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Ichinose et al.

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(54) **VEHICLE DOOR CONTROL SYSTEM**

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E05F 15/40	(2015.01)
E05F 15/74	(2015.01)
B60R 25/24	(2013.01)
B60R 16/037	(2006.01)
B60R 25/20	(2013.01)

(52) **U.S. Cl.**

CPC ***E05F 15/611*** (2015.01); ***B60R 16/037*** (2013.01); ***B60R 25/24*** (2013.01); ***E05F 15/40*** (2015.01); ***E05F 15/74*** (2015.01); *B60R 25/20* (2013.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

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Primary Examiner — Catherine A Kelly

(57) **ABSTRACT**

A vehicle door control system comprises a door that is supported to a vehicle body; an electric door opening device that can open and close the door electrically; a touch panel display that can display an image like the door; a loudspeaker that can create a voice; and a control device that controls the electric door opening device. The control device performs opening control by which the electric door opening device opens the door by touching an image on the touch panel display and performs voice control by which it is reported through the voice from the loudspeaker that the door opens.

2 Claims, 8 Drawing Sheets

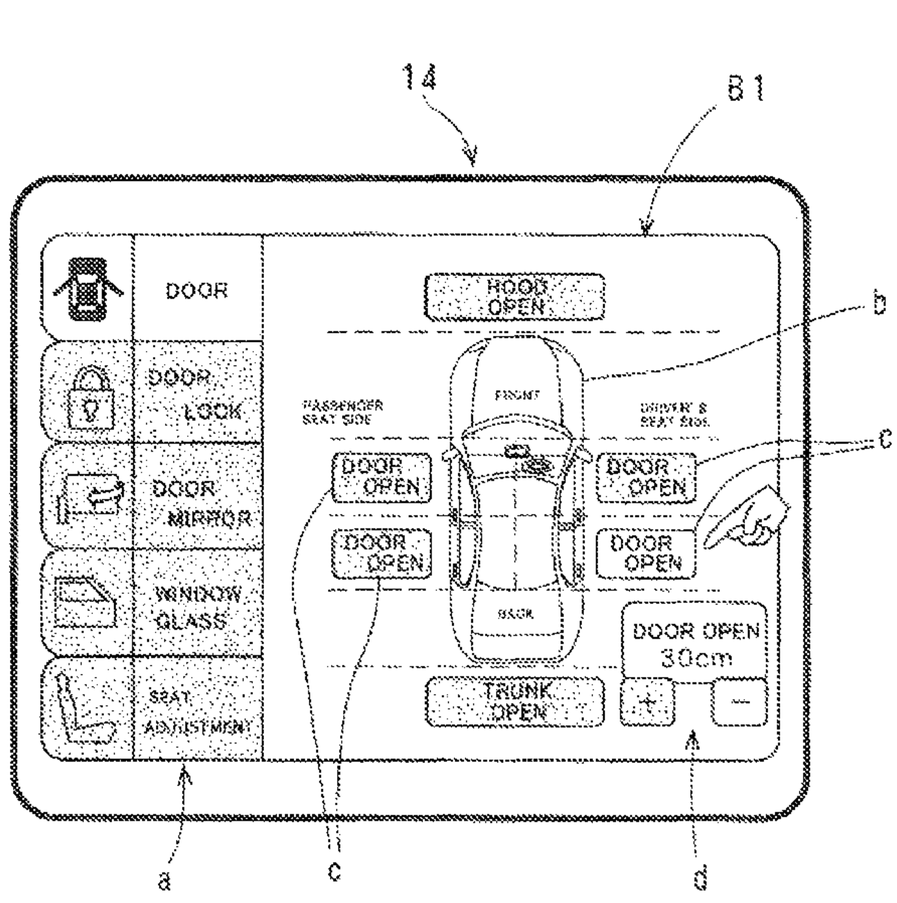


Fig. 1

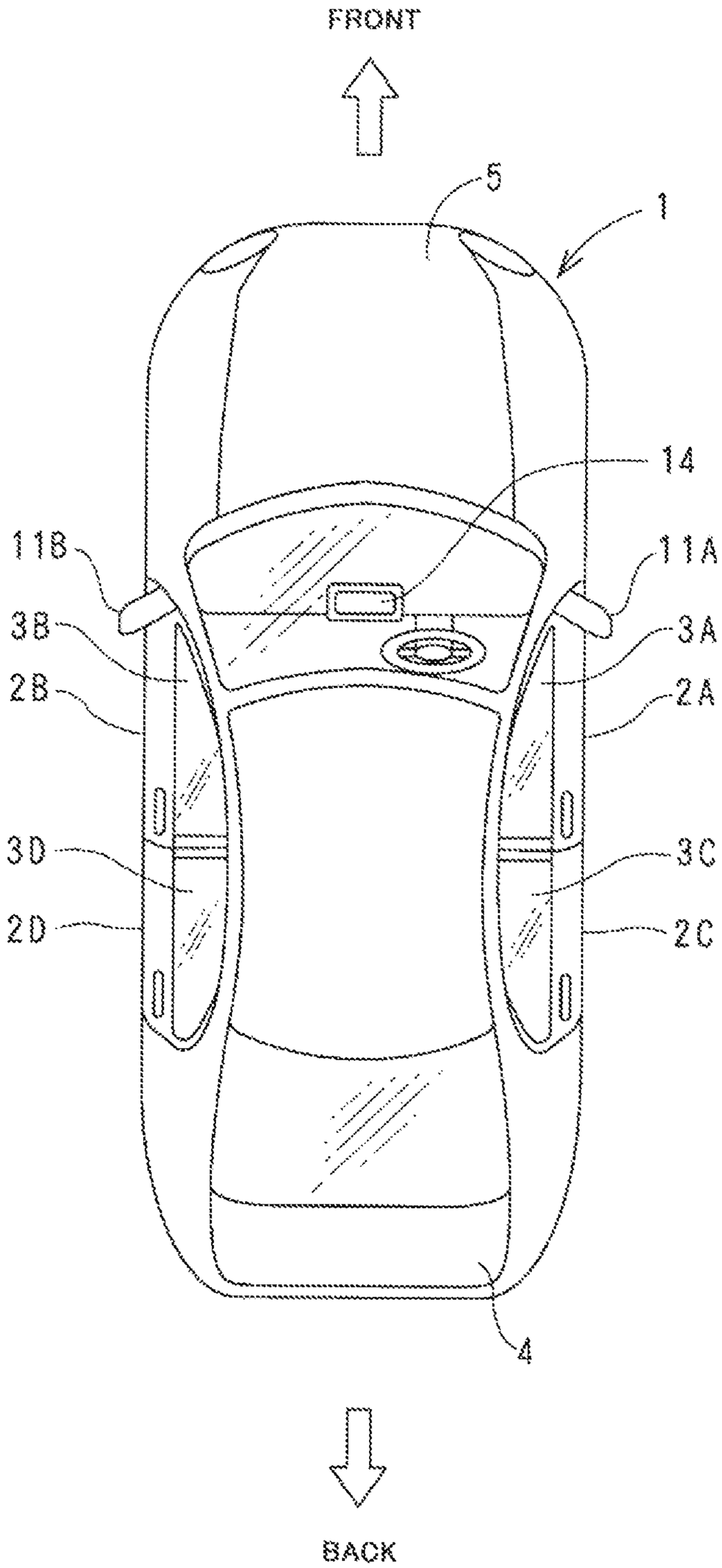


Fig.2

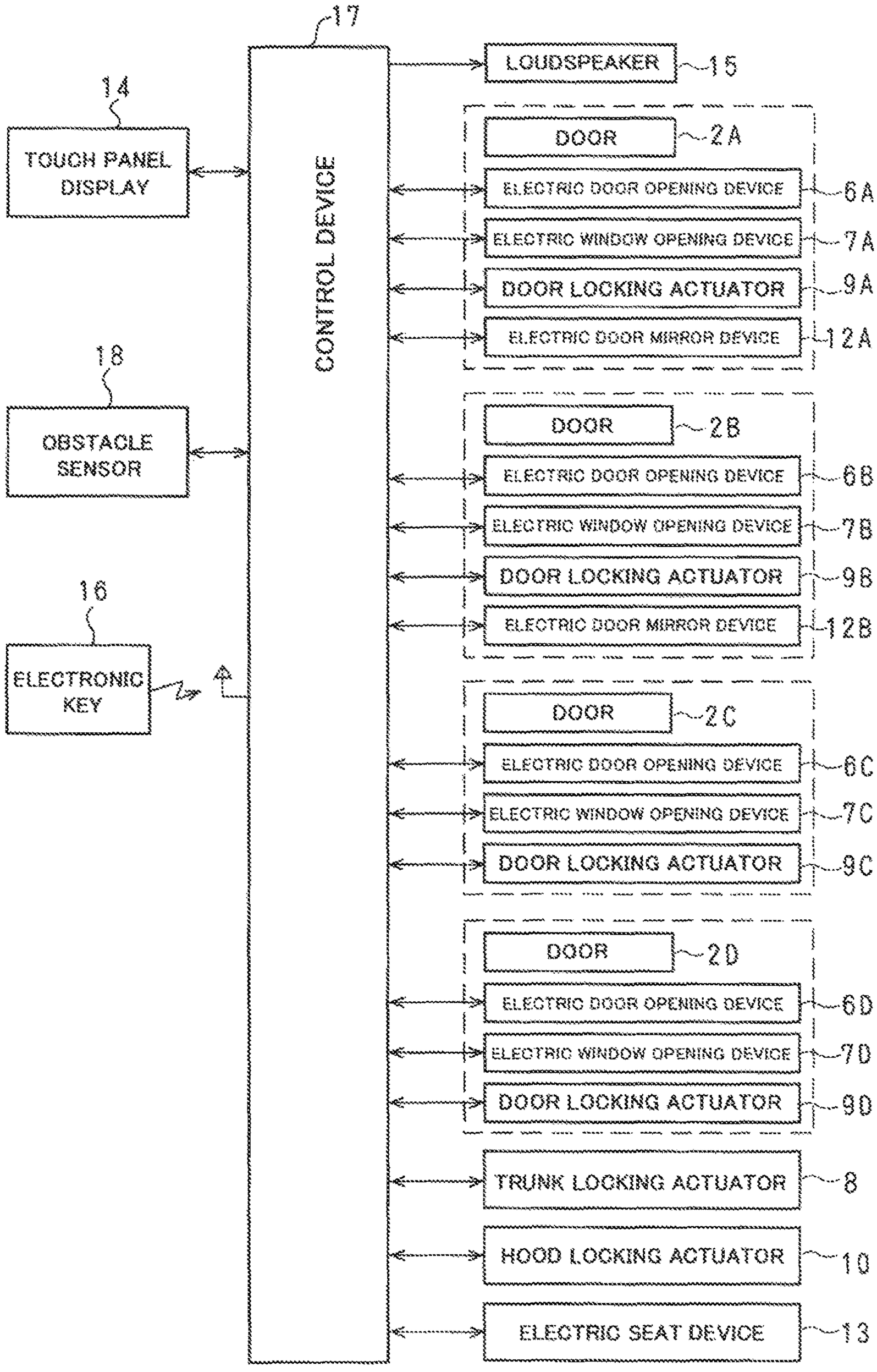

17
CONTROL DEVICE
LOUDSPEAKER
15
14
TOUCH PANEL DISPLAY
DOOR
2A
ELECTRIC DOOR OPENING DEVICE
6A
ELECTRIC WINDOW OPENING DEVICE
7A
DOOR LOCKING ACTUATOR
9A
ELECTRIC DOOR MIRROR DEVICE
12A
18
OBSTACLE SENSOR
DOOR
2B
ELECTRIC DOOR OPENING DEVICE
6B
ELECTRIC WINDOW OPENING DEVICE
7B
DOOR LOCKING ACTUATOR
9B
16
ELECTRONIC KEY
ELECTRIC DOOR MIRROR DEVICE
12B
DOOR
2C
ELECTRIC DOOR OPENING DEVICE
6C
ELECTRIC WINDOW OPENING DEVICE
7C
DOOR LOCKING ACTUATOR
9C
DOOR
2D
ELECTRIC DOOR OPENING DEVICE
6D
ELECTRIC WINDOW OPENING DEVICE
7D
DOOR LOCKING ACTUATOR
9D
TRUNK LOCKING ACTUATOR
8
HOOD LOCKING ACTUATOR
10
ELECTRIC SEAT DEVICE
13

