DATE RECORDED: Mar 08, 2010)

4 Action: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS). Number of Pages: 002, (DATE RECORDED: Jun 12, 2009)

5 Action: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS). Number of Pages: 030, (DATE RECORDED: Feb 22, 2008)

6 Action: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS). Number of Pages: 003, (DATE RECORDED: Feb 06, 2003)

Patent Status Files

.. Patent Suit(See LitAlert Entries),

Docket Summaries

8 BALTHER TECHNOLOGIES, LLC v. AMERICAN HONDA MOTOR CO. INC. ET AL, (E.D.TEX. Mar 08, 2010) (NO. 6:10CV00078), (35 USC 271 PATENT INFRINGEMENT)

Litigation Alert

9 Derwent LitAlert P2010-11-45 (Mar 08, 2010) Action Taken: complaint

Prior Art (Coverage Begins 1976)

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Items 1 to 1 of 1

	Patent	Class	Subclass	Description	Court (All)	Docket Number	Filed	Date Retrieved
☐	7,241,034	362	465	Balther Technologies, LLC v. American Honda Motor Co Inc Et A	US-DIS-TXED	6:10cv78	3/8/2010	7/8/2010

Items 1 to 1 of 1

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US District Court Civil Docket

U.S. District - Texas Eastern
(Tyler)

6:10cv78

Balther Technologies, Llc v. American Honda Motor Co Inc et A

This case was retrieved from the court on Thursday, July 08, 2010

Date Filed:	**03/08/2010**	**Class Code:**	**CLOSED**
Assigned To:	**Judge Leonard Davis**	**Closed:**	**Yes**
Referred To:		**Statute:**	**35:271**
Nature of suit:	**Patent (830)**	**Jury Demand:**	**Plaintiff**
Cause:	**Patent Infringement**	**Demand Amount:**	**$0**
Lead Docket:	**None**	**NOS Description:**	**Patent**
Other Docket:	**None**		
Jurisdiction:	**Federal Question**		

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American Honda Motor Co Inc
Defendant

Honda Motor Company, Ltd
Defendant

Bmw of North America, Llc
Defendant

Bmw AG
Defendant

Chrysler Group Llc
Defendant

Ferrari North America, Inc
Defendant

Ferrari Spa
Defendant

General Motors, Llc
Defendant

Hyundai Motor America
Defendant

Hyundai Motor Company
Defendant

Jaguar Land Rover North America, Llc
Defendant

Jaguar Cars Limited
Defendant

Maserati North America Inc
Defendant

Maserati Spa
Defendant

Mercedes-Benz USA, Llc
Defendant

Daimler North America Corporation
Defendant

Daimler AG
Defendant

Mazda Motor of North America, Inc
Defendant

Mazda Motor Corp
Defendant

Mitsubishi Motors North America, Inc Defendant	Michael Charles Smith [COR LD NTC] Siebman Reynolds Burg Phillips & Smith, LLP-Marshall 713 South Washington Marshall , TX 75670 USA 903-938-8900 Fax: 19727674620 Email: MICHAELSMITH@SIEBMAN.COM
Mitsubishi Motors Corp Defendant	Michael Charles Smith [COR LD NTC] Siebman Reynolds Burg Phillips & Smith, LLP-Marshall 713 South Washington Marshall , TX 75670 USA 903-938-8900 Fax: 19727674620 Email: MICHAELSMITH@SIEBMAN.COM
Nissan North America, Inc Defendant	
Nissan Motor Co, Ltd Defendant	
Porsche Cars North America, Inc Defendant	
Dr Ing Hc.F Porsche AG Defendant	
Saab Cars North America, Inc Defendant	
Toyota Motor North America, Inc Defendant	
Toyota Motor Sales, USA, Inc Defendant	
Toyota Motor Corp Defendant	
Volkswagen Group of America, Inc Defendant	
Automobili Lamborghini Spa Defendant	
Audi AG Defendant	
Volkswagen AG Defendant	
Ford Motor Company Defendant	
Volvo Cars of North America, Llc Defendant	
Volvo Car Corp Defendant	

Date	#	Proceeding Text
03/08/2010	1	COMPLAINT for Patent Infringement against all defendants (Filing fee $ 350 receipt number 05400000000002387982.), filed by Balther Technologies, LLC. (Attachments: # 1 Exhibit A, # 2 Civil Cover Sheet)(Albritton, Eric) (Entered: 03/08/2010)
03/08/2010	--	Judge Leonard Davis added. (mll,) (Entered: 03/08/2010)
03/08/2010	2	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Albritton, Eric) (Entered: 03/08/2010)

03/09/2010	3	NOTICE of Attorney Appearance by Thomas John Ward, Jr on behalf of Balther Technologies, LLC (Ward, Thomas) (Entered: 03/09/2010)
03/09/2010	4	NOTICE of Attorney Appearance by Jack Wesley Hill on behalf of Balther Technologies, LLC (Hill, Jack) (Entered: 03/09/2010)
03/09/2010	5	NOTICE of Attorney Appearance by Adam A Biggs on behalf of Balther Technologies, LLC (Biggs, Adam) (Entered: 03/09/2010)
03/09/2010	6	NOTICE of Attorney Appearance by Debra Rochelle Coleman on behalf of Balther Technologies, LLC (Coleman, Debra) (Entered: 03/09/2010)
03/09/2010	7	NOTICE of Attorney Appearance by Matthew Clay Harris on behalf of Balther Technologies, LLC (Harris, Matthew) (Entered: 03/09/2010)
03/10/2010	8	NOTICE of Attorney Appearance by J Mike Amerson on behalf of Balther Technologies, LLC (Amerson, J) (Entered: 03/10/2010)
03/10/2010	9	NOTICE of Attorney Appearance by Matthew Richard Rodgers on behalf of Balther Technologies, LLC (Rodgers, Matthew) (Entered: 03/10/2010)
03/10/2010	10	NOTICE of Attorney Appearance by Michael Aaron Benefield on behalf of Balther Technologies, LLC (Benefield, Michael) (Entered: 03/10/2010)
03/10/2010	11	NOTICE of Attorney Appearance by David Wynne Morehan on behalf of Balther Technologies, LLC (Morehan, David) (Entered: 03/10/2010)
03/10/2010	12	NOTICE of Attorney Appearance by Danny Lloyd Williams on behalf of Balther Technologies, LLC (Williams, Danny) (Entered: 03/10/2010)
03/10/2010	13	NOTICE of Attorney Appearance by Jaison Chorikavumkal John on behalf of Balther Technologies, LLC (John, Jaison) (Entered: 03/10/2010)
03/10/2010	14	NOTICE of Attorney Appearance by Christopher Needham Cravey on behalf of Balther Technologies, LLC (Cravey, Christopher) (Entered: 03/10/2010)
04/26/2010	15	ORDER that plaintiff file a notice that the case is ready for scheduling conference when all of the defendants have either answered or filed a motion to transfer or dismiss. The notice shall be filed within five days of the last remaining defendant's answer or motion. Signed by Judge Leonard Davis on 04/26/10. cc:attys 4-27-10 (mll,) (Entered: 04/27/2010)
04/28/2010	16	E-GOV SEALED SUMMONS Issued as to American Honda Motor Co. Inc., BMW of North America, LLC, Chrysler Group LLC, Daimler North America Corporation, Ferrari North America, Inc., Ford Motor Company, General Motors, LLC, Hyundai Motor America, Jaguar Land Rover North America, LLC, Maserati North America Inc, Mazda Motor of North America, Inc., Mercedes-Benz USA, LLC, Mitsubishi Motors North America, Inc., Nissan North America, Inc., Porsche Cars North America, Inc., SAAB Cars North America, Inc., Toyota Motor North America, Inc., Toyota Motor Sales, U.S.A., Inc., Volkswagen Group of America, Inc., Volvo Cars of North America, LLC., and emailed to pltf for service. (mll,) (Entered: 04/28/2010)
05/17/2010	17	NOTICE of Voluntary Dismissal by Balther Technologies, LLC (Attachments: # 1 Text of Proposed Order) (Albritton, Eric) (Entered: 05/17/2010)
05/18/2010	18	ORDER DISMISSING CASE. This civil action is dismissed without prejudice. Pltf and defts shall bear their own costs, expenses and legal fees. Signed by Judge Leonard Davis on 05/18/10. cc:attys 5-18-10(mll,) (Entered: 05/18/2010)
05/18/2010	19	Agreed MOTION for Extension of Time to File Answer re 1 Complaint by Mitsubishi Motors Corp., Mitsubishi Motors North America, Inc.. (Attachments: # 1 Text of Proposed Order)(Smith, Michael) (Entered: 05/18/2010)
05/19/2010	20	NOTICE by Mitsubishi Motors Corp., Mitsubishi Motors North America, Inc. re 19 Agreed MOTION for Extension of Time to File Answer re 1 Complaint (Notice of Withdrawal of Agreed MOTION for Extension of Time to File Answer) (Smith, Michael) (Entered: 05/19/2010)

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285312 (10) 7241034 July 10, 2007

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

7241034

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Link to Claims Section

June 12, 2003

Automatic directional control system for vehicle headlights

INVENTOR: Smith, James E. - Berkey, OHIO, United States of America (US), United States of America (US) ; McDonald, Anthony B. - Perrysburg, OHIO, United States of America (US), United States of America (US)

APPL-NO: 285312 (10)

FILED-DATE: October 31, 2002

GRANTED-DATE: July 10, 2007

CORE TERMS: headlight, directional, controller, adjustment, sensed, algorithm, sensor, actuator, steering, control system, road, suspension, responsive, automatic, feedback, orientation, beam, aiming, height, generating, electrical, input output device, plane, stored, automatically, optical, pitch, calibration, accomplish, angular

ENGLISH-ABST:

A structure and method for operating a directional control system for vehicle headlights that is capable of altering the directional aiming angles of the headlights to account for changes in the operating conditions of the vehicle. One or more operating condition sensors may be provided that generate signals that are representative of a condition of the vehicle, such as road speed, steering angle, pitch, suspension height, rate of change of road speed, rate of change of steering angle, rate of change of pitch, and rate of change of suspension height of the vehicle. A controller is responsive to the sensor signal for generating an output signal. An actuator is adapted to be connected to the headlight to effect movement thereof in accordance with the output signal. The controller can include a table that relates values of sensed operating condition to values of the output signal. The controller is responsive to the sensor signal for looking up the output signal in the table.

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- Remove some search terms.
- Use more common search terms, such as those listed in "Suggested Words and Concepts"
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Patent Assignment Abstract of Title

Total Assignments: 4

Application #: 10285312 **Filing Dt:** 10/31/2002 **Patent #:** 7241034 **Issue Dt:** 07/10/2007
PCT #: NONE **Publication #:** US20030107898 **Pub Dt:** 06/12/2003
Inventors: James E. Smith, Anthony B. McDonald
Title: AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS

Assignment: 1

Reel/Frame: 013729 / 0559 **Received:** 02/10/2003 **Recorded:** 02/06/2003 **Mailed:** 06/13/2003 **Pages:** 3
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignors: SMITH, JAMES E. **Exec Dt:** 01/31/2003
MCDONALD, ANTHONY B. **Exec Dt:** 01/31/2003
Assignee: DANA CORPORATION
4500 DORR STREET
TOLEDO, OHIO 43615
Correspondent: MACMILLAN, SOBANSKI & TODD, LLC
RICHARD S. MACMILLAN
720 WATER STREET
ONE MARITIME PLAZA, FOURTH FLOOR
TOLEDO, OH 43604-1853

Assignment: 2

Reel/Frame: 020540 / 0476 **Received:** 02/22/2008 **Recorded:** 02/22/2008 **Mailed:** 02/22/2008 **Pages:** 30
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: DANA CORPORATION **Exec Dt:** 01/31/2008
Assignee: DANA AUTOMOTIVE SYSTEMS GROUP, LLC
4500 DORR STREET
TOLEDO, OHIO 43615
Correspondent: DANA HOLDING CORPORATION
4500 DORR STREET
KRISTENE M RAGAN
TOLEDO, OH 43615

Assignment: 3

Reel/Frame: 022813 / 0432 **Received:** 06/12/2009 **Recorded:** 06/12/2009 **Mailed:** 06/12/2009 **Pages:** 2
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: DANA AUTOMOTIVE SYSTEMS GROUP, LLC **Exec Dt:** 05/26/2009
Assignee: STRAGENT, LLC
211 W. TYLER, SUITE C
LONGVIEW, TEXAS 75601
Correspondent: ASSIGNMENT RECORDATION
211 W. TYLER ST., SUITE C
LONGVIEW, TX 75601

Assignment: 4

Reel/Frame: 024045 / 0235 **Received:** 03/08/2010 **Recorded:** 03/08/2010 **Mailed:** 03/09/2010 **Pages:** 2
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: STRAGENT, LLC **Exec Dt:** 12/16/2009
Assignee: BALTHER TECHNOLOGIES, LLC
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Correspondent: THE CALDWELL FIRM, LLC
PO BOX 59655
DEPT. SVIPGP
DALLAS, TX 75229

Search Results as of: 07/28/2010 01:33 PM

If you have any comments or questions concerning the data displayed, contact PRD / Assignments at 571-272-3350.

