

Patent Right	Date	July 6, 2022	Court	Intellectual Property High Court, Second Division
	Case number	2020 (Ne) 10042		
- A case concerning a demand of payment for damages based on the patent right for an invention titled "Vehicle guidance system," in which the court found an infringement by the First-instance Defendant and calculated the amount of damages pursuant to Article 102, paragraph (3) of the Patent Act.				

Case type: Appeal case of seeking injunction against patent infringement

Results: Modification of the prior instance judgment, part of the claims granted

References: Article 29, paragraph (2) and Article 102, paragraph (3) of the Patent Act

Related rights, etc.: Patent No. 5769141, Patent No. 6159845

Judgment in prior instance: Tokyo District Court, 2019 (Wa) 7178, rendered on June 11, 2020

Summary of the Judgment

1. In this case, the First-instance Plaintiff, who is a patentee [related to/for] two patents (hereinafter referred to as the "Patents") for an invention titled "Vehicle guidance system," alleged that the First-instance Defendant's systems (smart interchange (hereinafter referred to as the "smart IC") exclusively for ETC vehicles that are installed at Sano Service Area on the Tohoku Expressway, which is an expressway) used by the First-instance Defendant infringe the patent right in question (hereinafter referred to as the "Patent Right"), and the First-instance Plaintiff demanded that the First-instance Defendant pay compensation for damages based on the tort. The judgment in prior instance determined that the First-instance Defendant's systems did not belong to the technical scope of the Patents, and dismissed all the claims of the First-instance Plaintiff. Accordingly, the First-instance Plaintiff filed an appeal.

2. In this judgment, as mentioned below, the court determined that the First-instance Defendant's systems belong to the technical scope of the patented inventions in question and that there are no grounds for invalidation for the patented inventions in question, and then, calculated the amount of damages pursuant to Article 102, paragraph (3) of the Patent Act and granted all claims of the First-instance Plaintiff in the prior instance and partially granted the claims that were expanded in the appeal court.

(1) Sufficiency

In the claims of the inventions in question (hereinafter referred to as the "Inventions"), concerning the "first detection means," there are the following statements

only: it detects a vehicle that enters or exits a toll gate, service area, or parking area on a toll road; the "first bar" is installed by corresponding to the "first detection means"; and if the entry of a vehicle is detected by the "first detection means," it lowers the first bar after the vehicle passes through it. Other than the above, there is no statement to identify the positional relationship where the "first bar," "first detection means," and "communication means" are installed. Therefore, whether the constituent features are fulfilled is not determined by the positional relationship where each piece is installed.

In the description in question (hereinafter referred to as the "Description"), an example with a structure where a communication means (antenna 3 in front of the gate) is placed beyond the first bar (bar 1) and the first detection means (vehicle sensor 2a) is indicated; however, it is only an embodiment and there is no grounds to construe the Inventions by only limiting to the aforementioned structure.

(2) Invalidation theory

Looking at Difference 1 (Exhibit Otsu 35 Invention [prior art] has no bars that are equivalent to the first bar installed by corresponding to the first detection means in the Inventions), in Exhibit Otsu 35 Invention, vehicle dividers 11 and 12 are equivalent to "the first detection means" in the Inventions. There are no statements or suggestions in Exhibit Otsu 35 that any bar corresponding to vehicle dividers 11 and 12 is installed in addition to bar 17. There are no suggestions related to difference 1 in the secondary prior art either, and therefore, it is not easily conceived of by a person skilled in the art.

In addition, a breach of the clarity requirements and other grounds for invalidation were not found.

(3) Damages

When using an expressway, a vehicle passes an interchange twice as a gate, and therefore, half of the fixed amount (terminal charge) that is charged per use and the toll based on the distance from Sano SA Smart IC, where the First-instance Defendant's systems are installed, to the next interchange fall under sales related to the use of the First-instance Defendant's systems. In light of the fact that the First-instance Defendant earns profits, such as cost reduction, by installing said smart IC, while the number of user vehicles did not increase significantly; the First-instance Plaintiff did not work the Patents by itself and there is no possibility to work them in the future either; and the First-instance Defendant continues working the Patents even after receiving a warning from the First-instance Plaintiff, and other facts, the royalty rate of the Patents should be 2%

Judgment rendered on July 6, 2022

2020 (Ne) 10042, Case of appeal for seeking compensation

(Court of prior instance: Tokyo District Court, 2019 (Wa) 7178)

Date of conclusion of oral argument: April 20, 2022

Judgment

Appellant: Yugen Kaisha PXZ

Appellee: East Nippon Expressway Company Limited

Main text

1. The judgment in prior instance shall be rescinded.
2. The Appellee shall pay to the Appellant 26,930,317 yen and the amount accrued on the portion of 10,000,000 yen at the rate of 5% per annum for the period from April 2, 2019 until the completion of the payment and the amount accrued on the portion of 16,930,317 yen at the rate of 3% per annum for the period from November 12, 2021 until the completion of the payment.
3. The Appellant's other expanded claims in this instance shall be dismissed.
4. Court costs in the first and second instances shall be divided into five and the Appellant shall bear four-fifths of the costs and the Appellee shall bear the rest.
5. This judgment may be executed provisionally only for paragraph 2.