Fig.3

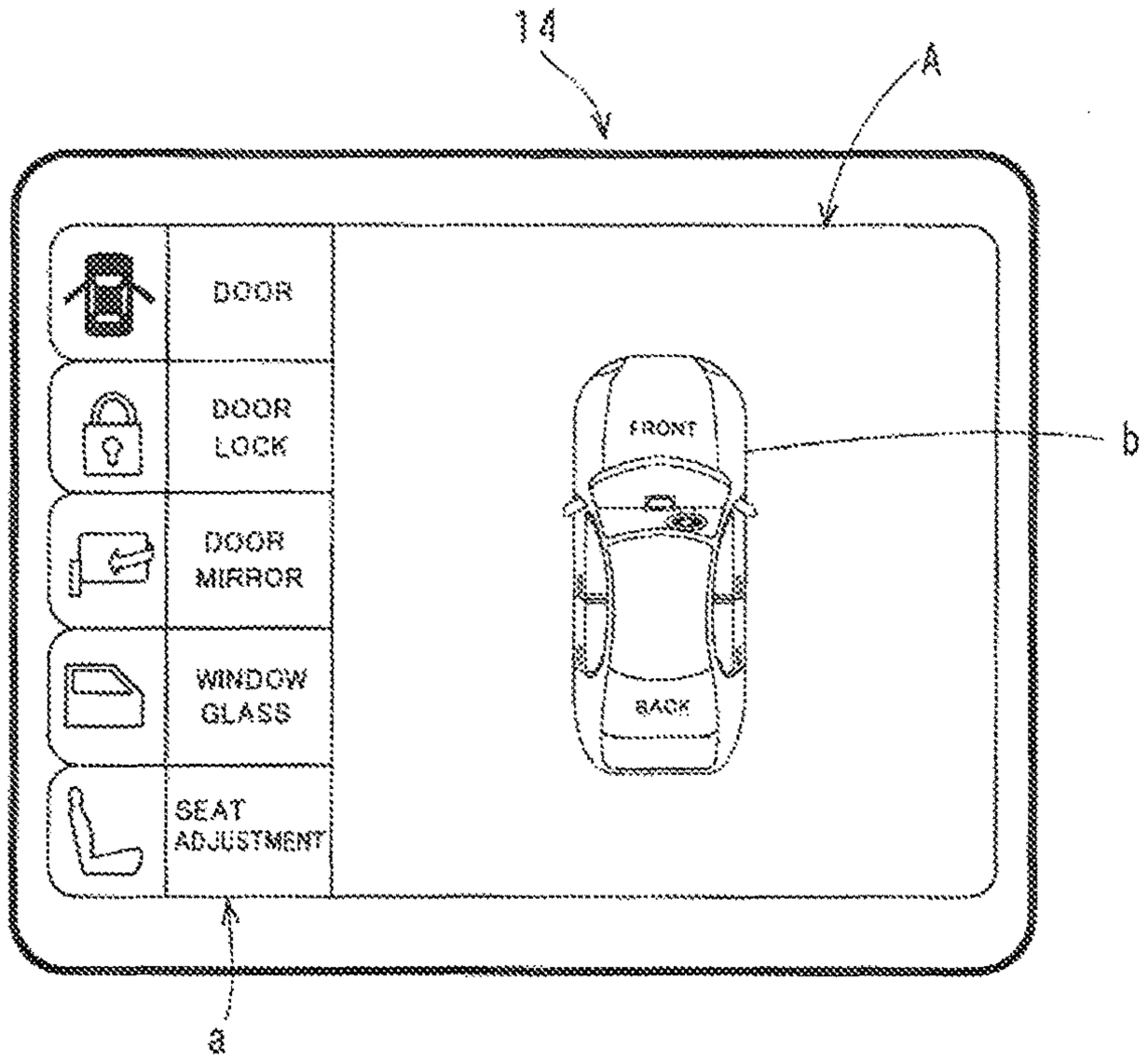

14
A
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
FRONT
BACK
b
a

Fig.4

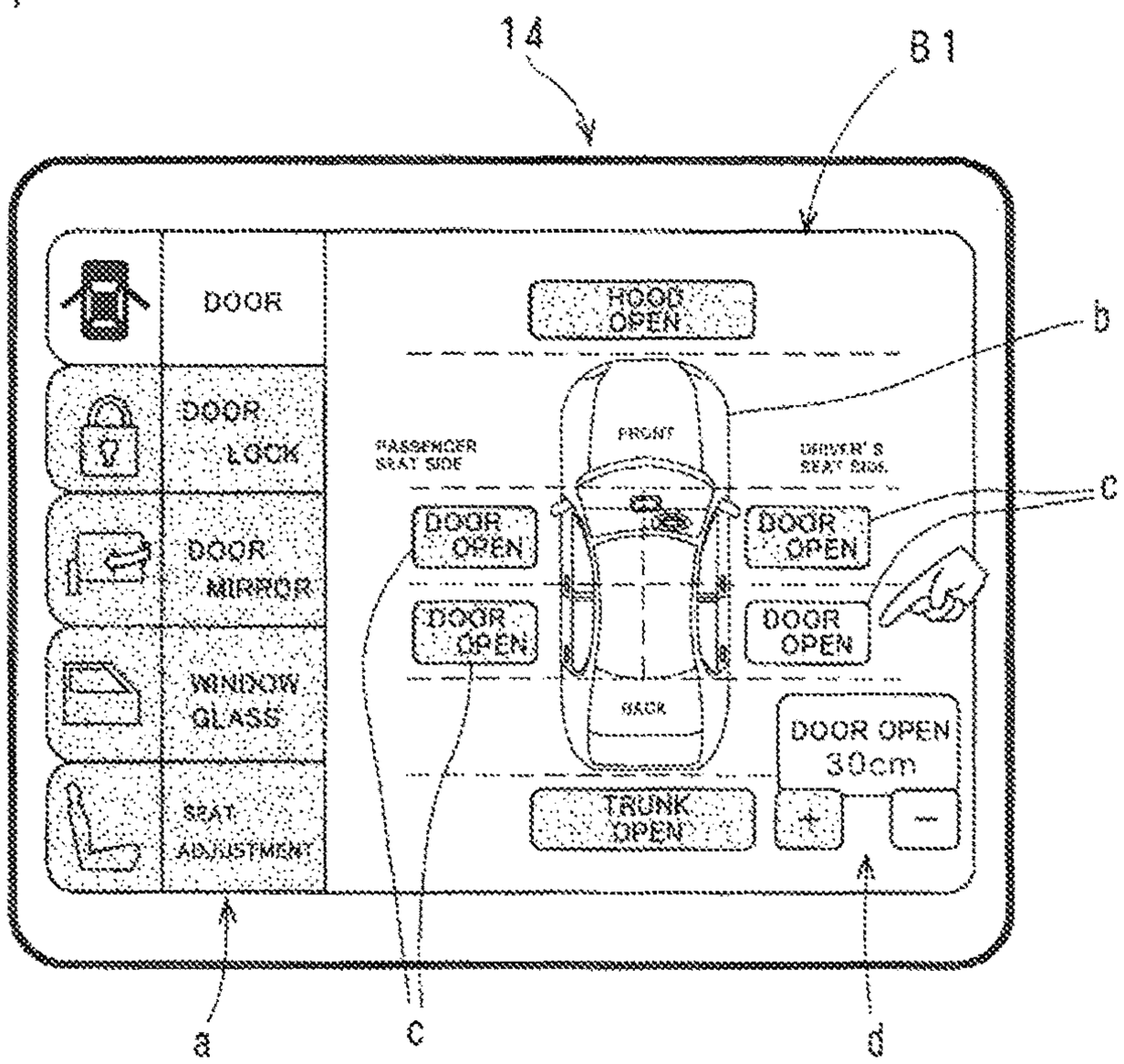

14
B1
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
HOOD OPEN
FRONT
PASSENGER SEAT SIDE
DRIVER'S SEAT SIDE
DOOR OPEN
DOOR OPEN
DOOR OPEN
DOOR OPEN
BACK
DOOR OPEN 30cm
TRUNK OPEN
+
−
b
c
a
c
d