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United States Patent and Trademark Office
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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/011,011	07/10/2010	7241034

CONFIRMATION NO. 3919

REEXAM ASSIGNMENT NOTICE

92045
The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

OC000000042606636

Date Mailed: 07/16/2010

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

/jawhitfield/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

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UNITED STATES DEPARTMENT OF COMMERCE
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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/011,011	07/10/2010	7241034

CONFIRMATION NO. 3919

92045
The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

REEXAMINATION REQUEST NOTICE

OC000000042606635

Date Mailed: 07/16/2010

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Patent Owner Requester)

Requester is hereby notified that the filing date of the request for reexamination is 07/10/2010, the date the required fee of $2,520 was received. (See CFR 1.510(d)).

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

Pursuant to 37 CFR 1.33(c), future correspondence in this reexamination proceeding will be with the latest attorney or agent of the record in the patent file.

The paragraphs checked below are part of this communication:

___ 1. The party receiving the courtesy copy is the latest attorney or agent of record in the patent file.

___ 2. The person named to receive the correspondence in this proceeding has not been made the latest attorney or agent of record in the patent file because:

___ A. Requester's claim of ownership of the patent is not verified by the record.

___ B. The request papers are not signed with a real or apparent binding signature.

___ C. The mere naming of a correspondence addressee does not result in that person being appointed as the latest attorney or agent of record in the patent file.

___ 3. Addressee is the latest attorney or agent of record in the patent file.

___ 4. Other _____

/jawhitfield/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/011,011	07/10/2010	7,241,034	SVIPGP109RE	3919

92045 7590 08/12/2010

The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED: 08/12/2010

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Order Granting / Denying Request For Ex Parte Reexamination	Control No.	Patent Under Reexamination	
	90/011,011	7,241,034	
	Examiner	Art Unit	
	MY-TRANG N. TON	3992	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed *10 July 2010* has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☒ PTO-892, b)☐ PTO/SB/08, c)☐ Other: _____

1. ☒ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

2. ☐ The request for *ex parte* reexamination is DENIED.

This decision is not appealable (35 U.S.C. 303(c)). Requester may seek review by petition to the Commissioner under 37 CFR 1.181 within ONE MONTH from the mailing date of this communication (37 CFR 1.515(c)). **EXTENSION OF TIME TO FILE SUCH A PETITION UNDER 37 CFR 1.181 ARE AVAILABLE ONLY BY PETITION TO SUSPEND OR WAIVE THE REGULATIONS UNDER 37 CFR 1.183.**

In due course, a refund under 37 CFR 1.26 (c) will be made to requester:

a) ☐ by Treasury check or,

b) ☐ by credit to Deposit Account No. _____, or

c) ☐ by credit to a credit card account, unless otherwise notified (35 U.S.C. 303(c)).

cc:Requester (if third party requester)

***DECISION GRANTING* EX PARTE REEXAMINATION**

A substantial new question of patentability (SNQ) affecting claims 1 and 3 of United States Patent Number 7,241,034 (the '034 patent) to Smith et al, entitled "AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS" is raised by the present request for ex *parte* reexamination (hereinafter "the Request").

The '034 patent issued on July 10, 2007, based on US Patent Application No. 10/285,312 (the base application) filed on October 31, 2002. The '034 patent is currently assigned to Dana Corporation.

Scope of Reexamination

Since requester did not request reexamination of claims 2, 4 and 5, and did not assert the existence of a substantial new question of patentability (SNQP) for such claims (see 35 U.S.C. § 311(b)(2); see also 37 CFR 1.915b and 1.923), such claims will not be reexamined. This matter was squarely addressed in *Sony Computer Entertainment America Inc., et al. v. Jon W. Dudas*, Civil Action No. 1:05CV1447 (E.D.Va. May 22, 2006), Slip Copy, 2006 WL 1472462. (Not Reported in F.Supp.2d.) The District Court upheld the Office's discretion to not reexamine claims in an *inter partes* reexamination proceeding other than those claims for which reexamination had specifically been requested. The Court stated:

> To be sure, a party may seek, and the PTO may grant, *inter partes* review of each and every claim of a patent. Moreover, while the PTO in its discretion may review claims for which *inter partes* review was not requested, nothing in the statute compels it to do so. To ensure that the PTO considers a claim for *inter partes* review, § 311(b)(2) requires that the party seeking reexamination demonstrate why the PTO should reexamine each and every claim for which it seeks review. Here, it is undisputed that Sony did not seek review of every claim under the '213 and '333 patents. Accordingly, Sony cannot now claim that the PTO wrongly failed to reexamine claims for which Sony never requested review, and its argument that AIPA compels a contrary result is unpersuasive.

The *Sony* decision's reasoning and statutory interpretation apply analogously to *ex parte* reexamination, as the same relevant statutory language applies to both *inter partes* and *ex parte* reexamination. 35 U.S.C. § 302 provides that the *ex parte* reexamination "request must set forth the pertinency

and manner of applying cited prior art to every claim for which reexamination is requested" (emphasis added), and 35 U.S.C. § 303 provides that "the Director will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request..." (Emphasis added). These provisions are analogous to the language of 35 U.S.C. § 311(b)(2) and 35 U.S.C. § 312 applied and construed in *Sony*, and would be construed in the same manner. As the Director can decline to reexamine non-requested claims in an *inter partes* reexamination proceeding, the Director can likewise do so in *ex parte* reexamination proceeding. See *Notice of Clarification of Office Policy To Exercise Discretion in Reexamining Fewer Than All the Patent Claims* (signed Oct. 5, 2006) 1311 OG 197 (Oct. 31, 2006). See also MPEP § 2240, Rev. 5, Aug. 2006.

Therefore, **claims 2, 4 and 5 will not be reexamined** in this *ex parte* reexamination proceeding.

Substantial New Question of Patentability

In the request for reexamination, the requestor alleges that the '034 patent claims 1 and 3 are unpatentable in light of the following prior art reference:

U.S. Patent 4,733,333 issued to Shibata (hereinafter "Shibata")

This reference was not of record in the prosecution history of the '034 patent and is not cumulative to the art of record in the original file.

Form 1449 is not readily available to the Examiner. Thus, this reference is cited in PTOL 892.

Prosecution History

The following is a summary of the most relevant portions regarding the prosecution history of the base application that ultimately issued as the '034 patent.

Review of the prosecution history of the base application reveals that the Examiner of record issued non-final Office action on 12/23/2003 including: rejected claims 1-2, 4-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Toda et al (U.S. Pat. No 6,305,823); rejected claims 1-2, 4-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Okuchi et al (U.S. Pat. No 6,193,398); and rejected claims 1-3 and 9 under 35 U.S.C. 102(b) as being anticipated by Gotoh (US Pat. No 5,909,949).

The Patent Owner complied with such requirements by submitting an amendment on 3/25/2004 which amendment to claims 1 and 7 and canceled claim 6. Thus, in this amendment claims 1-5 and 7-13 were pending. Of these, claims 1 and 7 were independent claims.

In response to the amendment, the Examiner of record issued a final Office action on 6/15/2004 including rejected claims 1-2, 4-5, 7-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Toda et al (U.S. Pat. No 6,305,823); rejected claims 1-2, 4-5, 7-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Okuchi et al (U.S. Pat. No 6,193,398) and rejected claims

1-3 and 9 under 35 U.S.C. 102(b) as being anticipated by Gotoh (US Pat. No 5,909,949).

The Patent Owner submitted Notice of Appeal on 9/17/2004 and a request for reconsideration on 12/28/2004. The Patent Owner noted in the remark that for claim 1: "*None of the art of record is believed to show or suggest a controller that is responsive to the sensor signal for generating an output signal only when the sensor signal changes by more than a predetermined amount*" and claim 7: "*None of the art of record is believed to show or suggest a controller that is responsive to a rate of change of the sensor signal for generating the output signal*".

In response, the Examiner of record issued an Advisor Action on 12/28/2004 indicated that "*The prior art of record including Toda et al in particular reads on independent claims 1 and 7. Regarding claims 1 and 7, Toda discloses an automatic leveling device for vehicle headlamps including a sensor (speed sensor12 and height sensor 14 fig. 1), a controller (CPU 16), an actuator (motor driver 18, and 20). Therefore, Toda meets the limitation of claims 1 and 7 and thus rejection of claims 1-5, and 7-13 are maintained*".

Notice of Abandonment mailed out 2/22/2005.

RCE was filed on 2/28/2005 after personal interview held on 2/26/2005 (noted in preliminary remark 02/28/2005).

In response to the RCE, the Examiner of record issued a non-final Office action including rejected claims 1-2, 4-5, 7-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Toda et al (U.S. Pat. No 6,305,823); rejected claims 1-2, 4-5, 7-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Okuchi et al (U.S. Pat. No 6,193,398); and rejected claims 1-3 and 9 under 35 U.S.C. 102(b) as being anticipated by Gotoh (US Pat. No 5,909,949).

The Patent Owner complied with such requirements by submitting remarks on 7/18/2005 with argument stating that *"In independent Claim 1, the claimed controller is responsive to a sensor signal for generating an output signal when the sensor signal changes by more than a predetermined amount"* and *"In independent Claim 7, the claimed controller is responsive to a rate of change of the sensor signal for generating the output signal"*

In response to the remarks, the Examiner of record issued a final Office action on 10/5/2005 including rejected claims 1-2, 4-5, 7-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Toda et al (U.S. Pat. No 6,305,823); rejected claims 1-2, 4-5, 7-8, 10-13 under 35 U.S.C. 102(e) as being anticipated by Okuchi et al (U.S. Pat. No 6,193,398) and rejected claims 1-3 and 9 under 35 U.S.C. 102(b) as being anticipated by Gotoh (US Pat. No 5,909,949).

The Patent Owner complied with such requirement by submitting a notice of Appeal filed 1/9/2006.

In response, a pre-Appeal brief conference has been held on 2/3/2006 and a panel from the pre-appeal conference has determined that forwarded rejected claims 1-13 to Board of Patent Appeals and Interferences.

The examiner of record issued notice of abandonment mailed out 4/6/2006.

In response to the notice of abandonment, Patent Owner filed request for withdrawal of holding of abandonment filed on 7/11/2006.

RCE was filed on 8/9/2006 including previously presented claims 1-5, 7-13 and added claim 14. Thus, in the RCE claims 1-5 and 7-14 were pending. Of these, claims 1, 7 and 14 were independent claims.

The decision for withdrawal of holding of abandonment was granted and the Notice of Abandonment was vacated on 9/29/2006.

In response to the RCE, the Examiner of record issued a non final Office action on 10/6/2006 including rejected claims 1-2, 4-5, 7-8, 10-14 under 35 U.S.C. 102(e) as being anticipated by Toda et al (U.S. Pat. No 6,305,823); rejected claims 1-2, 4-5, 7-8, 10-14 under 35 U.S.C. 102(e) as being anticipated by Okuchi et al (U.S. Pat. No 6,193,398) and rejected claims 1-3 and 9 under 35 U.S.C. 102(b) as being anticipated by Gotoh (US Pat. No 5,909,949).