Facts and reasons

Abbreviations of terms as used herein and the meaning of the abbreviations shall be subject to the judgment in prior instance unless they are assigned or defined in this judgment and the term "Plaintiff" as used in the judgment in prior instance shall be deemed to be replaced with "Appellant" and the term "Defendant" shall be deemed to be replaced with "Appellee" as necessary. In addition, the term "Attachment" in the cited part in the judgment in prior instance are all altered to "Attachment to the judgment in prior instance".

No. 1 Object of the appeal

1. The judgment in prior instance shall be rescinded.
2. The Appellee shall pay to the Appellant 134,372,126 yen and the amount accrued on the portion of 10,000,000 yen at the rate of 5% per annum for the period from April 2,

2019 until the completion of the payment and the amount accrued on the portion of 124,372,126 yen at the rate of 3% per annum for the period from November 12, 2021 until the completion of the payment (the Appellant expanded the claim for compensation for damages as stated above in this trial from the claim made in the prior instance for 10,000,000 yen and the amount accrued thereon at the rate of 5% per annum for the period from April 2, 2019 until the completion of the payment).

3. The Appellee shall bear the court costs for both the first and second instances.

4. Declaration of provisional execution

No. 2 Outline of the case

In this case, the Appellant, who is a patentee of the patent rights of Patents 1 and 2 (hereinafter collectively referred to as the "Patents") for inventions that are both titled "Vehicle guidance system" (hereinafter the patent rights related to Patent 1 are referred to as "Patent Right 1" and the patent rights related to Patent 2 are referred to as "Patent Right 2"), alleged that Appellee's systems 1 through 3 that are used by the Appellee infringe Patent Right 1 and Appellee's system 4 infringes Patent Rights 1 and 2. Based on these allegations, the Appellant demanded as a claim for compensation for damages due to tort based on Article 709 of the Civil Code and Article 102, paragraph (3) of the Patent Act or as a claim for return of unjust enrichment based on Article 703 of the Civil Code that the Appellee pay 10,000,000 yen and delay damages accrued thereon at the rate of 5% per annum as prescribed by the Civil Code before the amendment by Act No. 44 of 2017 (hereinafter referred to as the "Civil Code before Amendment") for the period from April 2, 2019 (the day following the day on which the complaint was served), which is the day after the tort and after the claim was made, until the completion of the payment.

The judgment in prior instance determined that the Appellee's systems are not included in the technical scope of the Patents and dismissed the Appellant's claims, and the Appellant filed an appeal. In addition, the Appellant expanded its claim against the Appellee based on the tort to demand that the Appellee pay 134,372,126 yen and delay damage accrued on the portion of 10,000,000 yen at the rate of 5% per annum as prescribed by the Civil Code before Amendment for the period from April 2, 2019 until the completion of the payment and delay damages accrued on the portion of 124,372,126 yen at the rate of 3% per annum as prescribed by the Civil Code for the period from November 12, 2021 (the day following the day on which a written petition to change the appeal was served) until the completion of the payment.

1. Basic facts (facts not disputed between the parties and facts that are easily found based on the evidence mentioned below and the entire import of oral arguments;

hereinafter documentary evidence for which the indication of branch numbers is omitted includes branch numbers)

They are as stated in the section from page 2, line 13 through page 6, line 17 in the judgment in prior instance and therefore they are cited, except for the following corrections.