Fig.5

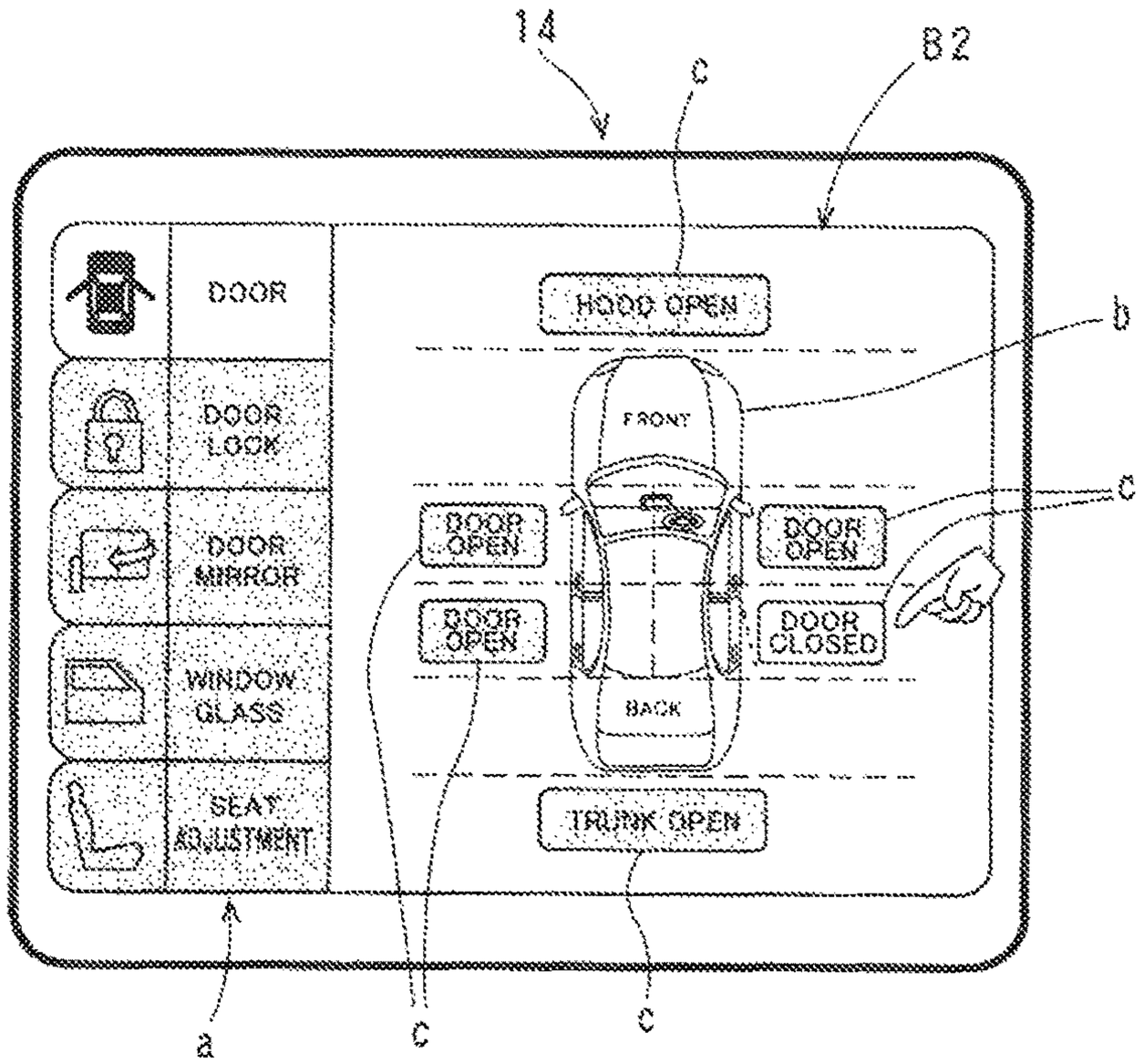

14
B2
C
DOOR
HOOD OPEN
D
DOOR LOCK
FRONT
DOOR MIRROR
C
DOOR OPEN
DOOR OPEN
DOOR OPEN
DOOR CLOSED
WINDOW GLASS
BACK
SEAT ADJUSTMENT
TRUNK OPEN
a
c
c

Fig.6

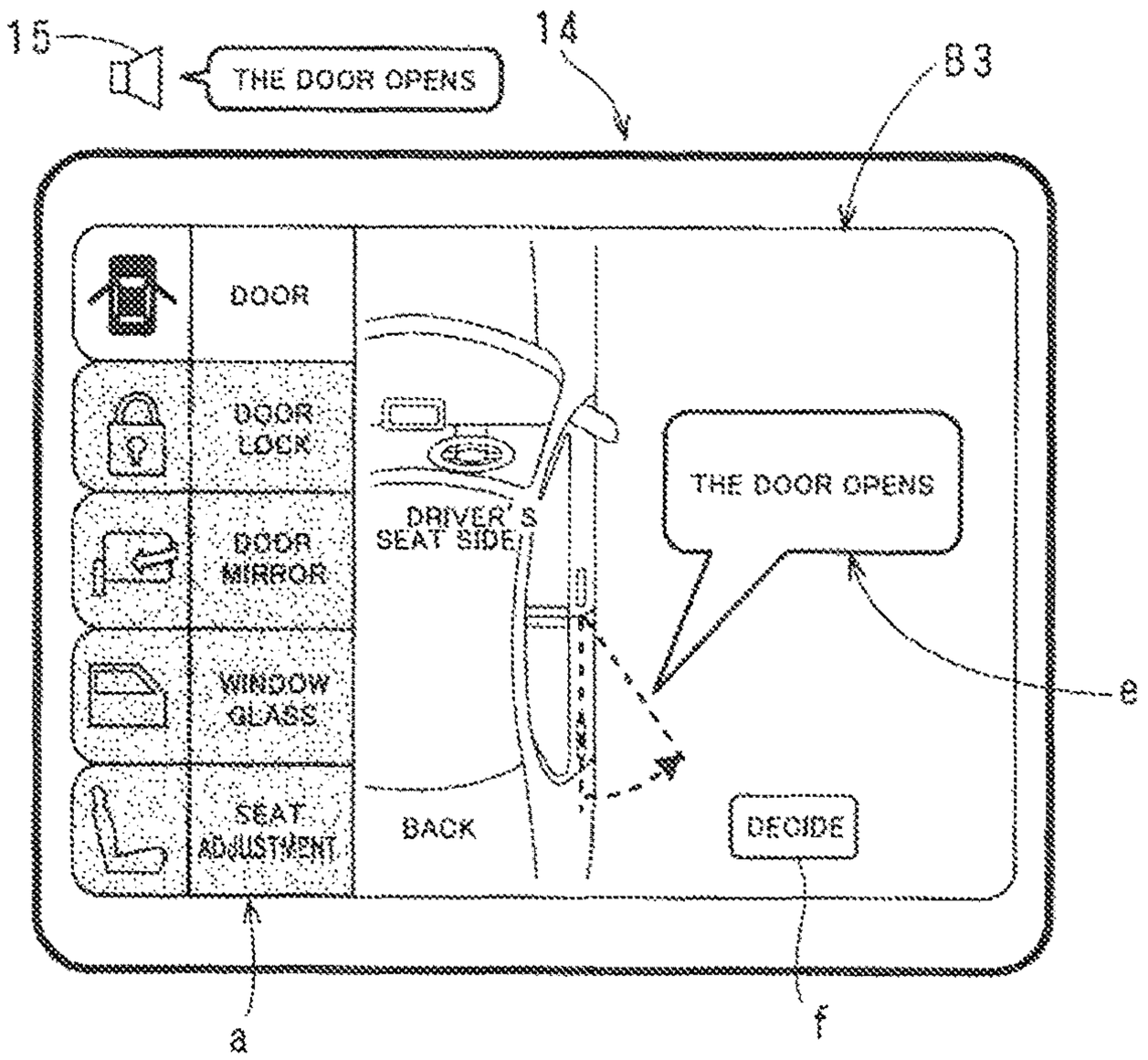

15
THE DOOR OPENS
14
B3
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
DRIVER'S SEAT SIDE
BACK
THE DOOR OPENS
DECIDE
e
a
f