The Patent Owner complied with such requirement by submitting remarks on 1/10/2007 and argued that "*Independent Claim 1 recites that the controller is responsive to the sensor signal for generating an output signal only when the sensor signal changes by more than a predetermined amount. Independent Claim 14 recites that the controller is responsive to the sensor signal for generating an output signal only when the sensor signal changes by more than a predetermined minimum threshold amount to prevent the actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition. The cited references fail to disclose either of these features*" and "*claim 7 recites that the controller is responsive to a rate of change of the sensor signal for generating the output signal. The Toda et al. and the Okuchi et al. references fail to disclose this feature*".

A personal interview held on 1/31/2007. The Examiner of record noted in the interview summary stating "*We discussed independent claims 1, 7, and 14. We agreed that claim 14 is allowable over the prior art of record because of the specific limitation of "a predetermined minimum threshold amount to prevent the actuator from being operated continuously or duly in response to relatively small variations in the sensed operating speed".*

On the same day, the Patent Owner submitted an amendment including canceled claims 1, 7-13 and amended claims 2-5 to depend from claim 14.

Thus, in this amendment claims 2-5 and 14 were pending. Of these, claim 14 was independent claim.

Notice of allowance was mailed on4/19/2007 with a statement of reasons for allowance: "*applicant's amendment and accompanying remarks has persuaded the examiner to place this application in condition for allowance.*"

Claims 2-5 and 14 were renumbered, the same numbering that appears in the base patent.

Thus, it appears from the Examiner's Statement of Reasons for allowance included in the base patent prosecution history that at the time of allowance, claims 2-5 and 14 were perceived as including at least the limitation "*a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition*" (the remark 1/10/2007) and the base patent issued for that reason.

Therefore, any reference or combination of references that includes a teaching recited in a base patent claims raise a substantial new question of patentability where such teaching is not seen to be cumulative of the teaching of the prior arts of record.

Substantial New Question of Patentability

The requestor alleges that a substantial new question of patentability is raised because claims 1 and 3 of the '034 patent are unpatentable as follow:

Claims 1 and 3 are unpatentable by Shibata.

Detailed Explanation

The request indicates that the Requestor considers that claims 1 and 3 are unpatentable by Shibata.

It is agreed that the consideration of Shibata raises a substantial new question of patentability to claims 1 and 3 of the '034 patent.

As presented in pages 2-5 of the request offered by the Requestor, a reasonable Examiner would consider Shibata important in making a decision as to the patentability of the claims 1 and 3 of the '034 patent. More particularly, the item-matching for claims 1 and 3 on Exhibit A of the request plausibly suggest that Shibata appears to teach: a sensor (81) which output an electric signal, a controller (84 and 85) that is responsive to the sensor signal for generating an output signal only **when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously** (the controller (84 and 85) is

responsive to the sensor signal (the output signal from 81, 82, 83), and outputs a signal only when the sensor signal changes by more than a predetermined minimum threshold amount, by forcing the counter 83 to be a certain value before providing an output, col. 11, lines 35-52) and an actuator (motor 39 connect to the headlight) as called for in claim 1.

Sine this teaching is directly related to subject matter considered as the basis for allowability of the patent claim, there is a substantial likehood that a reasonable examiner would consider these teachings important in deciding whether or not claim 1 is patentable. The prosecution history of the base application does not indicate that Shibata was included for consideration by the Examiner in charge of the base application. Accordingly, such teaching is not cumulative to any written discussion on the record of the teachings of the prior art, was not previously considered nor addressed during a prior examination and the same question of patentability were not the subject of a final holding of invalidity by Federal Courts.

Insofar as dependent claim 3 is within the chain of dependency stemming from independent claim 1; and thus inherently possesses all of the limitations of the independent claim 1, the same substantial new question of patentability raised for claim 1 is also raises for dependent claim 3.

Therefore, Shibata raises a substantial new question regarding claims 1 and 3 of the '034 patent.

Accordingly, the request for reexamination is GRANTED. Claims 1 and 3 will be reexamined.

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Amendment in Reexamination Proceedings

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).

Submissions

In order to insure full consideration of any amendments, affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and by 37 CFR 41.33 after appeal, which will be strictly enforced.

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 7,241,034 throughout the course of his reexamination proceeding. Likewise, if present, the third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

Conclusion

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By Mail to: Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Registered users of EFS-Web may alternatively submit such correspondence via the electronic filing system EFS-Web, at https://sportal.uspto.gov/authenticate/authenticateuserlocalepf.html. EFS-Web offers the benefit of quick submission to the particular area of the Office that needs to act on the correspondence. Also, EFS-Web submissions are "soft scanned" (i.e., electronically uploaded) directly into the official file for the reexamination proceeding, which offers parties the opportunity to review the content of their submissions after the "soft scanning" process is complete.

Any inquiry concerning this communication should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/My-Trang N. Ton/
Primary Examiner
Central Reexamination Unit 3992

Conferees:

/Margaret Rubin/

MARK J. REINHART
SPE ~~SERE~~-AU 3992
CENTRAL REEXAMINATION UNIT

Primary Examiner, CRU 3992

Notice of References Cited	Application/Control No. 90/011,011	Applicant(s)/Patent Under Reexamination 7,241,034	
	Examiner MY-TRANG N. TON	Art Unit 3992	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-4,733,333	03-1988	Shibata et al.	362/40
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes

Application/Control No.	Applicant(s)/Patent under Reexamination	
90/011,011	7,241,034	
Examiner	**Art Unit**	
MY-TRANG N. TON	3992	

SEARCHED			
Class	Subclass	Date	Examiner
n/a	-	8/10/2010	MT

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
n/a	-	8/10/2010	MT

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
n/a	8/10/2010	MT

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/011,011	7,241,034
	Certificate Date	Certificate Number

Requester Correspondence Address: ☒ **Patent Owner** ☐ **Third Party**

THE CALDWELL FIRM, LLC
P.O. BOX 59655
DEPT. SVIPGP
DALLAS, TX 95229

LITIGATION REVIEW ☒	mt (examiner initials)	8/10/2010 (date)
Case Name		Director Initials
U.S. District - Texas Eastern (Tyler) 6:10cv78 Balther Technologies, Llc v. American Honda Motor Co Inc et A		MM for 6M

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
1. n/a	
2.	
3.	
4.	

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/011,011	07/10/2010	7,241,034	SVIPGP109RE	3919

92045 7590 01/12/2011

The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED: 01/12/2011

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action in Ex Parte Reexamination	Control No. 90/011,011	Patent Under Reexamination 7,241,034	
	Examiner MY-TRANG N. TON	Art Unit 3992	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a☐ Responsive to the communication(s) filed on _____ . b☐ This action is made FINAL.
c☐ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☐ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☒ Claims *1 and 3* are subject to reexamination.
1b. ☒ Claims *2,4 and 5* are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _____ are patentable and/or confirmed.
4. ☒ Claims *1, 3* are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a)☐ approved (7b)☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some* c)☐ None of the certified copies have
   1☐ been received.
   2☐ not been received.
   3☐ been filed in Application No. _____ .
   4☐ been filed in reexamination Control No. _____.
   5☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

EX PARTE REEXAMINATION FIRST OFFICE ACTION

Background

This Office action is a first Office action on the merits for the reexamination proceeding control number 90/011,011.

This is a reexamination of U.S Patent No. 7,241,034 (hereinafter "the '034 patent").

The '034 patent is currently assigned to "Dana Corporation".

The '034 patent issued on July 10, 2007 based on US Patent Application No. 10/285,312 (the base application) filed on October 31, 2002.

Summary of Proceedings

A Request pursuant to 37 CFR 1.510 for ex parte reexamination of the '034 patent was filed 7/9/2010 by the Patent Owner. An Order granting ex parte reexamination of the base patent was mailed 8/12/2010. The order stated that there was a substantial new question of patentability affecting claims 1 and 3 of the '034 patent. Of these, claim 1 is independent claim.

Scope of Reexamination

Since requester did not request reexamination of claims 2, 4-5, and did not assert the existence of a substantial new question of patentability (SNQP) for such claims (see 35 U.S.C. § 311(b) (2); see also 37 CFR 1.915b and 1.923), such claims will not be reexamined. This matter was squarely addressed in *Sony Computer Entertainment America Inc., et al. v. Jon W. Dudas*, Civil Action No. 1:05CV1447 (E.D.Va. May 22, 2006), Slip Copy, 2006 WL 1472462. (Not Reported in F.Supp.2d.) The District Court upheld the Office's discretion to not reexamine claims in an *inter partes* reexamination proceeding other than those claims for which reexamination had specifically been requested. The Court stated:

> To be sure, a party may seek, and the PTO may grant, *inter partes* review of each and every claim of a patent. Moreover, while the PTO in its discretion may review claims for which *inter partes* review was not requested, nothing in the statute compels it to do so. To ensure that the PTO considers a claim for *inter partes* review, § 311(b)(2) requires that the party seeking reexamination demonstrate why the PTO should reexamine each and every claim for which it seeks review. Here, it is undisputed that Sony did not seek review of every claim under the '213 and '333 patents. Accordingly, Sony cannot now claim that the PTO wrongly failed to reexamine claims for which Sony never requested review, and its argument that AIPA compels a contrary result is unpersuasive.

The *Sony* decision's reasoning and statutory interpretation apply analogously to *ex parte* reexamination, as the same relevant statutory language

applies to both *inter partes* and *ex parte* reexamination. 35 U.S.C. § 302 provides that the *ex parte* reexamination "request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested" (emphasis added), and 35 U.S.C. § 303 provides that "the Director will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request..." (Emphasis added). These provisions are analogous to the language of 35 U.S.C. § 311(b)(2) and 35 U.S.C. § 312 applied and construed in *Sony*, and would be construed in the same manner. As the Director can decline to reexamine non-requested claims in an *inter partes* reexamination proceeding, the Director can likewise do so in *ex parte* reexamination proceeding. See *Notice of Clarification of Office Policy To Exercise Discretion in Reexamining Fewer Than All the Patent Claims* (signed Oct. 5, 2006) 1311 OG 197 (Oct. 31, 2006). See also MPEP § 2240, Rev. 5, Aug. 2006.

Therefore, **claims 2 and 4-5 will not be reexamined** in this ex *parte* reexamination proceeding.

References Relied Upon in the Request

Substantial new question of patentability affecting claims 1 and 3 of the '034 patent are raised by the request for ex parte reexamination based on the following prior art reference:

U.S. Patent 4,733,333 issued to Shibata (hereinafter "Shibata")

This reference was not of record in the prosecution history of the '034 patent and is not cumulative to the art of record in the original file.

Listing of Rejections Proposed in the Requests

The Patent Owner alleges that a substantial new question of patentability is raised because claims 1 and 3 of the '034 patent are unpatentable as follows:

The request indicates that Patent Owner considers that claims 1 and 3 are anticipated by Shibata.

Status of Claims

The status of the claims in this proceeding is as follows:

Claims 1 and 3 are as original in the '034 patent.

It is agreed this issue raises SNQ as to claims 1 and 3 of the '034 patent.

Relevant Statute

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Detail rejections

The request indicates that Patent Owner considers claims 1 and 3 are anticipated by Shibata.

The rejection of claims 1 and 3 were proposed by Patent Owner in the request for reexamination, pages 2-5, is **ACCEPTED.**

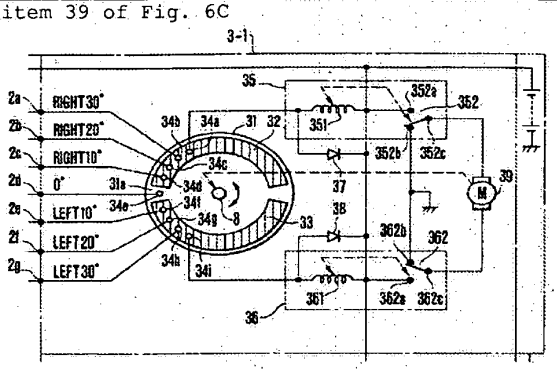
Claims 1 and 3 are rejected under 35 U.S.C 102(b) as being anticipated by Shibata.