(1) The section from page 2, line 13 through page 3, line 2 in the judgment in prior instance is altered as follows:

"(1) The Patents

A. Non-party P (hereinafter referred to as "P") filed a patent application for an invention titled "Vehicle guidance system" (Patent Application No. 2004-300749; hereinafter referred to as the "Parent Application" and descriptions and drawings related to the Parent Application are referred to as the "Parent Application's Descriptions") on September 13, 2004 (hereinafter referred to as the "Original Application Date"), and subsequently, made a divisional application as stated in Attachment 1. (Exhibit Ko 12, and Exhibits Otsu 40 and 41)

B. In the divisional application mentioned in A. above, P made a divisional application for part of Patent Application No. 2013-24483, which falls under the third generation, as Patent Application No. 2014-89069 on April 23, 2014, and it was registered as Patent No. 5769141 (hereinafter referred to as "Patent 2"; the number of claims is 2; descriptions and drawings related to Patent 2 are collectively referred to as "Description 2") on July 3, 2015. Concerning Patent Right 2, a transfer of the patent right was registered for the Appellant on March 14, 2018, as an acceptance date, caused by the transfer of Patent Right 2 due to specified succession. (Exhibits Ko 3 and 4, and Exhibit Otsu 41)

C. After P made a divisional application (the fifth generation) for part of the aforementioned Patent Application No. 2014-89069 as Patent Application No. 2014-243621 on December 2, 2014, P made another divisional application (the sixth generation) for part of Patent Application No. 2014-243621 as Patent Application No. 2015-98590 (hereinafter referred to as "Patent 1 Parent Application") on May 13, 2015. Furthermore, P made another divisional application for part of Patent Application No. 2015-98590 as Patent Application No. 2016-75107 on April 4, 2016, and the patent was registered as Patent No. 6159845 on June 16, 2017 (hereinafter referred to as "Patent 1"; the number of claims is 2; descriptions and drawings related to Patent 1 are collectively referred to as "Description 1" and Descriptions 1 and 2 are collectively referred to as the "Descriptions"; in cases of indicating a paragraph or drawing in the Descriptions, it refers to paragraphs or drawings of both Descriptions 1 and 2 unless

otherwise mentioned.). Concerning Patent Right 1, a transfer of the patent right was registered for the Appellant on March 14, 2018, as an acceptance date, caused by the transfer of Patent Right 1 due to specified succession. (Exhibits Ko 1, 2, 15, and 16, and Exhibits Otsu 1, 8, 46, and 47)

D. Concerning Patent 1 Parent Application, a notice of grounds for refusal dated March 14, 2016 was given on the grounds of a breach of requirements for division, etc. and the application was refused as of September 28, 2016. The refusal became final and binding. (Exhibits Otsu 16 and 42)"

(2) The term "A1 through K2" in page 4, line 26 of the judgment in prior instance is altered to "A2 through K2".

(3) The term "closed space" in page 6, line 1 of the judgment in prior instance is altered to "closed zone".

(4) The following phrase is added after the end of page 6, line 17 of the judgment in prior instance.

"(5) Whether the Appellee's systems fulfill the constituent features of the Inventions
The Appellee's systems fulfill Constituent Features E1, E2, G1, G2, H1, and H2 of the Inventions."

2. Issues

(1) Whether the Appellee's systems belong to the technical scope of Inventions 1-1 and 1-2 (hereinafter collectively referred to as "Invention 1") and whether Appellee's system 4 belongs to the technical scope of Inventions 2-1 and 2-2 (hereinafter collectively referred to as "Invention 2") (Issue 1)

A. Whether the statements of Constituent Features A1 and A2 "a system to guide a vehicle" and Constituent Features J1 and K2 "a vehicle guidance system" are fulfilled (Issue 1-A)

B. Whether Constituent Features B1, C1, D1, B2, C2, and D2 that are related to the positional relationship between "first detection means" and "first bar," and "communication means" are fulfilled (Issue 1-B)

C. Whether the statement of Constituent Features F1 and F2 "guiding means to guide a vehicle to the second lane" is fulfilled (Issue 1-C)

D. Whether Constituent Features I1, K1, J2, and L2 related to the structure to "lower a bar" and to open "the first bar" are fulfilled (Issue 1-D)

E. Whether the statement of Constituent Feature I2 "to form a closed zone between the second bar and the fourth bar" is fulfilled (Issue 1-E)

(2) Whether there are Grounds for Invalidation 1 (breach of the clarity requirements related to the first detection means, the first bar, and communication means, etc. of the

Inventions) (Issue 2)

(3) Whether there are Grounds for Invalidation 2 (lack of an inventive step of Inventions based on Exhibit Otsu 35 Invention) (Issue 3)

(4) Whether there are Grounds for Invalidation 3 (on the premise of a breach of requirements for division of Patent 1 Parent Application, lack of novelty and breach of support requirements of Invention 1 based on publications of Exhibit Otsu 45 or Exhibit Ko 12) (Issue 4)

(5) Whether there are Grounds for Invalidation 4 (breach of support requirements related to the timing to open bars concerning Invention 2) (Issue 5)

(6) Occurrence of damages or unjust enrichment and the amount thereof (Issue 6)

(omitted)

No. 3 Judgment of this court

1. Inventions

(1) Statements in the Descriptions (Exhibits Ko 2 and 4)

There are the following statements in the Descriptions.