Fig. 7

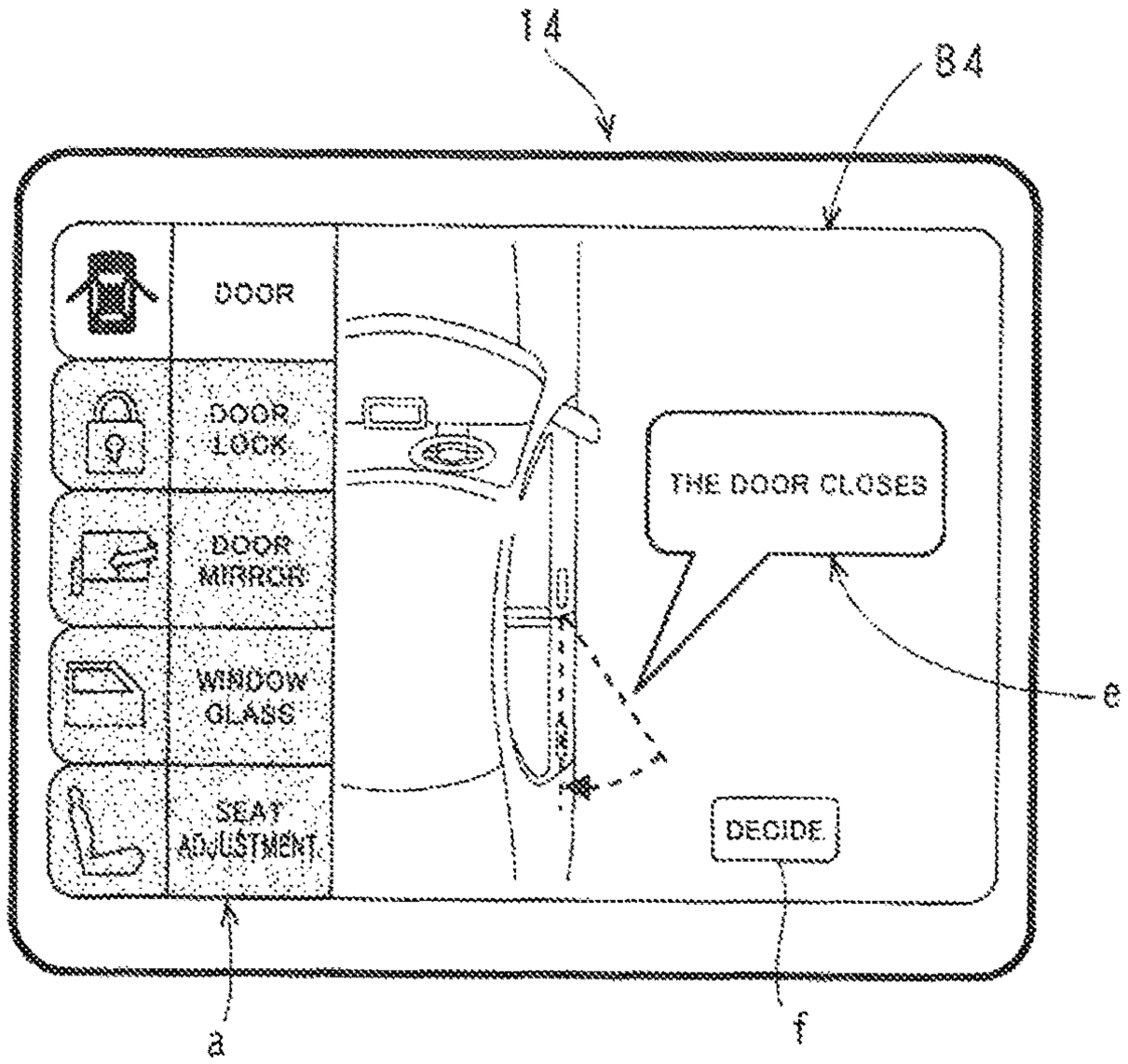

14
84
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
THE DOOR CLOSES
DECIDE
e
a
f

Fig. 8

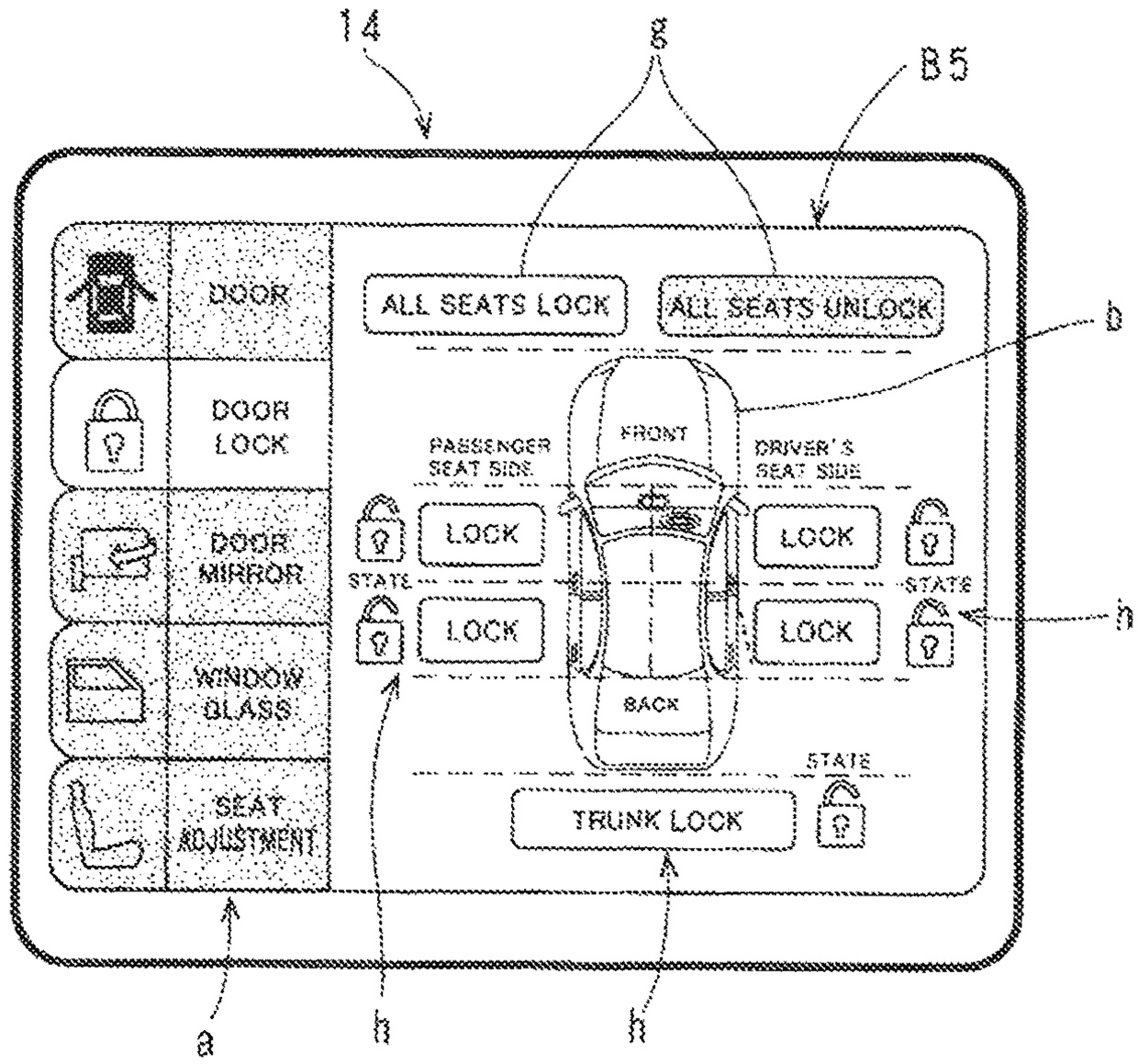

14
g
85
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
ALL SEATS LOCK
ALL SEATS UNLOCK
b
PASSENGER SEAT SIDE
FRONT
DRIVER'S SEAT SIDE
LOCK
STATE
BACK
TRUNK LOCK
h
a
h
h