Claims chart, Exhibit A, pages 1-5 of the request for reexamination is hereby incorporated by reference for the Patent Owner's explanation of the proposed rejection.

U.S. Patent No. 7,241,034	4,733,333 (Shibata)
1. An automatic directional control system for a vehicle headlight comprising:	"A cornering lamp system for a vehicle which changes direction of the headlamps in conjunction with the operation of the vehicle's steering mechanism" (Abstract - emphasis added). Shibata teaches a "cornering lamp system for a vehicle which changes direction of the headlamps," which meets applicant's claimed "automatic directional control system for a vehicle headlight." Summary [cornering lamp system for a vehicle which changes direction of the headlamps (Shibata) = automatic directional control system for a vehicle (Smith)]
a sensor that is adapted to generate a signal that is representative of a condition of the vehicle, said sensed condition includes one or more of road speed, steering angle, pitch, and suspension height of the vehicle;	"The cornering lamp system in this embodiment includes a steering wheel rotation angle sensor 81 which output an electric signal comprising a pulse train having "1" and "0" pulses by turns in cooperation with the steering operation of the steering wheel" (Col. 11, lines 35-40 - emphasis added). Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal," which meets applicant's claimed "sensor that is adapted to generate a signal that is representative of a condition of the vehicle, said sensed condition includes one or more of road speed, steering angle, pitch, and suspension height of the vehicle" (emphasis added). Summary [steering wheel rotation angle sensor 81 which output an electric signal (Shibata) = sensor that is adapted to generate a signal (Smith)] [steering wheel rotation angle sensor 81 which output an electric signal (Shibata) = sensed condition includes one or more of ... steering angle (Smith)]
a controller that is responsive to said sensor signal for generating an	"The cornering lamp system in this embodiment includes a steering wheel rotation angle sensor 81 which output an electric signal comprising a pulse

output signal only when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition;	train having "1" and "0" pulses by turns in cooperation with the steering operation of the steering wheel, an UP/DOWN switching circuit 82 which inputs the pulse like electric signal output from the steering wheel rotation angle sensor 81 to output an up signal and a down signal proportional to the angular displacement of the steering wheel from output terminals 82a and 82b, an UP/DOWN counter 83 which inputs the up and down signal output from the UP/DOWN [switching] circuit 82 to count up or down by the number of the up signal or the down signal thus input, and decoders/drivers 84 and 85 which input a count value output from the UP/DOWN counter 83, thus allowing only the level of an output terminal at a position corresponding to the count value to be set to "0". " (Col. 11, line 35-52 - emphasis added). "Now, when the steering wheel is rotated clockwise from such a condition, thus to initiate the right steering operation, the steering wheel rotation angle sensor 81 begins outputting a pulse like electric signal. As a result, an up signal corresponding to the steering amount of the steering wheel is input to the UP/DOWN counter 83 through the UP/DOWN switching circuit 82. Thus, the UP/DOWN counter 83 begins counting up from zero one by one. Then, when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals from which a signal of "0" is output to output the signal from the output terminals 84i and 85i." (Col. 13, line 35-48 - emphasis added) "The steering wheel has a play there may often happen the phenomena that such count down and up operations occur by. This is known in the art as the so called chattering phenomenon. However, according to the cornering lamp system in the present embodiment, even if such a chattering phenomenon would occur, there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp." (Col. 15, lines 57-65 - emphasis added) Shibata teaches 'decoders/drivers 84 and 85 which input a count

	value output from the UP/DOWN counter 83, thus allowing only the level of an output terminal at a position corresponding to the count value to be set to "0"' and that "when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals from which a signal of "0" is output to output the signal from the output terminals 84i and 85i," which meets applicant's claimed "controller that is responsive to said sensor signal for generating an output signal only when said sensor signal changes by more than a predetermined minimum threshold amount to prevent said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition" (emphasis added). In addition, Shibata teaches "there is no possibility that the chattering phenomenon occurs during the change of the irradiation direction of the front lamp" which meets applicant's claimed "prevent[ing] said actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating condition" (emphasis added). [decoders/drivers 84 and 85 (Shibata) = controller (Smith)] [when the count value of the UP/DOWN counter 83 becomes equal to a value corresponding to a steering angle of 5.degree., the decoders/drivers 84 and 85 shift ahead each position of the output terminals (Shibata) = controller that is responsive to said sensor signal for generating an output signal only when said sensor signal changes by more than a predetermined minimum threshold amount (Smith)]
and an actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal.	"The headlamps are moved in discrete steps by use of a stepper motor." (Abstract - emphasis added)

	See item 39 of Fig. 6C  Shibata teaches "[t]he headlamps are moved in discrete steps by use of a stepper motor," which meets applicant's claimed "actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal" (emphasis added). Figure 6C from Shibata shows motor 39 connect to the headlight. Smith teaches that "[t]he actuators 12 and 13 are conventional in the art and may, for example, be embodied as servo motors, step motors, or any other electronically controlled mechanical actuators" (Col. 3, lines 28-31 – emphasis added). Accordingly, Shibata teaches applicant's claimed "actuator that is adapted to be connected to the headlight to effect movement thereof in accordance with said output signal" (emphasis added).

3. The automatic directional control system defined in claim 1	See Claim 1 chart above.
wherein said sensor generates a signal that is representative of the steering angle of the vehicle.	"The cornering lamp system in this embodiment includes a steering wheel rotation angle sensor 81 which output an electric signal comprising a pulse train having "1" and "0" pulses by turns in cooperation with the steering operation of the steering wheel" (Col. 11, lines 35-40 - emphasis added). Shibata teaches "a steering wheel rotation angle sensor 81 which output[s] an electric signal," which meets applicant's claimed "said sensor generates a signal that is representative of the

	steering angle of the vehicle" (emphasis added). [steering wheel rotation angle sensor 81 which output an electric signal (Shibata) = sensor generates a signal that is representative of the steering angle of the vehicle (Smith)]

Extensions of time

Extensions of time under 37 C.F.R. 1.136(a) will not be permitted in ex parte reexamination *proceedings* because the provisions of 37 C.F.R. 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. § 305 requires that reexamination proceedings "will be conducted with special dispatch" (37 C.F.R. 1.550(a)). Extension of time in ex *parte* reexamination proceedings are provided for in 37 C.F.R. 1.550(c).

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 C.F.R. 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability of similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

Amendment in Reexamination Proceedings

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 C.F.R. 1.530(d)-(j), must be formally presented pursuant to 37 C.F.R.

1.52(a) and (b), and must contain any fees required by 37 C.F.R. 1.20(c). See MPEP § 2250(IV) for examples to assist in the preparation of proper proposed amendments in reexamination proceedings.

After the filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requested proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. See 37 CFR 1.550(f).

Submissions

In order to insure full consideration of any amendments, affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and by 37 CFR 41.33 after appeal, which will be strictly enforced.

** It is noted that since form PTOL 1449 is not readily available to the Examiner, reference Shibata is now cited in PTOL 892.

Conclusion

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By Mail to: Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Registered users of EFS-Web may alternatively submit such correspondence via the electronic filing system EFS-Web, at https://sportal.uspto.gov/authenticate/authenticateuserlocalepf.html. EFS-Web offers the benefit of quick submission to the particular area of the Office that needs to act on the correspondence. Also, EFS-Web submissions are "soft scanned" (i.e., electronically uploaded) directly into the official file for the reexamination proceeding, which offers parties the opportunity to review the content of their submissions after the "soft scanning" process is complete.

Any inquiry concerning this communication should be directed to Central Reexamination Unit at telephone number (571) 272-7705.

/My-Trang N. Ton/

My-Trang Nu Ton
Primary Examiner
Central Reexamination, Art Unit 3992

MARK J. REINHART
CRU SPE-AU 3992

Conferees:

/Margaret Rubin/

Primary Examiner, CRU 3992

Notice of References Cited	Application/Control No. 90/011,011	Applicant(s)/Patent Under Reexamination 7,241,034	
	Examiner MY-TRANG N. TON	Art Unit 3992	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-4,733,333	03-1988	Shibata et al.	362/40
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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	Q					
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	S					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/011,011	7,241,034
	Certificate Date	Certificate Number

Requester Correspondence Address: ☒ Patent Owner ☐ Third Party
THE CALDWELL FIRM, LLC P.O. BOX 59655 DEPT. SVIPGP DALLAS, TX 95229

LITIGATION REVIEW ☒	mt (examiner initials)	1/5/2011 (date)
Case Name		Director Initials
U.S. District - Texas Eastern (Tyler) 6:10cv78 Balther Technologies, Llc v. American Honda Motor Co Inc et A		MM for IY

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
1. n/a	
2.	
3.	
4.	

Search Notes

Application/Control No.	Applicant(s)/Patent under Reexamination	
90/011,011	7,241,034	
Examiner	**Art Unit**	
MY-TRANG N. TON	3992	

SEARCHED			
Class	Subclass	Date	Examiner
n/a	-	1/5/2011	MT

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
n/a	-	1/5/2011	**MT**

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
n/a	1/5/2011	MT

Index of Claims

Application/Control No.	Applicant(s)/Patent under Reexamination
90/011,011	7,241,034
Examiner	**Art Unit**
MY-TRANG N. TON	3992

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)
	)
7,241,034	) Art Unit: 3992
	)
Application No. 90/011,011	) Examiner: MY-TRANG N. TON
	)
Filed: 07/10/2010	) Atty. Docket No.:
	) SVIPGP109RE
For: AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS	) Date: 1/18/2011

AMENDMENT A

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Examiner:

In response to the Office Action mailed 1/12/2011 ("Office Action"), please enter the following amendments believed to place the claims in condition for allowance.

AMENDMENTS TO THE CLAIMS

Amended claims follow:

1. (Currently Amended) An automatic directional control system for a vehicle headlight, comprising:

[[a]]two or more sensors that [[is]]are each adapted to generate a signal that is representative of a condition of [[the]]a vehicle, said sensed conditions including[[es]] [[one]]two or more of road speed, steering angle, pitch, and suspension height of the vehicle;

a controller that is responsive to said two or more sensor signals for generating [[an]]at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent [[said]]at least one actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating conditions; and

[[an]]said at least one actuator [[that is]]being adapted to be connected to the headlight to effect movement thereof in accordance with said at least one output signal.

2. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the road speed of the vehicle.

3. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the steering angle of the vehicle.

4. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the pitch of the vehicle.

5. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the suspension height of the vehicle.

6. (New) The automatic directional control system defined in claim 1, wherein said two or more sensors include a first sensor and a second sensor.

7. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the road speed of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the steering angle of the vehicle.

8. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the steering angle of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the pitch of the vehicle.

9. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the suspension height of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the pitch of the vehicle.

10. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the pitch of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the road speed of the vehicle.

11. (New) The automatic directional control system defined in claim 6, wherein said first sensor is physically separate from said second sensor.

12. (New) The automatic directional control system defined in claim 1, wherein said sensed conditions further include one or more of a rate of change of road speed of the vehicle, a rate of change of steering angle of the vehicle, a rate of change of pitch of the vehicle, or a rate of change of suspension height of the vehicle.

13. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generate a signal that is representative of the rate of change of road speed of the vehicle.

14. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generates a signal that is representative of the rate of change of steering angle of the vehicle.

15. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generates a signal that is representative of the rate of change of pitch of the vehicle.

16. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generates a signal that is representative of the rate of change of suspension height of the vehicle.

17. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured to include at least two actuators.

18. (New) The automatic directional control system defined in claim 17, wherein the at least two actuators include a first actuator that is adapted to be connected to the headlight to effect movement thereof in a vertical direction.

19. (New) The automatic directional control system defined in claim 18, wherein the at least two actuators include a second actuator that is adapted to be connected to the headlight to effect movement thereof in a horizontal direction.

20. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes an electronically controlled mechanical actuator.

21. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes a step motor.

22. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes a servo motor.

23. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes a microstepping motor capable of being operated in fractional step increments.

24. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the headlight is adjustably mounted on the vehicle such that a directional orientation at which a beam of light projects therefrom is capable of being adjusted relative to the vehicle.

25. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the headlight is adjustably mounted on the vehicle such that a directional orientation at which a beam of light projects therefrom is capable of being adjusted up and down relative to a horizontal reference position.

26. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the headlight is adjustably mounted on the vehicle such that a directional orientation at which a beam of light

projects therefrom is capable of being adjusted left and right relative to a vertical reference position.

27. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that, while in a calibration mode, a directional orientation at which a beam of light projects therefrom is capable of being adjusted relative to the vehicle by manual operation of the at least one actuator.

28. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller includes a microprocessor.

29. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller includes a programmable electronic controller.

30. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system further includes at least one position feedback sensor capable of providing a position feedback signal associated with the at least one actuator.

31. (New) The automatic directional control system defined in claim 30, wherein the at least one position feedback sensor includes a Hall Effect sensor.

32. (New) The automatic directional control system defined in claim 30, wherein the at least one position feedback sensor includes an optical interrupter.

33. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system further includes memory.

34. (New) The automatic directional control system defined in claim 33, wherein the memory includes non-volatile memory.

35. (New) The automatic directional control system defined in claim 33, wherein the memory is configured to store a predetermined reference position associated with the headlight.

36. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured to position the headlight at or near a calibration position when an electrical system of the vehicle is turned on.

37. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the pitch of the vehicle is capable of being determined by sensing a front and a rear suspension height of the vehicle.

38. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the pitch of the vehicle is capable of being determined by a pitch level sensor.

39. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller is programmed to be responsive to changes in the suspension height of the vehicle that occur at frequencies lower than a suspension rebound frequency of the vehicle.

40. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller is programmed to be responsive to changes in the suspension height of the vehicle that occur at frequencies lower than a suspension rebound frequency of the vehicle, thereby ignoring frequency changes in the suspension height of the vehicle that are a result of bumps in a road.

41. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the predetermined minimum threshold amount functions as a filter to minimize undesirable operation of the at least one actuator.

42. (New) The automatic directional control system defined in claim 1, wherein said sensed conditions include three or more of road speed, steering angle, pitch, and suspension height of the vehicle.

43. (New) The automatic directional control system defined in claim 1, wherein said sensed conditions include all four of road speed, steering angle, pitch, and suspension height of the vehicle.

44. (New) The automatic directional control system defined in claim 1, wherein said controller is configured to be responsive to said two or more sensor signals for generating at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent at least one actuator from being operated continuously in response to relatively small variations in the sensed operating conditions.

45. (New) The automatic directional control system defined in claim 1,wherein controller is configured to be responsive to said two or more sensor signals for generating at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent at least one actuator from being operated unduly frequently in response to relatively small variations in the sensed operating conditions.

REMARKS

Claims 1 and 3 stand rejected under 35 U.S.C. §102(b) ("Section 102") as allegedly anticipated by Shibata (U.S. Patent No. 4,733,333)("Shibata"). Applicant respectfully traverses these rejections. Nevertheless, Applicant has amended Claim 1 to overcome such rejection, as follows:

> 1. (Currently Amended) An automatic directional control system for a vehicle headlight, comprising:
> [[a]]two or more sensors that [[is]]are each adapted to generate a signal that is representative of a condition of [[the]]a vehicle, said sensed conditions including[[es]] [[one]]two or more of road speed, steering angle, pitch, and suspension height of the vehicle;
> a controller that is responsive to said two or more sensor signals for generating [[an]]at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent [[said]]at least one actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating conditions; and
> [[an]]said at least one actuator [[that is]]being adapted to be connected to the headlight to effect movement thereof in accordance with said at least one output signal.

Applicant respectfully asserts that Shibata fails to teach "**two or more sensors** that are each adapted to generate a signal that is representative of a condition of the vehicle, said sensed conditions including **two or more** of road speed, steering angle, pitch, and suspension height of the vehicle" (emphasis added), as claimed by Applicant.

Applicant respectfully notes that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, the identical invention must be shown in as complete detail as contained in the claim. *Richardson v. Suzuki Motor*

*Co.*868 F.2d 1226, 1236, 9USPQ2d 1913, 1920 (Fed. Cir. 1989). Additionally, the elements must be arranged as required by the claim.

This criterion has simply not been met by the above reference, as noted above. As such, Applicant respectfully asserts that Shibata cannot support a proper rejection under Section 102 of Claims 1 and 3. Accordingly, Applicant respectfully requests the Examiner withdraw the Section 102 rejections of Claims 1 and 3. As Applicant has addressed all of the rejections in the Office Action, Applicant respectfully requests full allowance of Claims 1-5, as amended.

Finally, Applicant brings to the Examiner's attention the subject matter of new Claims 6-45, which Applicant adds for full consideration. Claims 6-45 depend from and further limit Claim 1. Accordingly, Applicant respectfully submits that new Claims 6-45 are allowable for at least the same reasons that Claim 1 is in condition for allowance, as described above.

Thus, all of the independent claims are deemed allowable. Moreover, the remaining dependent claims are further deemed allowable, in view of their dependence on such independent claims.

Therefore, for all of the above reasons, Applicant respectfully requests a Notice of Allowance of Claims 1-45, or a proper prior art showing of <u>all</u> of Applicant's claim limitations, in combination with the remaining claim elements.

Applicant encloses the appropriate fee for the new Claims. Applicant believes no other fees are due. In the event any other fees are due, the Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 50-4964 (Order No. SVIPGP109RE).

Should the Examiner deem that any further amendment is desirable to place this application in condition for allowance, Applicant invites the Examiner to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

Dated: 18 Jan 2011

The Caldwell Firm, LLC
PO Box 59655
Dallas, Texas 75229-0655
Telephone: (972) 243-4523
pcaldwell@thecaldwellfirm.com

Patrick E. Caldwell, Esq.
Reg. No. 44,580

Electronic Patent Application Fee Transmittal

Application Number:	90011011
Filing Date:	10-Jul-2010
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Filer:	Patrick Edgar Caldwell
Attorney Docket Number:	SVIPGP109RE

Filed as Large Entity

ex parte reexam Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Reexamination claims in excess of 20	1822	25	52	1300
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**1300**

Electronic Acknowledgement Receipt	
EFS ID:	9256364
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	18-JAN-2011
Filing Date:	10-JUL-2010
Time Stamp:	20:33:10
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1300
RAM confirmation Number	7187
Deposit Account	504964
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment/Req. Reconsideration-After Non-Final Reject	SVIPGP109RE_Amndt_A_vF_18-Jan-2011.pdf	59673 17a11ea125a383206b10af9c297bef25c988c3c6	no	11
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	30142 d08a4ddc3906d7cb68af03ae002f8dd892c327e5	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	89815		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)
	)
Smith, et al.	) Art Unit: 3992
	)
Application No. 90/011,011	) Examiner: MY-TRANG N. TON
	)
Filed: 07/10/2010	) Atty. Docket No.:
	) SVIPGP109RE
For: AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS	) Date: 02/16/2011

SUBSTITUTE AMENDMENT A

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Examiner:

In response to the Office Action mailed 1/12/2011 ("Office Action"), and as a substitute for the Response filed 1/18/2011, please enter the following amendments believed to place the Claims in condition for allowance.

AMENDMENTS TO THE CLAIMS

Amended claims follow:

1. (Currently Amended) An automatic directional control system for a vehicle headlight, comprising:

[[a]]two or more sensors that [[is]]are each adapted to generate a signal that is representative of a condition of [[the]]a vehicle, said sensed conditions including[[es]] [[one]]two or more of road speed, steering angle, pitch, and suspension height of the vehicle;

a controller that is responsive to said two or more sensor signals for generating [[an]]at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent [[said]]at least one actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating conditions; and

[[an]]said at least one actuator [[that is]]being adapted to be connected to the headlight to effect movement thereof in accordance with said at least one output signal.

2. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the road speed of the vehicle.

3. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the steering angle of the vehicle.

4. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the pitch of the vehicle.

5. (Currently Amended) The automatic directional control system defined in claim 1, wherein at least one of said two or more sensors generates a signal that is representative of the suspension height of the vehicle.

6. (New) The automatic directional control system defined in claim 1, wherein said two or more sensors include a first sensor and a second sensor.

7. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the road speed of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the steering angle of the vehicle.

8. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the steering angle of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the pitch of the vehicle.

9. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the suspension height of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the pitch of the vehicle.

10. (New) The automatic directional control system defined in claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the pitch of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the road speed of the vehicle.

11. (New) The automatic directional control system defined in claim 6, wherein said first sensor is physically separate from said second sensor.

12. (New) The automatic directional control system defined in claim 1, wherein said sensed conditions further include one or more of a rate of change of road speed of the vehicle, a rate of change of steering angle of the vehicle, a rate of change of pitch of the vehicle, or a rate of change of suspension height of the vehicle.

13. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generate a signal that is representative of the rate of change of road speed of the vehicle.

14. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generates a signal that is representative of the rate of change of steering angle of the vehicle.

15. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generates a signal that is representative of the rate of change of pitch of the vehicle.

16. (New) The automatic directional control system defined in claim 12, wherein at least one of said two or more sensors generates a signal that is representative of the rate of change of suspension height of the vehicle.

17. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured to include at least two actuators.

18. (New) The automatic directional control system defined in claim 17, wherein the at least two actuators include a first actuator that is adapted to be connected to the headlight to effect movement thereof in a vertical direction.

19. (New) The automatic directional control system defined in claim 18, wherein the at least two actuators include a second actuator that is adapted to be connected to the headlight to effect movement thereof in a horizontal direction.

20. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes an electronically controlled mechanical actuator.

21. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes a step motor.

22. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes a servo motor.

23. (New) The automatic directional control system defined in claim 1, wherein the at least one actuator includes a microstepping motor capable of being operated in fractional step increments.

24. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the headlight is adjustably mounted on the vehicle such that a directional orientation at which a beam of light projects therefrom is capable of being adjusted relative to the vehicle.

25. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the headlight is adjustably mounted on the vehicle such that a directional orientation at which a beam of light projects therefrom is capable of being adjusted up and down relative to a horizontal reference position.

26. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the headlight is adjustably mounted on the vehicle such that a directional orientation at which a beam of light

projects therefrom is capable of being adjusted left and right relative to a vertical reference position.

27. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that, while in a calibration mode, a directional orientation at which a beam of light projects therefrom is capable of being adjusted relative to the vehicle by manual operation of the at least one actuator.

28. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller includes a microprocessor.

29. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller includes a programmable electronic controller.

30. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system further includes at least one position feedback sensor capable of providing a position feedback signal associated with the at least one actuator.

31. (New) The automatic directional control system defined in claim 30, wherein the at least one position feedback sensor includes a Hall Effect sensor.

32. (New) The automatic directional control system defined in claim 30, wherein the at least one position feedback sensor includes an optical interrupter.

33. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system further includes memory.

34. (New) The automatic directional control system defined in claim 33, wherein the memory includes non-volatile memory.

35. (New) The automatic directional control system defined in claim 33, wherein the memory is configured to store a predetermined reference position associated with the headlight.

36. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured to position the headlight at or near a calibration position when an electrical system of the vehicle is turned on.

37. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the pitch of the vehicle is capable of being determined by sensing a front and a rear suspension height of the vehicle.

38. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the pitch of the vehicle is capable of being determined by a pitch level sensor.

39. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller is programmed to be responsive to changes in the suspension height of the vehicle that occur at frequencies lower than a suspension rebound frequency of the vehicle.

40. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the controller is programmed to be responsive to changes in the suspension height of the vehicle that occur at frequencies lower than a suspension rebound frequency of the vehicle, thereby ignoring frequency changes in the suspension height of the vehicle that are a result of bumps in a road.

41. (New) The automatic directional control system defined in claim 1, wherein the automatic directional control system is configured such that the predetermined minimum threshold amount functions as a filter to minimize undesirable operation of the at least one actuator.

42. (New) The automatic directional control system defined in claim 1, wherein said sensed conditions include three or more of road speed, steering angle, pitch, and suspension height of the vehicle.

43. (New) The automatic directional control system defined in claim 1, wherein said sensed conditions include all four of road speed, steering angle, pitch, and suspension height of the vehicle.