[Technical field]

[0001]

The present invention is related to a vehicle guidance system, and more specifically, it is related to a vehicle guidance system to guide a vehicle safely that is used at ETC vehicle gates, which is installed at toll road gates.

[Background art]

[0002]

In recent years, ETC systems (Electronic Toll Collection Systems: non-stop toll payment systems) have been installed at toll gates on toll roads. As shown in FIG. 1, the ETC system automatically settles tolls using wireless communication between roadside antennas 3 and 5 installed at the toll gate and the vehicle-mounted device 20 mounted on vehicle 14 so that vehicle 14 can pass through the toll gate without stopping. ...

[Problems to be solved by the invention]

[0006]

However, at present, as not all vehicles are ETC system-compatible vehicles, there are lanes labeled "ETC only," which are exclusive to ETC vehicles, lanes labeled "ETC-General," where both ETC vehicles and general vehicles can pass through, and lanes labeled "General," where the ETC system cannot be used, in a mixed manner at toll

gates on toll roads. For this reason, there may be cases where a general vehicle enters the ETC vehicle exclusive lane accidentally. In these application documents, "ETC vehicle" means a vehicle from which tolls can be collected using the ETC system, and "general vehicle" means a vehicle that cannot use the ETC system.

[0007]

Furthermore, even if a vehicle is an ETC vehicle, the vehicle-mounted device may not communicate normally with a roadside antenna. For example, there are cases where an ETC card is not inserted into the vehicle-mounted device, is incompletely inserted, or is inserted immediately before passing through a toll gate, among others.

[0008]

In such cases, the open-close bar lowers and the vehicle cannot go through the gate. Therefore, it is necessary to stop the vehicle and call an attendant using the intercom. As a result, traffic congestion at the toll gate is facilitated and the ETC's original purpose is not met. In addition, if the open-close bar lowers and the vehicle is stopped, the driver of the vehicle may attempt to back out of the lane and may cause the vehicle to collide with a following vehicle, which is very dangerous.

[Means of solving problems]

[0010]

Therefore, the present invention aims to provide a vehicle guidance system for safely guiding a vehicle even in cases where a general vehicle enters an ETC vehicle gate or where the ETC system does not operate normally for an ETC vehicle (communication is impossible or unavailable between roadside antenna and vehicle-mounted device).

[0011]

In addition, the present invention aims to provide a safe vehicle guidance system, for example, that does not allow a vehicle traveling in the wrong direction or that may be able to avoid collision between a preceding vehicle and a following vehicle, in a vehicle guidance system using the ETC system.

[0012] (Description 1)

In view of the objectives above, the vehicle guidance system related to the present invention is a vehicle guidance system used for an interchange having an ETC vehicle lane at a toll gate between a general road and a toll road, and it is characterized by installing a means where a vehicle can exit the ETC vehicle lane if communication becomes impossible or unavailable between a roadside antenna and a vehicle-mounted device (note of the judgment: the expression "と間で" is found to be an error and it should be "との間で").

[0012] (Description 2)

In view of the objectives above, the vehicle guidance system related to the present invention is a system installed on a toll gate, service area, or parking area on a toll road to guide a vehicle entering and leaving an ETC vehicle gate; which is characterized by being equipped with the following: the first detection means that detects a vehicle entering and leaving the toll gate, service area, or parking area on the toll road; the first bar that is installed corresponding to the first detection means; a communication means to communicate data with a vehicle-mounted ETC device that is mounted on a vehicle; a determining means to determine whether the toll can be collected using the ETC system by recognizing data received by the communication means; and a guiding means, based on the results determined by the determining means, to guide a vehicle from which toll can be collected using the ETC system to the first lane leading to the route to enter the toll gate, service area, or parking area on the toll road or to leave from the toll gate, service area, or parking area on the toll road through the ETC gate, and to guide a vehicle from which the toll cannot be collected using the ETC system to the second lane leading to the route to go back to the entrance of the ETC vehicle gate or to the general vehicle gate, in which the guiding means includes the second bar installed on the first lane and the third bar installed on the second lane and is equipped with the second detection means to detect a vehicle that passes through the second bar and the third detection means to detect a vehicle that passes through the third bar, and in which the fourth bar and the fourth detection means to detect a vehicle are installed in a position where the vehicle enters the toll gate, service area, or parking area on the toll road through the ETC gate or where the vehicle leaves from the toll gate, service area, or parking area on the toll road and thereby, a closed zone is formed between the second bar and the fourth bar, with which if an entrance of a vehicle is detected by the first detection means, the first bar lowers after the vehicle passes through it and if the passing of a vehicle is detected by the second detection means, the second bar lowers after the vehicle passes through it, and if the passing of a vehicle is detected by the fourth detection means, the fourth bar lowers after the vehicle passes through it.