Fig.9

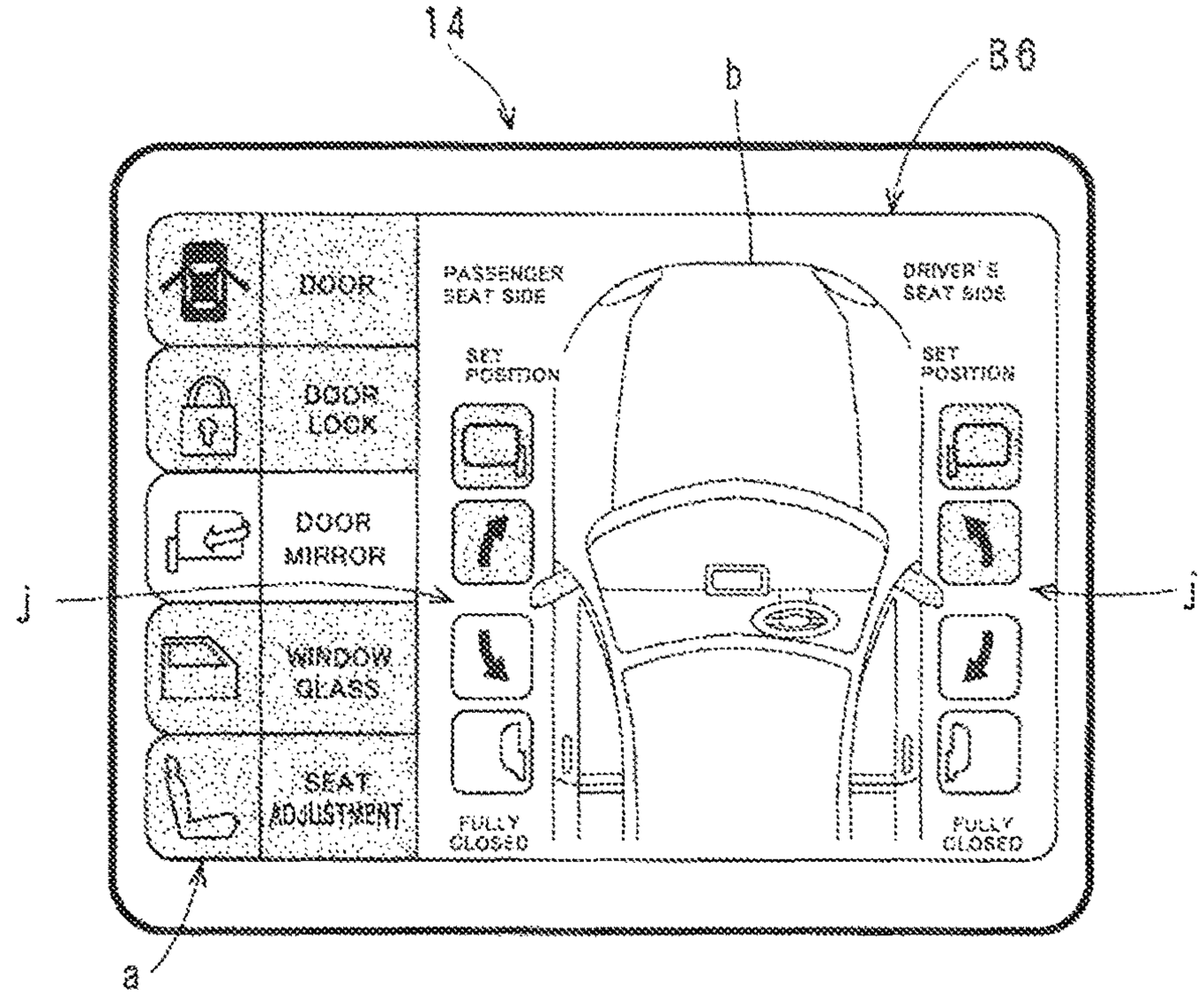

14
b
86
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
PASSENGER SEAT SIDE
DRIVER'S SEAT SIDE
SET POSITION
SET POSITION
FULLY CLOSED
FULLY CLOSED
a

Fig.10

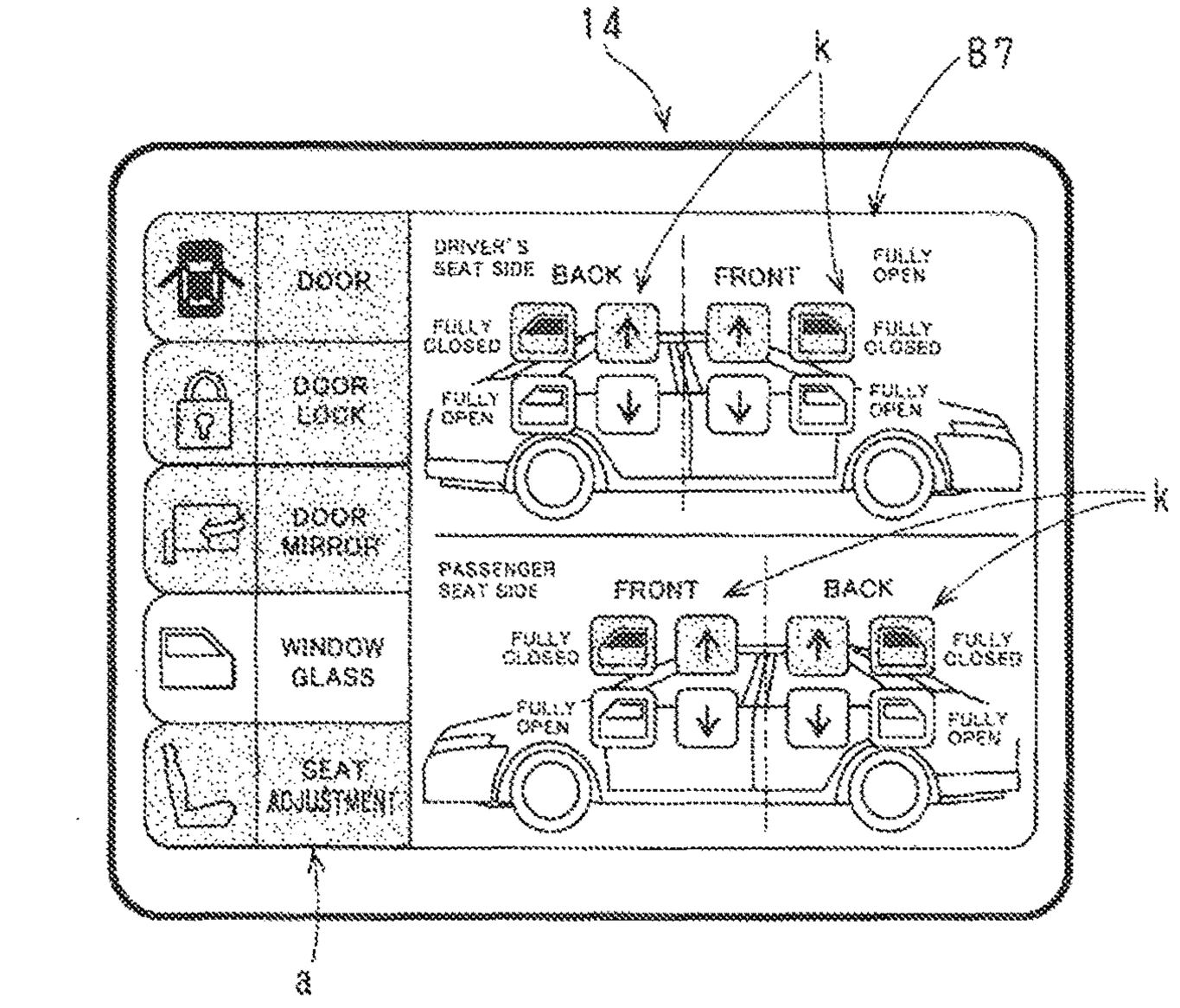

14
K
87
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
DRIVER'S SEAT SIDE
BACK
FRONT
FULLY OPEN
FULLY CLOSED
FULLY OPEN
FULLY CLOSED
FULLY OPEN
PASSENGER SEAT SIDE
FRONT
BACK
FULLY CLOSED
FULLY CLOSED
FULLY OPEN
FULLY OPEN
K
a