44. (New) The automatic directional control system defined in claim 1, wherein said controller is configured to be responsive to said two or more sensor signals for generating at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent at least one actuator from being operated continuously in response to relatively small variations in the sensed operating conditions.

45. (New) The automatic directional control system defined in claim 1,wherein controller is configured to be responsive to said two or more sensor signals for generating at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent at least one actuator from being operated unduly frequently in response to relatively small variations in the sensed operating conditions.

REMARKS

Claims 1 and 3 stand rejected under 35 U.S.C. §102(b) ("Section 102") as allegedly anticipated by Shibata (U.S. Patent No. 4,733,333)("Shibata"). Applicant respectfully traverses these rejections. Nevertheless, Applicant has amended Claim 1 to overcome such rejection, as follows:

> 1. (Currently Amended) An automatic directional control system for a vehicle headlight, comprising:
> [[a]]two or more sensors that [[is]]are each adapted to generate a signal that is representative of a condition of [[the]]a vehicle, said sensed conditions including[[es]] [[one]]two or more of road speed, steering angle, pitch, and suspension height of the vehicle;
> a controller that is responsive to said two or more sensor signals for generating [[an]]at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent [[said]]at least one actuator from being operated continuously or unduly frequently in response to relatively small variations in the sensed operating conditions; and
> [[an]]said at least one actuator [[that is]]being adapted to be connected to the headlight to effect movement thereof in accordance with said at least one output signal.

Applicant respectfully asserts that Shibata fails to teach "**two or more sensors** that are each adapted to generate a signal that is representative of a condition of the vehicle, said sensed conditions including **two or more** of road speed, steering angle, pitch, and suspension height of the vehicle" (emphasis added), as claimed by Applicant.

Applicant respectfully notes that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, the identical invention must be shown in as complete detail as contained in the claim. *Richardson v. Suzuki Motor*

*Co.*868 F.2d 1226, 1236, 9USPQ2d 1913, 1920 (Fed. Cir. 1989). Additionally, the elements must be arranged as required by the claim.

This criterion has simply not been met by the above reference, as noted above. As such, Applicant respectfully asserts that Shibata cannot support a proper rejection under Section 102 of Claims 1 and 3. Accordingly, Applicant respectfully requests the Examiner withdraw the Section 102 rejections of Claims 1 and 3. As Applicant has addressed all of the rejections in the Office Action, Applicant respectfully requests full allowance of Claims 1-5, as amended.

Finally, Applicant brings to the Examiner's attention the subject matter of new Claims 6-45, which Applicant adds for full consideration. Claims 6-45 depend from and further limit Claim 1. Accordingly, Applicant respectfully submits that new Claims 6-45 are allowable for at least the same reasons that Claim 1 is in condition for allowance, as described above.

Thus, all of the independent claims are deemed allowable. Moreover, the remaining dependent claims are further deemed allowable, in view of their dependence on such independent claims.

Therefore, for all of the above reasons, Applicant respectfully requests a Notice of Allowance of Claims 1-45, or a proper prior art showing of <u>all</u> of Applicant's claim limitations, in combination with the remaining claim elements.

Applicant encloses the appropriate fee for the new Claims. Applicant believes no other fees are due. In the event any other fees are due, the Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 50-4964 (Order No. SVIPGP109RE).

Should the Examiner deem that any further amendment is desirable to place this application in condition for allowance, Applicant invites the Examiner to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

Dated: 16 Feb 2011

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Patrick E. Caldwell, Esq.
Reg. No. 44,580

Electronic Acknowledgement Receipt	
EFS ID:	9463539
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	16-FEB-2011
Filing Date:	10-JUL-2010
Time Stamp:	23:39:49
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	SVIPGP109RE_Amndt_A1_vF_16-Feb-2011.pdf	61811 cb8a86f3ce0c7c5a7dc631cd99d322d8eb6f031c	no	11

Warnings:
Information:

Total Files Size (in bytes):	61811

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: WFEE

Document Description: Fee Worksheet (PTO-875)

PTO/SB/06 (10-07)
Approved for use through 09/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 90/011,011

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x =		OR	x =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x =			x =	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			N/A			N/A	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
A									
Total (37 CFR 1.16(i))	* 45	Minus	** 20	= 25	x 52 =	1300	OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	= 0	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/07 (07-07)
Approved for use through 09/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET
Substitute for Form PTO-1360
(For use with Form PTO/SB/06)

Application Number: 90/011,011
Filing Date:
Applicant(s):

* May be used for additional claims or amendments

CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT	
	Indep	Depend	Indep	Depend	Indep	Depend
1		1				
2	1					
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Total Indep	44					
Total Depend	1					
Total Claims	45					

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	Indep	Depend	Indep	Depend	Indep	Depend
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Total Indep						
Total Depend						
Total Claims						

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	90011011
Filing Date:	10-Jul-2010
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Filer:	Patrick Edgar Caldwell
Attorney Docket Number:	SVIPGP109RE

Filed as Large Entity

ex parte reexam Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Reexamination claims in excess of 20	1822	25	52	1300
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**1300**

Electronic Acknowledgement Receipt	
EFS ID:	9493384
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	22-FEB-2011
Filing Date:	10-JUL-2010
Time Stamp:	15:40:54
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1300
RAM confirmation Number	2265
Deposit Account	504964
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Fee Worksheet (PTO-875)	fee-info.pdf	30143 10bdb83a36a84bafccbfaa8d3de40e1c4ff18f27	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	30143	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent of	:	James E. SMITH et al.
Patent No.	:	7,241,034
Issued	:	July 10, 2007
Reexamination Control No.	:	90/011,011
Title	:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
Examiner	:	My Trang TON
Art Unit	:	3992
Confirmation	:	3919

CERTIFICATE OF SERVICE

I hereby certify that a copy of the attached "**NOTICE OF CONCURRENT PROCEEDING UNDER 37 C.F.R. § 1.565**" is being served in its entirety by first class mail on the patent owner at the address listed below in the manner provided in 37 C.F.R. § 1.248:

The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

on this 16th day of May 2011.

/Clifford A. Ulrich/
Clifford A. Ulrich
Reg. No. 42,194

KENYON & KENYON LLP
One Broadway
New York, N.Y. 10004
(212) 425-7200 (telephone)
(212) 425-5288 (facsimile)

Attorney for Volkswagen
Group of America, Inc.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent of	:	James E. SMITH et al.
Reexamination Control No.	:	90/011,011
Patent No.	:	7,241,034
Issued	:	July 10, 2007
Title	:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
Examiner	:	My Trang TON
Group Art Unit	:	3992
Confirmation No.	:	3919

VIA EFS-WEB
Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office via the Office electronic filing system on **May 16, 2011**.
Signature: /Helen Tam/
Helen Tam

NOTICE OF CONCURRENT PROCEEDING UNDER 37 C.F.R. § 1.565

Sir:

Pursuant to the provisions of M.P.E.P. § 2282, which provides that "in order to ensure a complete file, with updated status information regarding prior or concurrent proceedings regarding the patent under reexamination, the Office will, at any time, accept from any parties, for entry into the reexamination file, copies of notices of suits and other proceedings involving the patent and copies of decisions or papers filed in the court from litigations or other proceedings involving the patent," Volkswagen Group of America, Inc. ("VWGoA") hereby informs the Office that it has requested *inter partes* reexamination of U.S. Patent No. 7,241,034, the patent under reexamination in the above-captioned proceeding. VWGoA filed its Request on May 16, 2011, which has been assigned Control No. 95/001,621.

As set forth in the Certificate of Service attached hereto, a copy of this Notice is being served on the patent owner in accordance with 37 C.F.R. § 1.248.

Respectfully submitted,

Date: May 16, 2011

By: /Clifford A. Ulrich/
Clifford A. Ulrich
Reg. No. 42,194

KENYON & KENYON LLP
One Broadway
New York, N.Y. 10004
(212) 425-7200 (telephone)
(212) 425-5288 (facsimile)
CUSTOMER NO. 26646

Electronic Acknowledgement Receipt	
EFS ID:	10102221
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Customer Number:	92045
Filer:	Clifford A. Ulrich/Helen Tam
Filer Authorized By:	Clifford A. Ulrich
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	16-MAY-2011
Filing Date:	10-JUL-2010
Time Stamp:	19:14:37
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reexam Certificate of Service	Certificate-of-Service.pdf	61302 f7517c2ff25468cc7c6d256cc84886c5562ea163	no	1
Warnings:					
Information:					

2	Notice of concurrent proceeding(s)	Notice-Concurrent-Proceeding.pdf	81015 33059498f552477433f6265ab9bb16f97dec31ab	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	142317	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Patent Assignment Abstract of Title

Total Assignments: 4

Application #: 10285312 **Filing Dt:** 10/31/2002 **Patent #:** 7241034 **Issue Dt:** 07/10/2007
PCT #: NONE **Publication #:** US20030107898 **Pub Dt:** 06/12/2003
Inventors: James E. Smith, Anthony B. McDonald
Title: AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS

Assignment: 1

Reel/Frame: 013729 / 0559 **Received:** 02/10/2003 **Recorded:** 02/06/2003 **Mailed:** 06/13/2003 **Pages:** 3
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignors: SMITH, JAMES E. **Exec Dt:** 01/31/2003
MCDONALD, ANTHONY B. **Exec Dt:** 01/31/2003
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Assignment: 2

Reel/Frame: 020540 / 0476 **Received:** 02/22/2008 **Recorded:** 02/22/2008 **Mailed:** 02/22/2008 **Pages:** 30
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: DANA CORPORATION **Exec Dt:** 01/31/2008
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Assignment: 3

Reel/Frame: 022813 / 0432 **Received:** 06/12/2009 **Recorded:** 06/12/2009 **Mailed:** 06/12/2009 **Pages:** 2
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: DANA AUTOMOTIVE SYSTEMS GROUP, LLC **Exec Dt:** 05/26/2009
Assignee: STRAGENT, LLC
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Assignment: 4

Reel/Frame: 024045 / 0235 **Received:** 03/08/2010 **Recorded:** 03/08/2010 **Mailed:** 03/09/2010 **Pages:** 2
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: STRAGENT, LLC **Exec Dt:** 12/16/2009
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DEPT. SVIPGP
DALLAS, TX 75229

Search Results as of: 05/20/2011 11:36 AM

LIST OF DOCUMENTS CITED BY THIRD PARTY REQUESTER IN *INTER PARTES* REEXAMINATION	PATENT NO. 7,241,034	PATENTEE James E. SMITH et al.
	PATENT DATE July 10, 2007	

U. S. PATENT DOCUMENTS

EXAM. INITIAL	PATENT/ PUBLICATION NUMBER	NAME	PATENT/ PUBLICATION DATE	CLASS	SUBCLASS	FILING DATE
/M.T./	4,954,933	Wassen et al.	September 4, 1990			
/M.T./	5,182,460	Hussman	January 26, 1993			
/M.T./	5,909,949	Gotoh	June 8, 1999			
/M.T./	6,193,398	Okuchi et al.	February 27, 2001			
/M.T./	6,305,823	Toda et al.	October 23, 2001			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	COUNTRY	DATE	NAME	SUBCLASS	TRANSLATION	
						YES	NO
/M.T./	31 29 891	DE	June 9, 1982			X	
/M.T./	31 10 094	DE	September 30, 1982			X	
/M.T./	2 309 773	GB	August 6, 1997				X
/M.T./	2 309 774	GB	August 6, 1997				X

OTHER DOCUMENTS

EXAMINER INITIAL	Name
	"Original Complaint for Patent Infringement," filed on March 8, 2010, *BALTHER TECHNOLOGIES, LLC. v. AM. HONDA MOTOR CO. INC., et al.*, Case No. 6:10-CR-78-LED (E.D. Tex.).
	"Plaintiff's Notice of Voluntary Dismissal," filed on May 17, 2010, *BALTHER TECHNOLOGIES, LLC. v. AM. HONDA MOTOR CO. INC., et al.*, Case No. 6:10-CR-78-LED (E.D. Tex.).
	"Order," dated May 18, 2010, *BALTHER TECHNOLOGIES, LLC. v. AM. HONDA MOTOR CO. INC., et al.*, Case No. 6:10-CR-78-LED (E.D. Tex.).
/M.T./	Certified English-language translation of German Patent Application Publication No. 31 10 094 to Miskin et al.
/M.T./	Certified English-language translation of German Patent Application Publication No. 31 29 891 to Leleve.