[0013]

Further, in the vehicle guidance system described above, the means capable of exiting from the ETC vehicle lane can be determined to be a lane that branches off from the ETC vehicle lane so that the vehicle can re-enter the toll gate or a lane leading to the general vehicle lane.

[0014] (Description 1 only)

Furthermore, in the vehicle guidance system described above, the roadside antenna

may have an antenna in front of the gate for determining whether wireless communication is possible with the vehicle-mounted device, and an ETC antenna that transmits and receives entrance information and toll information.

[0015]

Furthermore, in the vehicle guidance system described above, the system may include bars, the first vehicle sensor, an antenna in front of the gate, the second vehicle sensor, a guiding means, the third vehicle sensor, the fourth vehicle sensor, and ETC gate, to enable the following: when the first vehicle sensor detects the entry of a vehicle, it closes the bar to keep a specified interval with a following vehicle; when the second vehicle sensor detects the vehicle that entered, it confirms that the vehicle passes the antenna in front of the gate, determines whether it can be communicated with or not on this timing, and when the third or fourth vehicle sensor detects the vehicle that entered, it may open the bar for the following vehicle.

[0016]

Furthermore, in the vehicle guidance system described above, the system may have at least one guiding device to enable the following: when it determines that the antenna in front of the gate cannot communicate with the vehicle-mounted device, it may guide the vehicle to the specified destination using the guiding device based on the determination.

[0017]

Furthermore, the vehicle guidance system related to the present invention is a system to guide a vehicle equipped with a vehicle-mounted ETC device that passes through the ETC vehicle gate when entering and leaving between a general road or a toll road and it is characterized by the following: it is equipped with a detection means to detect a vehicle that enters or exits between a general road and toll road; a communication means to communicate data with a vehicle-mounted ETC device that is mounted on a vehicle; a determining means to determine whether the toll can be collected using the ETC system by recognizing data received by the communication means; and a guiding means, based on the results determined by the determining means, to guide a vehicle from which tolls can be collected using the ETC system to a route to enter from a general road to a toll road or to go out from a toll road to a general road through the ETC gate and a vehicle from which the toll cannot be collected using the ETC system to a route to go back to the entrance of the gate again or to a general vehicle gate; and if the entry of a vehicle is detected by the detection means, a bar lowers to prevent the vehicle that entered from backing out and a following vehicle from entering.

[0023]

Furthermore, the vehicle guidance method related to the present invention is a vehicle guidance method that is used for an interchange with an ETC vehicle lane at a toll gate between a general road and a toll road. The interchange is equipped with a lane to allow a vehicle to exit from the ETC vehicle lane if communication becomes impossible or unavailable between a roadside antenna and a vehicle-mounted device (note of the judgment: the expression "と間で" is found to be an error and it should be "との間で"). The lane to allow a vehicle to exit from the ETC vehicle lane is a lane that allows the vehicle to re-enter the toll gate or a lane that guides the vehicle to a general vehicle lane. The vehicle guidance method includes the following steps: when the first vehicle sensor detects the entry of a vehicle, it closes the first bar to keep a specified interval with a following vehicle, and when the second vehicle sensor detects the vehicle that entered, it confirms that the vehicle passes through an antenna in front of the gate and determines whether communication is possible, impossible, or unavailable on this timing; if it is determined that communication is possible, it opens the second gate, guides the vehicle to the ETC gate and the third vehicle sensor, and sends the vehicle to the desired road; if it is determined that communication is impossible or unavailable, it opens the third gate, guides the vehicle to the fourth vehicle sensor, and sends the vehicle to the re-entrance lane; and when the third or fourth vehicle sensor detects the vehicle that entered, it opens the first bar for the following vehicle.