Fig.11

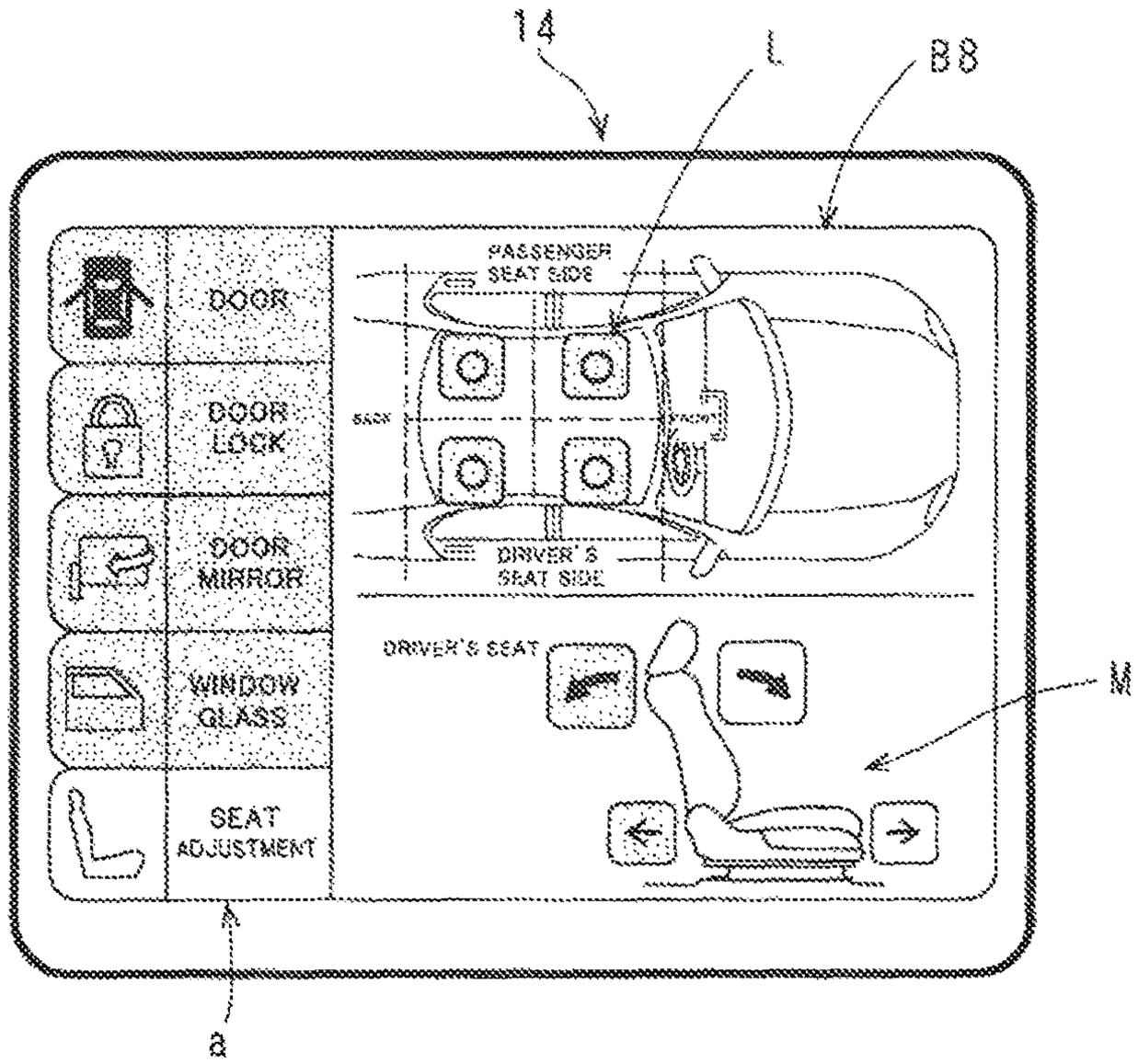
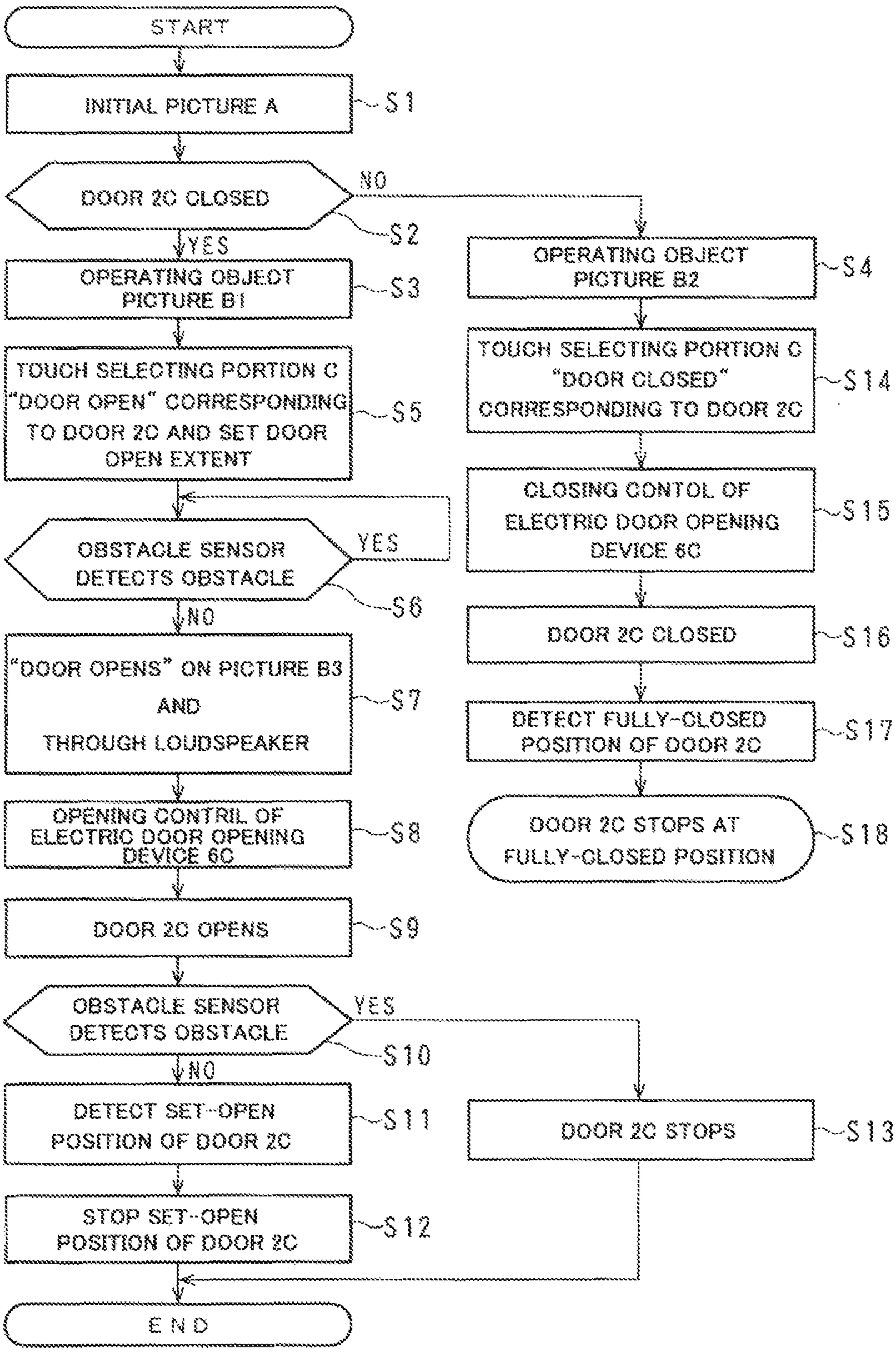

14
L
88
DOOR
DOOR LOCK
DOOR MIRROR
WINDOW GLASS
SEAT ADJUSTMENT
PASSENGER SEAT SIDE
BACK
DRIVER'S SEAT SIDE
DRIVER'S SEAT
SW
12

Fig. 12


START
INITIAL PICTURE A
S1
DOOR 2C CLOSED
NO
S2
YES
OPERATING OBJECT PICTURE B1
S3
TOUCH SELECTING PORTION C "DOOR OPEN" CORRESPONDING TO DOOR 2C AND SET DOOR OPEN EXTENT
S5
OBSTACLE SENSOR DETECTS OBSTACLE
YES
S6
NO
"DOOR OPENS" ON PICTURE B3 AND THROUGH LOUDSPEAKER
S7
OPENING CONTRIL OF ELECTRIC DOOR OPENING DEVICE 6C
S8
DOOR 2C OPENS
S9
OBSTACLE SENSOR DETECTS OBSTACLE
YES
S10
NO
DETECT SET-OPEN POSITION OF DOOR 2C
S11
STOP SET-OPEN POSITION OF DOOR 2C
S12
END
OPERATING OBJECT PICTURE B2
S4
TOUCH SELECTING PORTION C "DOOR CLOSED" CORRESPONDING TO DOOR 2C
S14
CLOSING CONTOL OF ELECTRIC DOOR OPENING DEVICE 6C
S15
DOOR 2C CLOSED
S16
DETECT FULLY-CLOSED POSITION OF DOOR 2C
S17
DOOR 2C STOPS AT FULLY-CLOSED POSITION
S18
DOOR 2C STOPS
S13

VEHICLE DOOR CONTROL SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates to a vehicle door control system with a touch panel display.

Vehicles comprise opening/closing members such as a plurality of doors, a trunk lid and a window glass in each of the doors. In the doors, in order to enhance vehicle accesibility of passengers, it is suggested to provide a vehicle control system for a vehicle door in which an electric door opening device with a power source such as a motor is driven to open and close a selected door electrically.

For example, in a vehicle door control system in JP2016-16813A, a vehicle door image on a touch panel display is selected by touching, and a touched finger slides to open and close a door. An electric door opening device is actuated to open or close the door, so that the door selected by the touch panel display is opened or closed.

In the vehicle door control system in JP2016-16813A, a user who operates the touch panel display is a driver at a driver's seat, and the operated door is a rear door. The operated door is behind the user, and if the touch panel display is operated to open the door without making sure backward, the rear door will be opened unexpectedly, so that a passenger at a rear seat is likely to get uncomfortable.

SUMMARY OF THE INVENTION

In view of the disadvantage, it is an object of the present invention to provide a vehicle door control system by which a door is safely opened by touching a touch panel display.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top plan view of a vehicle in which the present invention is applied.

FIG. **2** is a block diagram of a control circuit.

FIG. **3** is an initial picture A on a touch panel display.

FIG. **4** is an operating object picture B**1** on the touch panel display.

FIG. **5** is an operating object picture B**2** on the touch panel display.

FIG. **6** is an operating object picture B**3** on the touch panel display.

FIG. **7** is an operating object picture B**4** on the touch panel display.

FIG. **8** is an operating object picture B**5** on the touch panel display.

FIG. **9** is an operating object picture B**6** on the touch panel display.

FIG. **10** is an operating object picture B**7** on the touch panel display.

FIG. **11** is an operating object picture B**8** on the touch panel display.

FIG. **12** is a flow chart showing control of an electric door opening device using the touch panel display.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

One embodiment of the present invention will be described with respect to drawings.

In FIG. **1**, a vehicle **1** in this embodiment comprises, as opening members, front doors **2**A, **2**B and rear doors **2**C, **2**D pivotally attached on door hinges (not shown) with vertical shafts at the sides of a vehicle body to open and close;

window glasses **3**A-**3**D that open and close in the doors **2**A-**2**D respectively; a trunk lid **4** that opens and closes a trunk; and a hood **5** that opens and closes an engine compartment.

In FIG. **1**, the vehicle **1** further comprises electric opening devices **8**A-**6**D that open and close the doors **2**A-**2**D electrically; electric window-opening devices **7**A-**7**D that vertically open and close the window glasses **3**A-**3**D electrically, a trunk-locking actuator **8** that enables the trunk lid **4** to open by releasing a trunk lock (not shown) for holding the trunk lid **4** closed; door locking actuators **9**A-**9**D that turns on/off a door Sock (not shown) for holding the doors **2**A-**2**D closed, to an unlock state or a lock state; a hood locking actuator **10** that enables the hood **5** to open by releasing a hood lock (not shown) that holds the hood **5** closed; electric door mirror devices **12**A, **12**B that switch door mirrors **11**A, **11**B (in FIG. **1**) attached to the doors **2**A, **2**B, to an upright state in use or a folded state in storage; and an electric seat device **13** that changes a position of an interior seat (not shown) electrically.