EXAMINER	/My Trang Ton/ (06/15/2011)	DATE CONSIDERED	(06/15/2011)

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/011,011	07/10/2010	7,241,034	SVIPGP109RE	3919

92045 7590 01/18/2012

The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED: 01/18/2012

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Notice Of Defective Paper In Ex Parte Reexamination	Control Number	Patent Under Reexamination
	90/011,011	7,241,034
	Examiner	Art Unit
	MY-TRANG TON	3992

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

1. ☐ Since no proof of service was included with the paper filed on _____ , it fails to comply with 37 CFR 1.248 and 1.540. Proof of service is required within ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this letter, whichever is longer. Failure to provide proof of service may result in a refusal to consider the paper. If the failure to comply with this requirement results in a patent owner failure to file a timely and appropriate response to any Office action or any written statement of an interview required under 37 CFR 1.560(b), the prosecution of the reexamination proceeding will be terminated under 37 CFR 1.550(d).

2. ☐ The paper filed on _____ is unsigned. A duplicate paper or ratification, properly signed, is required within ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this letter, whichever is longer. Failure to comply with this requirement will result in the paper not being considered. If the failure to comply results in a patent owner failure to file a timely and appropriate response to any Office action or any written statement of an interview required under 37 CFR 1.560(b), the prosecution of the reexamination proceeding will be terminated under 37 CFR 1.550(d).

3. ☐ The paper filed on _____ is signed by _____ , who is not of record. A duplicate paper or ratification signed by a person of record, a person made of record by way of a new power of attorney, is required within ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this letter, whichever is longer. Failure to comply with this requirement will result in the paper not being considered. If the failure to comply results in a patent owner failure to file a timely and appropriate response to any Office action or any written statement of an interview required under § 1.560(b), the prosecution of the reexamination proceeding will be terminated under 37 CFR 1.550(d).

4. ☒ The Amendment filed on *2/16/11* does not comply with 37 CFR 1.530(d)-(j). Patent owner is given ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this letter, whichever is longer to correct this informality; otherwise, the prosecution of the the reexamination proceeding will be terminated under (37 CFR 1.550(d)).

5. ☐ The amendment filed by patent owner on _____, does not comply with 37 CFR ☐1.20(c)(3) and/or ☐1.20(c)(4), as to excess claim fees. Patent owner is given a time period of ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this letter, whichever is longer, to correct this fee deficiency, or the prosecution of the reexamination proceeding will be terminated under 37 CFR 1.550(d), to effect the "abandonment" set forth in 37 CFR 1.20(c)(5).

6. ☐ Other :

NOTE: EXTENSION OF TIME ARE GOVERNED BY 37 CFR 1.550(c). If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

cc: Requester (if third party requester)

Defective Amendment

This proceeding is a merger of 90/011,011 and 95/001,621.

The Amendment filed 10/11/2007 is not fully compliant with 37 CFR 1.530 and will not be entered. A supplemental paper correctly proposing amendments in the present reexamination proceeding is required.

According to rule 37 CFR 1.530 (e), it requires that whenever there is an amendment of the claims, **there must supplied an explanation of the support in the disclosure of the patent for the changes of all patent claims and of all added claims made by the amendment paper**. The amendment has to specify which original claim it means, match it up with the claim amendment and make it intended meaning clear.

Patent Owner did not comply with this requirement for claims 1-5 and newly added claims 6-45. There is no explanation of the support in the disclosure of the patent for the changes made by the amendment paper.

Patent owner is given ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this latter, whichever is longer to correct this matter, otherwise, the prosecution of the reexamination proceeding will be terminated under 37 CFR 1.550(d).

37 CFR 1.530. Statement by patent owner in ex parte reexamination; amendment by patent owner in ex parte or inter partes reexamination; inventorship change in ex parte or inter partes reexamination.

(e) *Status of claims and support for claim changes.* Whenever there is an amendment to the claims pursuant to paragraph (d) of this section, there must also be supplied, on pages separate from the pages containing the changes, the status (*i.e.*, pending or canceled), as of the date of the amendment, of all patent claims and of all added claims, and an explanation of the support in the disclosure of the patent for the changes to the claims made by the amendment paper.

(f) *Changes shown by markings* . Any changes relative to the patent being reexamined which are made to the specification, including the claims, must include the following markings:

(1) The matter to be omitted by the reexamination proceeding must be enclosed in brackets; and

(2) The matter to be added by the reexamination proceeding must be underlined.

(g) *Numbering of patent claims preserved* . Patent claims may not be renumbered. The numbering of any claims added in the reexamination proceeding must follow the number of the highest numbered patent claim.

(h) *Amendment of disclosure may be required* . The disclosure must be amended, when required by the Office, to correct inaccuracies of description and definition, and to secure substantial correspondence between the claims, the remainder of the specification, and the drawings.

(i) *Amendments made relative to patent.* All amendments must be made relative to the patent specification, including the claims, and drawings, which are in effect as of the date of filing the request for reexamination.

(j) *No enlargement of claim scope* . No amendment may enlarge the scope of the claims of the patent or introduce new matter. No amendment may be proposed for entry in an expired patent. Moreover, no amendment, other than the cancellation of claims, will be incorporated into the patent by a certificate issued after the expiration of the patent.

(e) *Status of claims and support for claim changes.* Whenever there is an amendment to the claims pursuant to paragraph (d) of this section, there must also be supplied, on pages separate from

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By Mail to: Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Registered users of EFS-Web may alternatively submit such correspondence via the electronic filing system EFS-Web, at https://sportal.uspto.gov/authenticate/authenticateuserlocalepf.html. EFS-Web offers the benefit of quick submission to the particular area of the Office that needs to act on the correspondence. Also, EFS-Web submissions are "soft scanned" (i.e., electronically uploaded) directly into the official file for the reexamination proceeding, which offers parties the opportunity to review the content of their submissions after the "soft scanning" process is complete.

Any inquiry concerning this communication should be directed to Central Reexamination Unit at telephone number (571) 272-7705.

/My-Trang Nu Ton/

Primary Examiner
Central Reexamination, Art Unit 3992

Conferees: /Margaret Rubin/

Primary Examiner

MARK J. REINHART
CRU SPE-AU 3992

Central Reexamination, Art Unit 3992

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent No:	)
	)
7,241,034	) Art Unit: 3992
	)
Application No. 90/011,011	) Examiner: MY-TRANG N. TON
	)
Filed: 07/10/2010	) Atty. Docket No.:
	) SVIPGP109RE
For: AUTOMATIC DIRECTIONAL CONTROL	)
SYSTEM FOR VEHICLE	) Date: 02/02/2012
HEADLIGHTS	)
	)

AMENDMENT C

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Examiner:

In response to the Office Action mailed 1/12/2011 ("Office Action"), the Notice mailed 1/18/2012, and as a substitute for the Response filed 1/18/2011 and the Response filed 2/16/2011, please enter the following amendments believed to place the Claims in condition for allowance.

AMENDMENTS TO THE CLAIMS

Amended claims follow:

1. (Currently Amended) An automatic directional control system for a vehicle headlight, comprising:

[[a]]two or more sensors that [[is]]are each adapted to generate a signal that is representative of at least one of a plurality of sensed conditions of [[the]]a vehicle, said sensed conditions including at least[[es]] ~~one or more of road speed,~~ steering angle[[,]] and pitch~~, and suspension height~~ of the vehicle;

a controller that is responsive to said two or more sensor signals for generating [[an]]at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent [[said]]at least one first one of two or more actuators from being operated continuously or unduly frequently in response to relatively small variations in the sensed ~~operating~~ conditions; and

[[an]]said two or more actuators ~~that is~~each being adapted to be connected to the headlight to effect movement thereof in accordance with said at least one output signal.

2. (Currently Amended) The automatic directional control system defined in Claim[[claim]] 1, wherein at least one of said two or more sensors further generate[[s]] a signal that is representative of the road speed of the vehicle.

3. (Currently Amended) The automatic directional control system defined in Claim[[claim]] 1, wherein at least one of said two or more sensors further generates a signal that is representative of [[the]]a rate of change of steering angle of the vehicle.

4. (Currently Amended) The automatic directional control system defined in Claim[[claim]] 1, wherein at least one of said two or more sensors further generates a signal that is representative of [[the]]a rate of change of pitch of the vehicle.

5. (Currently Amended) The automatic directional control system defined in Claim[[claim]] 1, wherein at least one of said two or more sensors further generates a signal that is representative of the suspension height of the vehicle.

6. (New) The automatic directional control system defined in Claim 1, wherein said two or more sensors include a first sensor and a second sensor.

7. (New) The automatic directional control system defined in Claim 6, wherein said first sensor is adapted to generate a signal that is representative of a condition including the steering angle of the vehicle and said second sensor is adapted to generate a signal that is representative of a condition including the pitch of the vehicle.

8. (New) The automatic directional control system defined in Claim 6, wherein said first sensor is physically separate from said second sensor.

9. (New) The automatic directional control system defined in Claim 1, further comprising one or more additional sensors for sensing one or more of a rate of change of road speed of the vehicle, a rate of change of steering angle of the vehicle, a rate of change of pitch of the vehicle, a suspension height, or a rate of change of suspension height of the vehicle.

10. (New) The automatic directional control system defined in Claim 9, wherein at least one of said one or more additional sensors generate a signal that is representative of the rate of change of road speed of the vehicle.

11. (New) The automatic directional control system defined in Claim 9, wherein at least one of said one or more additional sensors generate a signal that is representative of the rate of change of steering angle of the vehicle.

12. (New) The automatic directional control system defined in Claim 9, wherein at least one of said one or more additional sensors generate a signal that is representative of the rate of change of pitch of the vehicle.

13. (New) The automatic directional control system defined in Claim 9, wherein at least one of said one or more additional sensors generate a signal that is representative of a suspension height of the vehicle.

14. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured to include the first actuator connected to the headlight to effect movement thereof in a first direction and a second actuator connected to the headlight to effect movement thereof in a second direction different form the first direction.

15. (New) The automatic directional control system defined in Claim 1, wherein the two or more actuators include the first actuator that is adapted to be connected to the headlight to effect movement thereof in a vertical direction.

16. (New) The automatic directional control system defined in Claim 15, wherein the two or more actuators include a second actuator that is adapted to be connected to the headlight to effect movement thereof in a horizontal direction.

17. (New) The automatic directional control system defined in Claim 1, wherein the two or more actuators include an electronically controlled mechanical actuator.

18. (New) The automatic directional control system defined in Claim 1, wherein the two or more actuators include a step motor.

19. (New) The automatic directional control system defined in Claim 1, wherein the two or more actuators include a servo motor.

20. (New) The automatic directional control system defined in Claim 1, wherein the two or more actuators include a microstepping motor capable of being operated in fractional step increments.

21. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the headlight is adjustably mounted on the vehicle such that a directional orientation at which a beam of light projects therefrom is capable of being adjusted both up and down relative to a horizontal reference position and left and right relative to a vertical reference position.

22. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that, while in a calibration mode, a directional orientation at which a beam of light projects therefrom is capable of being adjusted relative to the vehicle by manual operation of the two or more actuators.

23. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the controller includes a microprocessor.

24. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the controller includes a programmable electronic controller.

25. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system further includes at least one position feedback sensor capable of providing a position feedback signal associated with at least one of the two or more actuators.

26. (New) The automatic directional control system defined in Claim 25, wherein the at least one position feedback sensor includes a Hall Effect sensor.

27. (New) The automatic directional control system defined in Claim 25, wherein the at least one position feedback sensor includes an optical interrupter.

28. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system further includes memory.

29. (New) The automatic directional control system defined in Claim 28, wherein the memory includes non-volatile memory.

30. (New) The automatic directional control system defined in Claim 28, wherein the memory is configured to store a predetermined reference position associated with the headlight.

31. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the pitch of the vehicle is capable of being determined by sensing a front and a rear suspension height of the vehicle.

32. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the pitch of the vehicle is capable of being determined by a pitch sensor.

33. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the controller is programmed to be responsive to changes in the suspension height of the vehicle that occur at frequencies lower than a suspension rebound frequency of the vehicle.

34. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the controller is programmed to be responsive to changes in the suspension height of the vehicle that occur at frequencies lower than a suspension rebound frequency of the vehicle, thereby ignoring frequency changes in the suspension height of the vehicle that are a result of bumps in a road.

35. (New) The automatic directional control system defined in Claim 1, wherein the automatic directional control system is configured such that the predetermined minimum threshold amount functions as a filter to minimize undesirable operation of at least one of the two or more actuators.

36. (New) The automatic directional control system defined in Claim 1, wherein said controller is configured to be responsive to said two or more sensor signals for generating at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent at least one of the two or more actuators from being operated continuously in response to relatively small variations in the sensed conditions.

37. (New) The automatic directional control system defined in Claim 1, wherein said controller is configured to be responsive to said two or more sensor signals for generating at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent at least one of the two or more actuators from being operated unduly frequently in response to relatively small variations in the sensed conditions.

38. (New) The automatic directional control system defined in Claim 1, wherein said controller is further responsive to said two or more sensor signals to automatically activate one or more vehicle lights that are different than the headlight.

39. (New) The automatic directional control system defined in Claim 38, wherein said one or more vehicle lights that are different than the headlight include one or more lights for illuminating a road in front of the vehicle during a turn.

40. (New) The automatic directional control system defined in Claim 1, wherein said controller is further responsive to a steering angle in excess of a predetermined magnitude for automatically activating one or more vehicle lights that are different than the headlight.

41. (New) The automatic directional control system defined in Claim 1, wherein said controller is further responsive to a steering angle in excess of a predetermined magnitude for automatically activating one or more vehicle lights that are different than the headlight to extend an angular range of a road surface.

REMARKS

Claims 1 and 3 of U.S. Patent No. 7,241,034 ("the '034 patent") stand rejected under 35 U.S.C. §102(b) ("Section 102b") as being anticipated by Shibata (U.S. Patent No. 4,733,333)("Shibata"). Furthermore, as noted in the 6/23/2011 Office Communication for the Inter Partes Reexamination Proceeding number 95/001,621, which has now been merged with the present matter, the Examiner has agreed with the Requestor that Requestor's issues 1-2, 4-7, 9-12, 14-17, and 19-20 raise substantial new questions of patentability as to claims 1-5 of the '034 patent.

Specifically, the Examiner agrees that:

Claims 1, 2, 4, and 5 are anticipated by Uchida (United Kingdom Patent Application Publication No. 2309773) ("Uchida") under Section 102b;

Claims 1, 2, 4, and 5 are anticipated by Takahashi (United Kingdom Patent Application Publication No. 2309774)("Takahashi") under Section 102b;

Claims 1 and 5 are anticipated by Miskin et al. (German Patent Application Publication No. 3110094)("Miskin") under Section 102b;

Claims 1 and 5 are anticipated by Leleve (German Patent Application Publication No. 3129891)("Leleve") under Section 102b;

Claims 1, 2, 4, and 5 are unpatentable over the combination of Toda et al. (U.S. Patent No. 6,305,823)("Toda") and Uchida under 35 U.S.C. § 103(a) ("Section 103a");

Claims 1, 2, 4, and 5 are unpatentable over the combination of Toda and Takahashi under Section 103a;

Claims 1, 2, 4, and 5 are unpatentable over the combination of and Miskin under Section 103a;

Claims 1, 2, 4, and 5 are unpatentable over the combination of Toda and Leleve under Section 103a;

Claims 1, 2, 4, and 5 are unpatentable over the combination of Okuchi et al. (U.S. Patent No.6,193,398)("Okuchi") and Uchida under Section 103a;

Claims 1, 2, 4, and 5 are unpatentable over the combination of Okuchi and Takahashi under Section 103a;

Claims 1, 2, 4, and 5 are unpatentable over the combination of Okuchi and Miskin under Section 103a;

Claims 1, 2, 4, and 5 are unpatentable over the combination of Okuchi and Leleve under Section 103a;

Claims 1-5 are unpatentable over the combination of Gotoh (U.S. Patent No. 5,909,949)("Gotoh") and Uchida under Section 103a;

Claims 1-5 are unpatentable over the combination of Gotoh and Takahashi under Section 103a;

Claims 1, 2, 3, and 5 are unpatentable over the combination of Gotoh and Miskin under Section 103a; and

Claims 1-5 are unpatentable over the combination of Gotoh and Leleve under Section 103a.

Applicant has amended Claim 1 to overcome these rejections, as follows:

1. (Currently Amended) An automatic directional control system for a vehicle headlight, comprising:

[[a]]two or more sensors that [[is]]are each adapted to generate a signal that is representative of at least one of a plurality of sensed conditions of [[the]]a vehicle, said sensed conditions including at least[[es]] ~~one or more of road speed,~~ steering angle[[,]] and pitch~~, and suspension height~~ of the vehicle;

a controller that is responsive to said two or more sensor signals for generating [[an]]at least one output signal only when said at least one of the two or more sensor signals changes by more than a predetermined minimum threshold amount to prevent [[said]]at least one first one of two or more actuators from being operated continuously or unduly frequently in response to relatively small variations in the sensed ~~operating~~ conditions; and

[[an]]said two or more actuators ~~that is~~each being adapted to be connected to the headlight to effect movement thereof in accordance with said at least one output signal.

Applicant respectfully asserts that the references as relied on by the Examiner fail to teach "**two or more sensors** that are each adapted to generate a signal that is

representative of at least one of a plurality of sensed conditions of a vehicle, said sensed conditions including at least **steering angle and pitch of the vehicle**" (emphasis added), as claimed by Applicant. Further, Applicant respectfully asserts that the references as relied on by the Examiner fail to teach "**two or more actuators** each being adapted to be connected to the headlight to effect movement thereof in accordance with said at least one output signal" (emphasis added), as claimed by Applicant.

Applicant respectfully notes that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *See Verdegaal Bros. v. Union Oil Co. Of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, the identical invention must be shown in as complete detail as contained in the claim. *See Richardson v. Suzuki Motor Co.*868 F.2d 1226, 1236, 9USPQ2d 1913, 1920 (Fed. Cir. 1989). Additionally, the elements must be arranged as required by the claim.

This criterion has simply not been met by the above references, as noted above.

Further, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicant's disclosure. *See In re Vaeck,*947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir.1991).

Applicant respectfully asserts that at least the first and third elements of the *prima facie* case of obviousness have not been met, because it would be *unobvious* to combine the prior art references, and because the prior art references, as relied upon by the Examiner, fail to teach or suggest all of the claim limitations.

Finally, Applicant brings to the Examiner's attention the subject matter of new Claims 6-41, which Applicant adds for full consideration. Claims 6-41 depend from and further limit Claim 1. Accordingly, Applicant respectfully submits that new Claims 6-41 are allowable for at least the same reasons that Claim 1 is in condition for allowance, as described above. Support for the amendments to Claim 1, as well as for the newly added dependent claims may be found (by way of example), in Table 1.

Table 1

Claim 1 – *see, e.g.,* Abstract; Col. 2, lines 7-17; and Figure 1.
Claim 2 – *see, e.g.,* Col. 2, line 10.
Claim 3 – *see, e.g.,* Col. 2, lines 11-12.
Claim 4 – *see, e.g.,* Col. 2, line 12.
Claim 5 – *see, e.g.,* Col. 2, line 11.
Claim 6 – *see, e.g.,* items 15 and 16 of Figure 1.
Claim 7 - *see, e.g.,* Abstract; Col. 2, lines 7-17; Col. 3, line 58 - Col. 4, line 2; and Figure 1.
Claim 8 – *see, e.g.,* items 15 and 16 of Figure 1.
Claim 9 - *see, e.g.,* Col. 3, line 58 - Col. 4, line 2.
Claim 10 - *see, e.g.,* Col. 3, line 58 - Col. 4, line 2.
Claim 11 - *see, e.g.,* Col. 3, line 58 - Col. 4, line 2.
Claim 12 - *see, e.g.,* Col. 3, line 58 - Col. 4, line 2.
Claim 13 - *see, e.g.,* Col. 3, line 58 - Col. 4, line 2.
Claim 14 - *see, e.g.,* Figure 1 and Col. 3, lines 26-29.
Claim 15 - *see, e.g.,* Figure 1 and Col. 3, lines 26-29.
Claim 16 - *see, e.g.,* Figure 1 and Col. 3, lines 26-29.
Claim 17 - *see, e.g.,* Col. 3, lines 28-31.
Claim 18 - *see, e.g.,* Col. 3, lines 28-31.
Claim 19 - *see, e.g.,* Col. 3, lines 28-31.
Claim 20 - *see, e.g.,* Col. 3, lines 31-37.
Claim 21 - *see, e.g.,* Col. 3, lines 28-31.

Claim 22 – *see, e.g.,* Figure 2, Col. 5, lines 25-29.

Claim 23 – *see, e.g.,* Col. 3, lines 53-58.

Claim 24 – *see, e.g.,* Col. 3, lines 53-58.

Claim 25 – *see, e.g.,* Col. 4, lines 7-30.

Claim 26 - *see, e.g.,* Col. 4, line 26.

Claim 27 – *see, e.g.,* Col. 4, lines 35-36.

Claim 28 – *see, e.g.,* Col. 8, lines 8-11.

Claim 29 – *see, e.g.,* Col. 8, line 16.

Claim 30 – *see, e.g.,* Col. 6, lines 18-21.

Claim 31 – *see, e.g.,* Col. 7, lines 1-4.

Claim 32 – *see, e.g.,* Col. 7, lines 1-4.

Claim 33 – *see, e.g.,* Col. 9, lines 33-42.

Claim 34 – *see, e.g.,* Col. 9, lines 33-42.

Claim 35 – *see, e.g.,* Col 9, lines 46-56.

Claim 36 – *see, e.g.,* Col 9, lines 22-27.

Claim 37 – *see, e.g.,* Col 9, lines 22-27.

Claim 38 – *see, e.g.,* Col 12, lines 27-39.

Claim 39 – *see, e.g.,* Col 12, lines 27-39.

Claim 40 – *see, e.g.,* Col 12, lines 27-39.

Claim 41 – *see, e.g.,* Col 12, lines 27-39.

Of course, the above citations are merely examples of the above claim language and should not be construed as limiting in any manner.

For all of the forgoing reasons, Applicant respectfully requests a Notice of Allowance of Claims 1-41, or a proper prior art showing of all of Applicant's claim limitations, in combination with the remaining claim elements.

Applicant includes the appropriate fee for the new Claims. Applicant believes no other fees are due. In the event any other fees are due, the Commissioner is authorized to

charge any additional fees or credit any overpayment to Deposit Account No. 50-4964 (Order No. SVIPGP109RE).

Should the Examiner deem that any further amendment is desirable to place this application in condition for allowance, Applicant invites the Examiner to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

Dated: 02 Feb 2012

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Electronic Patent Application Fee Transmittal	
Application Number:	90011011
Filing Date:	10-Jul-2010
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Filer:	Patrick Edgar Caldwell
Attorney Docket Number:	SVIPGP109RE
Filed as Large Entity	

ex parte reexam Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Reexamination claims in excess of 20	1822	21	60	1260
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**1260**

Electronic Acknowledgement Receipt	
EFS ID:	11990616
Application Number:	90011011
International Application Number:	
Confirmation Number:	3919
Title of Invention:	AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE HEADLIGHTS
First Named Inventor/Applicant Name:	7,241,034
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	SVIPGP109RE
Receipt Date:	02-FEB-2012
Filing Date:	10-JUL-2010
Time Stamp:	23:27:52
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1260
RAM confirmation Number	7107
Deposit Account	504964
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment/Req. Reconsideration-After Non-Final Reject	SVIPGP109RE_Amndt_C_vF_02-Feb-2012.pdf	74004 6a35709c67f7a710d3410a0f6581e9b4cda2ce7a	no	14
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30243 fdb782610fa32a4082da10df2c887af8b2dfe4cf	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	104247		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.