[0024]

Furthermore, the vehicle guidance method related to the present invention is a vehicle guidance method that is used for an interchange with an ETC vehicle lane at a toll gate between a general road and a toll road. The interchange is equipped with a guiding means including the first bar, the first vehicle sensor, an antenna in front of the gate, the second vehicle sensor, and bars to form a closed zone. The guiding means has the following: the first closed zone sensor in the ETC vehicle lane beyond the branching off point; the third vehicle sensor, ETC gate, and the second bar (note of the judgment: the expression "遮断機及" is found to be an error and it should be "遮断機") in the first closed zone of the ETC vehicle lane beyond the branching off point; the fourth vehicle sensor beyond the first closed zone; the second closed zone sensor on the exit lane beyond the branching off point; the fifth vehicle sensor and the third bar in the second closed zone of the exit lane; and the sixth vehicle sensor beyond the second closed zone. The vehicle guidance method includes the following steps: when the first vehicle sensor detects the entry of a vehicle, it closes the first bar and divides the space with a following vehicle; when the second vehicle sensor detects the vehicle that

entered, it confirms that the vehicle passes the antenna in front of the gate and determines whether communication is possible, impossible, or unavailable on this timing; when the vehicle sensor in the closed zone detects the vehicle that entered, it closes a bar of the guiding means; and when the vehicle sensor installed beyond the closed zone detects a vehicle passing through, it closes a bar at the exit from the closed zone; and thereby it prevents another (wrong) vehicle from entering in the wrong direction from the exit of the closed zone and, even if another wrong vehicle enters in the wrong direction by passing the vehicle that goes out from the closed zone, when the closed zone sensor determines that there is a vehicle in the closed zone, it takes actions, such as reporting it to the monitoring center, etc., and when the closed zone sensor determines that there is no vehicle in the closed zone, it opens the first bar for the following vehicle.

[Effects of the Invention]

[0027]

According to the present invention, even in cases where a general vehicle enters an ETC vehicle gate or where the ETC system does not operate normally for an ETC vehicle, it can provide a vehicle guidance system for safely guiding the vehicle.

[0028]

In addition, according to the present invention, the vehicle guidance system using the ETC system can provide a safe vehicle guidance system that does not allow, for example, a vehicle traveling in the wrong direction, and that may be able to avoid collision between a preceding vehicle and a following vehicle.

[Best embodiment of the invention]

[0032]

A vehicle travels from general road 8 towards toll road 7 and toll gate 9 is installed between them. In the past, there were three lanes at toll gate 9. Lane (A → D) is for ETC vehicles and lanes B and C are for general vehicles. In the present embodiment, lane E that newly branches off from A (it is also called a "re-entrance lane") is prepared. Here, route A → D is a route where a vehicle passes through ETC gate 5 and travels to toll road 7 and route A → E is a lane for re-entering toll gate 9 (note of the judgment: the expression "再進入するのための" is found to be an error and it should be "再進入するための").

[0033]

Lane A → D has roadside antennas 3 and 5 and they perform wireless communication with the vehicle-mounted device in principle. FIG. 4 indicates the details of lanes A → D and A → E. Further explanation is given below based thereon.

A vehicle enters from a general road 8, passes through bar 1 that was opened in advance, is detected by vehicle sensor 2a, passes by roadside antenna 3 (antenna in front of the gate), which determines whether wireless communication is possible, and is detected by vehicle sensor 2b.

[0034]

When wireless communication is determined to be possible with antenna 3 in front of the gate, guiding device 4-1 opens while guiding device 4-2 remains closed. A vehicle passes by vehicle sensor 2c, receives entrance information from roadside antenna 5 (ETC gate) to the vehicle-mounted device, and thereby, the vehicle can travel to toll road 7.

[0035]

If wireless communication is determined to be impossible or unavailable with antenna 3 in front of the gate, guiding device 4-2 opens while guiding device 4-1 remains closed. A vehicle travels to lane E, passes by vehicle sensor 2d, and then returns to the point to select any of lanes A, B, or C. In the past, there was no re-entrance lane E. Therefore, if the open-close bar 4-1 lowered and the vehicle could not move, it was necessary to stop the vehicle and call an attendant using the intercom, etc. As a result, traffic congestion at roll gate 9 is facilitated and the ETC's original purpose is not met. In addition, if the open-close bar 4-1 lowers and the vehicle is stopped, the driver of the vehicle may attempt to back out of lane A and may cause the vehicle to collide with a following vehicle, which is very dangerous. However, if re-entrance lane E is installed, said failure and danger can be resolved systematically.

[0037]

Looking at FIG. 4 again, antenna 3 in front of the gate has a communication means to communicate data with a vehicle-mounted ETC device that is mounted on a vehicle and a determining means that recognizes received data and determines whether the toll can be collected using the ETC system.