An interior instrument panel comprises a touch-panel display **14** that enables touch operation on a screen such as a liquid-crystal display; and a loudspeaker **15** that can tell you of information on the touch-panel display **14** phonetically. On the vehicle body, there is installed a control device **17** that controls the electric devices and the loudspeaker **15** with a portable electronic key **16** and various switches. The touch panel display **14** is used as display and input means for a navigation device (not shown) installed in the vehicle **1** and input means for images like the opening members and for the electric devices.

In the electric, devices for the opening members, such as the electric opening devices **6**A-**8**D, electric window opening devices **7**A-**7**D and electric seat device **13**, a rotation angle sensor (not shown) or a rotary encoder for detecting a rotation angle of a rotating part are installed. A fully-closing detecting sensor (not shown) that detects each of the opening members fully closed is disposed in the opening members such as the doors **2**A-**2**D, trunk lid **4** and hood **5** on the vehicle body opposite the doors.

Obstacle sensors **18** are attached on the doors **2**A-**2**D or on the side of the vehicle body. The obstacle sensor **18** is, for example, a noncontact sensor, an infrared laser sensor that enables a distance to be measured, a motion sensor that detects a motion or an image sensor that recognizes with an image so as to detect an obstacle that prevents each of the doors **2**A-**2**D from opening when each of the doors **2**A-**2**D opens.

The control device **17** comprises microcontrollers, and into input ports thereof, signals that include wireless signals transmitted from the touch panel display **14**, electronic key **16**, obstacle sensor **14**, angular sensors in the electric devices and fully-closing sensor are fed. To output ports, the electric devices such as the electric door openings devices **6**A-**6**D, electric window opening devices **7**A-**7**D, trunk-locking actuator **8**, door-locking actuators **9**A-**9**D, hood-locking actuator **10**, electric door mirror devices **12**A, **12**D and electric seat device **13**, and the loudspeaker **15** are electrically connected respectively. Thus, the control device **17** controls the electric devices and the loudspeaker **15** according to each signal supplied when the touch panel display **14** is touched, which will be described In detail later.

When an ID signal is authenticated through a wireless communication with the electronic key **18**, the control device **17** receives a locking/unlocking signal from the electronic key **18** and controls locking/unlocking of the door

locking actuators **9**A-**9**D, which do not directly relate to the present invention and is not described in detail.

The touch panel display **14** can be switched from a map information of the navigation device to an electric device operation picture used as operating means for operating the electric device and vice versa, and by touching the display screen, a coordinate signal corresponding to a touched position is transmitted to the control device **17**.

As an electric device operating picture displayed on the touch panel display **14**, there are an initial picture A in FIG. **3** selecting an object to be operated and operating object pictures B**1**-B**8** displaying the object selected on the initial picture A.

The initial picture A in FIG. **3** is touched at a predetermined position on the screen when the map information of the navigation device is displayed on the touch panel display **14** and changed from the map information picture, and the operating objects that comprise "DOOR", "DOOR LOCK", "DOOR MIRROR", "WINDOW GLASS" and "SEAT ADJUSTMENT" are displayed on a left-side display area in words and design to form an operating object selecting area "a", and an image "b" like the vehicle is displayed on a right-side display area.

The operation object picture B**1** in FIG. **4** is displayed when an operating object "DOOR" is touched in the operating object selecting area "a" of the initial picture "A" in the closed doors **2**A-**2**D, trunk and hood. Displayed parts for "DOOR LOCK", "DOOR MIRROR", "WINDOW GLASS" and "SEAT ADJUSTMENT" in the operating object display area except "DOOR" get dark, and it can be made sure that the operating object for "DOOR" is selected.

A right-side displayed area of the operating object picture B**1**, besides the image "b", displays a displayed area "c" for "DOOR OPEN", "HOOD OPEN" and "TRUNK OPEN" on the doors **2**A-**2**D, trunk lid **4** and hood **5** and an open adjusting area "d" for determining an opening of the door. In order to open any one of the doors **2**A-**2**D, the displayed area "c" for "DOOR OPEN" for any one of the doors **2**A-**2**D is touched; in order to open the trunk lid **4**, the displayed area "c" for "TRUNK OPEN" for the trunk lid **4** is touched; and in order to open the hood **5**, the displayed area "c" for "HOOD OPEN" for the hood **5** is touched.

In order to open any one of the doors **2**A-**2**D In the operating object picture B**1**, a door open extent is determined with an opening adjusting area "d" displayed in the right display area before the displayed area "c" for "DOOR OPEN" on the door is touched. The door open extent is adjusted by touching and of the opening adjusting area "d" and changing a numerical value of the door open extent. By touching the displayed area "c" for "TRUNK OPEN", the trunk lid **4** can foe opened by controlling the trunk-lacking actuator **8**. By touching the displayed area "c" for "HOOD OPEN", the hood **5** can be opened by controlling the hood-locking actuator **10**.

The operating object picture B**1** in FIG. **4** shows that the display area "c" for "DOOR OPEN" on the door **2**C was touched.

The operating object picture B**2** in FIG. **5** shows that the operating object "DOOR" is touched on the operating object selecting area "a" in the initial picture when the door **2**C of the doors **2**A-**2**D is open, and as well as the operating object picture B**1**, the displayed portions "DOOR LOCK", "DOOR MIRROR", "WINDOW GLASS" and "SEAT ADJUSTMENT" of the operating object selecting area "a" except "DOOR" get dark.

On a right displayed area of the operating object picture B**2**, besides the image "b", the displayed parts "c" corresponding to the doors **2**A-**2**D are displayed to show "DOOR OPEN" when the opening member is closed, and "DOOR CLOSED" when it is open.

FIG. **5** shows that the doors **2**A, **2**B, **2**D are closed when the door **2**C is open, in which the displayed part "c" on the door **2**C shows "DOOR CLOSED", and the displayed parts "c" on the doors **2**A, **2**B, **2**C show "DOOR OPEN". When the displayed part for "DOOR CLOSED" is touched, the door **2**C is closed, and the open extent adjustment part "d" is not shown.

An operating object picture B**3** in FIG. **6** is shown when the displayed part "c" on the door **2**C in the operating object picture B**1** is touched. At the right side of the operating object selecting area "a", an image like the selected door **2**C is enlarged, and there are shown a notifying part "e" that informs you of a moving direction of the door **2**C in words such as "The door opens" and a decision part "f" for determining a selected operation. When the decision part "f" is touched, a coordinate signal corresponding to a touched position is transmitted to the control device **17**. The control device **17** starts opening control of the electric door opening device **6***c* for the door **2**C based on a signal transmitted from the touch panel display **14** or a coordinate signal when the decision part "f" is touched.

An operating object picture B**4** in FIG. **7** is shown when the part "c" for the door **2**C is selected on the operating object picture B**2**, an image like the selected door **2**C is enlarged on a right side of the operating object selecting area "a", and the notifying part "e" shows word information such as "The door closes" showing a moving direction of the door **2**C. The decision part "f" is touched, and the control device **17** starts closing control of the electric door opening device **6**C for the door **2**C.

An operating object picture B**5** in FIG. **8** is shown when the operating object "DOOR LOCK" of the operating object selecting area "a" is touched in the initial picture "A", and the displayed parts "DOOR", "DOOR MIRROR", "WINDOW GLASS" and "SEAT ADJUSTMENT" except "DOOR LOCK" on the operating object selecting area "a" get dark. Hence, it can be made sure that the operating object of the touch panel display **14** is "DOOR LOCK".

A right-side displayed area of an operating object picture B**5** shows a selecting part "g" for selecting whether the door lock device carries out locking or unlocking and a state-showing portion "h" that suggests a state of each of the doors **2**A-**2**D and trunk lid **4**.

"All seat lock" or "all seat unlock" in a selection area "g" on the operating object picture B**5** is touched, and a coordinate signal on the picture is transmitted to the control device **17**. The control device **17** controls the door lock actuators **9**A-**9**D based on a signal transmitted from the touch panel display **14** so that the door lock devices in the doors **2**A-**2**D may be switched to a lock state or an unlock state.

On a state displaying area "h", a word information "UNLOCK" appears in a locked state, and a word information "LOCK" appears in an unlock state.

An operating object picture B**6** in FIG. **9** displays that "DOOR MIRROR" is touched on the operating object selecting area "a" in the initial picture A. "DOOR", "DOOR LOCK", "WINDOW GLASS" and "SEAT ADJUSTMENT" except "DOOR MIRROR" on the operating object selecting area "a" get dark, thereby making sure that an operating object of the touch panel display **14** is "DOOR MIRROR".

On a right-side display area in the operating object picture B**6**, besides the image "b" like the vehicle, a selecting area

"j" for operating a standing and folding motion and an angle adjustment of the door mirrors **11**A, **11**B of a mirror part is displayed. In the picture, in order to fold or stand the door mirrors **11**A and **11**B, parts for folding or standing are touched in the selection area "j". A bottom design part and a top design part are touched for folding and standing respectively. In order to adjust art angle of the mirrors, arrow parts in second and third stages are touched, and a coordinate signal in the picture is transmitted to the control device **17**. The control device **17** controls the electric mirror devices **12**A, **12**B in a folding or standing direction or adjusts the angle of the mirror part based on a signal transmitted from the touch panel display **14**.

An operating object picture B**7** in FIG. **10** is displayed by touching "WINDOW GLASS" on the operation object selection area "a" in the initial picture. "DOOR", "DOOR LOCK", "DOOR MIRROR" and "SEAT ADJUSTMENT" except "WINDOW GLASS" get dark, and it can be made sure that the operating object of the touch panel display is "WINDOW GLASS".

Besides the side views of the vehicle, a right-side display area shows selecting parts on the window glasses **3**A-**3**D for selecting an operating direction.

In order to open the window glass **3**A fully on the operating object picture B**7**, a design display part that suggests fully-open on the window glass **3**A is touched on the selection area "k". In order to close the window glass **3**A fully, a design display part for closing it fully is touched. In order to move it to open, a selecting part "↓" is touched. In order to move it to close, a part "↑" is touched. A coordinate signal in the picture is transmitted to the control device **17**. The control device **17** controls the electric opening device **7**A for the window glass **3**A for opening and closing based on the signal from the touch panel display **14**. In order to open or close any one of the window glasses **3**B-**3**D except the window glass **3**A, a part "k" for each of the window glasses **3**B-**3**D is touched.

An operating object picture B**8** in FIG. **11** is displayed when "SEAT ADJUSTMENT" on the operating object selection area in the initial picture A is touched. "DOOR", "DOOR LOCK", "DOOR MIRROR" and "WINDOW GLASS" except "SEAT ADJUSTING" in the operating object selection area "a" get dark. Hence, it can be made sure that the operating object for the touch panel display **14** is "SEAT ADJUSTMENT".

A right-side display region shows a selection area L that suggests front and rear seats besides an image like a part of the vehicle and a selection area M that suggests a direction of adjustment like the seat.

In order to adjust a driver's seat m the operating object picture B**8**, the seat is touched on the selection area L and an adjusting direction is touched on the selection area M. A coordinate signal on the screen is transmitted to the control device **17**. The control device **17** controls the electric seat device **13** so as to adjust the selected seat based on the signal transmitted from the touch panel display **14**.

Then, procedures for operating the object using the touch panel display **14** in this embodiment will be described with a flow chart in FIG. **12**.

The following description in FIG. **12** relates to the door **2**C as the operating object, and can also be understood with respect to another door instead of the door **2**C.

On the touch panel display **14** in which a map information of the navigation device is displayed, a certain display portion is touched, and the initial picture A in FIG. **3** is displayed on the touch panel display **14** as STEP S**1**.

"DOOR" is selected on the operating object selection area "a" in the initial picture A. With judgment in STEP S**2**, if it is determined that the door **2**C is closed, it goes to STEP S**3**, and the operation object picture B**1** in FIG. **4** is shown on the touch panel display **14**. On the operating object picture B**1**, the area c for the door **2**C shows that "DOOR OPEN", and "DOOR LOCK", "DOOR MIRROR", "WINDOW GLASS" and "SEAT ADJUSTMENT" except "DOOR" get dark on the operating object selecting area "a".

Then, the open extent adjusting portion "d" shown in the right-side operating object picture B**1** is touched to adjust an open extent of the door, and then, the selection portion "c" for "DOOR OPEN" for the right-side door **2**C of the plurality of selection portions "c" for "DOOR OPEN" is touched and determined in STEP S**5**.

If it is determined that the door **2**C can be opened safely, by the judgment at a next step S**8** or if the obstacle sensor **18** does not detect an obstacle in parking at ON of a parking range or at vehicle speed of less than 3 km/h, it goes to an operating object screen B**3** In FIG. **6** and displays "DOOR OPENS" at a reporting part "e" of the touch panel display **14** to inform the user of alphabetic information that the door **2**C opens.

Simultaneously with report of the alphabetic information displayed on the touch panel display, the control device **17** performs voice report control by which if is created through a voice that "RIGHT REAR DOOR OPENS" and informs a rear-seat passenger through the voice that the door **2**C opens.

If the control device **17** determines that that the door **2**C cannot securely be opened at the judgment process in the step S**8** or if the obstacle sensor **18** detects an obstacle that the door **2**C cannot be opened to make it impossible to get in or out of the vehicle or to make the vehicle run at speed over a predetermined speed, the report part "e" of the touch panel display **14** displays a message such as "THERE ARE AN OBSTACLE" or "STILL RUNNING" to inform one alphabetically that the door **2**C cannot be opened and to make it impossible to open the door **2**C owing to the electric door opening device **6**C.

At the reporting process of the step S**7**, the user touches a determining portion f of the operating object screen B**3** after one confirms safety, and a coordinate signal on the touched position or a door-opening signal is transmitted to the control device **17**. The control device **17** drives and controls a releasing actuator (not shown) of the door **2**C based on the door-opening signal from the touch panel display **14** and releases the door lock device of the door **2**C, and then starts opening control for driving the electric door opening device **6**C for the door **2**C at a rotating amount corresponding a door-opening extent determined at an opening-extent adjusting portion "d" at the step S**8**.

The door **2**C is opened at the step S**9** by the electric door opening device **6**C, and a pulse signal corresponding to an opening extent of the door **2**C is transmitted to the control device **17** from an angular sensor of the electric door opening device **6**C, Before the door **2**C starts opening, the voice is formerly given from a loudspeaker **15** at the step S**7** that the door **2**C is opened, so that the door **2**C can safely be opened without discomfort to the rear-seat passenger.

The control device **17** performs arithmetic calculation on the basis of the pulse signal transmitted from the angular sensor to find a moving direction and an opening position of the door **2**C, so that image data for the opening position is transmitted to the touch panel display **14**. Based on image data from the control device, the touch panel display **14** displays an animation on the operating object screen B**3** as

if a door image like the door **2**C opens. Hence, the user can make sure on the touch panel display **14** that the door **2**C opens.

If the obstacle sensor **18** does not detect an obstacle during opening of the door **2**C in judgment of the step S**10**, the control device **17** compares a present door position calculated based on a pulse signal from the angular sensor with a predetermined open extent, and keeps door opening control if the present door position does not reach the predetermined open extent. The control device **17** stops the electric door opening device **6***c* if it is determined that the door reaches a predetermined open position at the step S**11**. Hence, the door **2**C stops at the predetermined open position of the step S**12**.

If the obstacle sensor **18** detects an obstacle during judgment at the step S**10**, the electric door opening device **6**C is controlled even before the door **2**C reaches the predetermined open position, so that the door **2**C is stopped just before the predetermined open position at the step S**13**.

If it is judged that the door **2**C is open during the foregoing judgment in the step S**2**, it goes, to the step S**4** in which an operating object picture B**2** in FIG. **5** appears on the touch panel display **14**. "DOOR CLOSED" appears on the word display "c" corresponding to the door **2**C in the operating object picture B**2**.

"DOOR CLOSED" at a selecting portion "c" corresponding to the right rear door **2**C on the operating object picture B**2** is touched at the step **814**, and a coordinate signal or a door closing signal for the operating object picture B**3** is transmitted to the control device **17**. The control device **17** receives the door closing signal from the touch panel display **14** and carries out closing control of the electric door opening device **6**C corresponding to the door **2**C at the step S**15**. Hence, the door **2**C starts closing at the step S**16**, and a pulse signal with the number for an open extent of the door **2**C is supplied from the angular sensor of the electric opening device **6**C.

The control device **17** performs arithmetic calculation based on the information of the pulse signal transmitted from the angular sensor and calculates a moving direction and a door position of the door **2**C to transmit image data corresponding to the door position to the touch panel display **14**. Anytime, based on pictorial data from the control device **17**, the touch panel display **14** displays an animation as if a door image like the door **2**C is closed on the operating object picture B**4**. Hence, the user can make sure on the touch panel display **14** that the door **2**C closes.

If the fully-closing switch defects that the door **2**C is fully closed at the step S**17**, the control device **17** carries out stop control of the electric door opening device **6***c*. Thus, the door **2**C stops at the fully-closed position at the step S**18**.

One embodiment of the present Invention is described as above, and without departing from claims, various modifications and changes may be made as below:

(a) The doors **2**A-**2**D are sliding doors instead of the swinging doors.

(b) The touch panel display **14** is used only for the electric device.

(c) The touch panel display **14** is easily transportable.

What is claimed is:

1. A vehicle door control system comprising:

multiple doors including front doors and rear doors each of which is supported to a vehicle body;

multiple electric door opening devices each of which opens and closes each of the multiple doors electrically;

a touch panel display that can display an image that suggests the multiple doors for selecting one of the doors;

a loudspeaker for creating voice corresponding to information displayed on the touch panel display;

multiple obstacle sensors provided corresponding to each of the multiple doors, each of which can detect an obstacle that prevents the door from opening;

a control device that controls the electric door opening devices and the loudspeaker,

wherein the touch panel display displays an image including an open adjusting area that adjusts an open extent of a selected door by touching,

wherein before the control device performs a door opening control through which the selected door is opened by the electric door opening device by touching the image displayed on the touch panel display, the touch panel display displays a word information that suggests that the selected door opens before the control device performs the door opening control, and the control device performs voice notification control by which it is reported through the voice from the loudspeaker that the selected door opens, and

wherein, if an obstacle sensor does not detect the obstacle after performing the voice notification control, the door opening control for opening the selected door is continued, and when the set open extent of the door is reached, the door opening operation for the selected door is stopped.

2. The vehicle door control system of claim **1**, wherein the control device stops control of the electric door opening device even before the selected door reaches the open extent if the obstacle sensor detects the obstacle.

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