[0038]

Concerning guiding devices 4-1 and 4-2, there is a method, for example, to form them into bars, and to open the bar on the route D side while closing the bar on the route E side when guiding a vehicle to route D, and to open the bar on the route E side while closing the bar on the route D side when guiding the vehicle to route E. In addition, there is a method to form them into display panels and to display "Passable," "Impassable," etc. for each route, or to display signs and pictures, such as "↑" (an arrow) for a passable route and "X" (cross mark) for an impassable route, etc. In addition, the reasons to be guided to route E, such as "ETC unreadable," etc., may be displayed.

Furthermore, the bar-type and display panel-type may be used together.

[0040]

Focusing on the functions of multiple vehicle sensors 2a, 2b, 2c, and 2d as shown in FIG. 4, the guiding method of vehicle guidance systems in FIG. 3 and FIG. 4 is simply explained below using a flow chart indicated in FIG. 5. When first vehicle sensor 2a detects the entry of a vehicle (step S02), bar 1 is closed to make a specified interval with a following vehicle (step S03). Bar 1 (omitted) does not open unless vehicle sensor 2c or 2d detects a vehicle. Therefore, it can prevent a collision between a preceding vehicle and a following vehicle and a preceding vehicle from traveling in lane A in the wrong direction. When the second vehicle sensor 2b detects the vehicle that entered (step S05), it confirms that the vehicle passes through antenna 3 in front of the gate and determines whether communication is possible, impossible, or unavailable on this timing (steps S06 and S07). It defines the determining time in order to distinguish the status when the vehicle has not passed from the status when wireless communication is not performed although the vehicle passed through (note of the judgment: the expression "車両の通過した" is found to be an error and it should be "車両が通過した").

[0041]

If communication is possible, guiding device 4-1 opens and the vehicle is guided to lane D and travels to toll road 7 (step S08). On the contrary, if communication is impossible or unavailable, guiding device 4-2 opens and the vehicle is guided to lane E and returns to the place to select any of lanes A, B, or C again (step S13). Here, "communication is impossible or unavailable" includes cases where a general vehicle enters by mistake and cases where an ETC vehicle did not succeed in wireless communication for any reason.

[0042]

When the third vehicle sensor 2c detects the vehicle that entered (step S09), as the vehicle is about to leave from lane A → D, bar 1 opens (step S10), and in the same way, when the fourth vehicle sensor 2d detects the vehicle that entered (step S14), as the vehicle is about to leave from lane A → E, bar 1 opens (step S15). Based on these steps, when a vehicle enters the zone of vehicle sensors 2c and 2d from bar 1, this zone becomes a sort of closed area and the presence of only one vehicle is allowed. Therefore, in this closed area, there is no collision between a preceding vehicle and a following vehicle. As long as the ETC system operates normally, the time when bar 1 closes is the time when a vehicle passes through from bar 1 to ETC gate 5, which is only a few seconds. Therefore, the original purpose of the ETC system, non-stop travel, is

substantially secured.

[0046]

Based on this embodiment, the following effects can be obtained.

- (1) This embodiment can be achieved only by newly preparing re-entrance lane E without adding drastic changes to the conventional interchange.
- (2) Even if ETC wireless communication is impossible or unavailable after a vehicle enters an ETC lane, no traffic congestion occurs since re-entrance lane E is prepared.
- (3) When vehicle sensor 2a detects a vehicle that entered, it closes bar 1 and will not open it until vehicle sensors 2c and 2d subsequently detect the vehicle that entered. Therefore, it can prevent the vehicle that entered from traveling in the wrong direction illegally.
- (4) In addition, only one vehicle is allowed to be present between bar 1 and vehicle sensors 2c and 2d (note of the judgment: the expression " 1 台限定" is found to be an error and it should be " 1 台に限定") and, therefore, it can avoid a collision accident between the vehicle that entered and a following vehicle.

[0054]

[Other applications]

(An interchange with enhanced function to prevent entry from the wrong direction)

However, in the embodiment explained in FIG. 4, it has a problem that it cannot prevent a wrong vehicle intending to evade payment of the toll, etc. from entering the ETC vehicle lane in the wrong direction from the exit of the ETC vehicle lane or the exit of the exit lane. In order to solve this problem, the embodiment explained in the following is a means to prevent driving in the wrong way by a combination of bars and vehicle sensors in the same way for lane D and lane E respectively.

[0055]

FIG. 9 is an example of modification of FIG. 4 and is a figure indicating a structure of an interchange where the function to prevent entrance from the wrong direction is enhanced. FIG. 10 is a flowchart explaining the guiding method of the vehicle guidance system in FIG. 9.

[0056]

Comparing the structure of the interchange in FIG. 9 with that in FIG. 4, in addition to the closed zone (the zone between bar 1 and bars 4-1 and 4-2) explained in FIG. 4, closed zone F (the zone between bar 1-2 and bar 4-1) and closed zone G (the zone between bar 1-3 and bar 4-2) are formed. As indicated in FIG. 9, in order to form closed zone F, bar 1-2, vehicle sensor 2e, and closed zone sensor 16 are newly installed and, in order to form closed zone G, bar 1-3, vehicle sensor 2f, and closed zone sensor 17

are newly installed, and furthermore, closed zone sensor 18 is installed.

[0057]

Comparing the flow in FIG. 10 with that in FIG. 8, the difference is substantially seen in the point that steps S50 through S54, S56, and S59 through S62 were newly added to FIG. 10.

[0058]

Explaining the embodiment simply by referring to FIG. 9 and FIG. 10, in cases where a vehicle enters lane D, when vehicle sensor 2c detects a vehicle (step S49), it closes bar 4-1 and opens bar 1-2 (step S50), and then, it keeps bar 4-1 closed until antenna 3 in front of the gate subsequently recognizes and determines a following vehicle (step S48). When vehicle sensor 2e detects a vehicle (step S52), it closes bar 1-2 (step S53) and prevents a wrong vehicle from entering in the wrong direction from the exit of lane D. When vehicle zone sensor 16 confirms that there is no vehicle in closed zone F (step S54), it opens bar 1 (step S55) and the following vehicle can enter. Even if another wrong vehicle enters from the wrong direction by passing the vehicle that exits from closed zone F, when closed zone sensor 16 determines that there is a vehicle in closed zone F (step S54), it takes actions, such as reporting it to the monitoring center, etc., and it prevents the wrong vehicle from entering further.

[0059]

The same applies to lane E. In cases where a vehicle enters lane E, when vehicle sensor 2d detects a vehicle (step S58), it closes bar 4-2 and opens bar 1-3 (step S59), and then, it keeps bar 4-2 closed until antenna 3 in front of the gate subsequently recognizes and determines a following vehicle (step S57). When vehicle sensor 2f detects a vehicle (step S60), it closes bar 1-3 (step S61) and prevents a wrong vehicle from entering in the wrong direction from the exit of lane E. When vehicle zone sensor 17 confirms that there is no vehicle in closed zone G (step S62), it opens bar 1 (step S63) and the following vehicle can enter. Even if another wrong vehicle enters from the wrong direction by passing the vehicle that exits from closed zone F, when closed zone sensor 17 determines that there is a vehicle in closed zone G (step S62), it takes actions, such as reporting it to the monitoring center, etc., and it prevents the wrong vehicle from entering further.

[0070]

Embodiments of the vehicle guidance system related to the present invention are indicated above. Please note that they are only examples, and the present invention is not limited thereto. Any changes and improvements that can be made by a person skilled in the art are within the technical scope of the present invention. The technical scope of

the present invention is determined based on the statements of the attached claims.

[Concise explanations of figures]

[0071]

[FIG.3] It shows the structure of a vehicle guidance system using an ETC system used at an entrance toll gate related to the embodiment of the present invention.

[FIG. 4] It is a partially enlarged figure of the vehicle guidance system in FIG. 3.

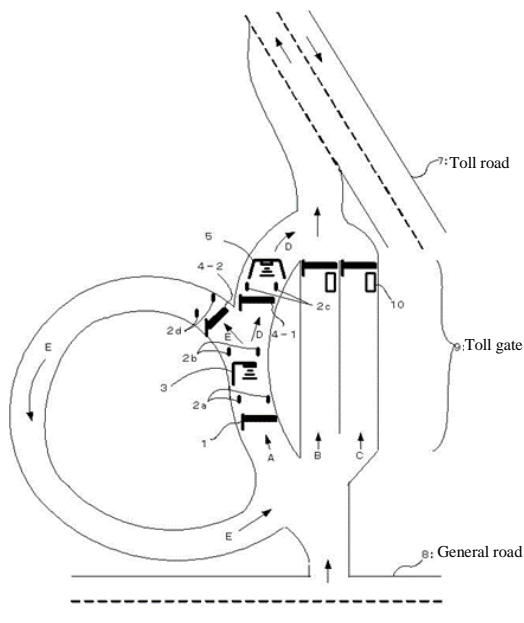
[FIG. 6] It shows the structure of a vehicle guidance system using an ETC system used at an exit toll gate related to the embodiment of the present invention.

[FIG. 7] It is an example of modification of FIG 6.

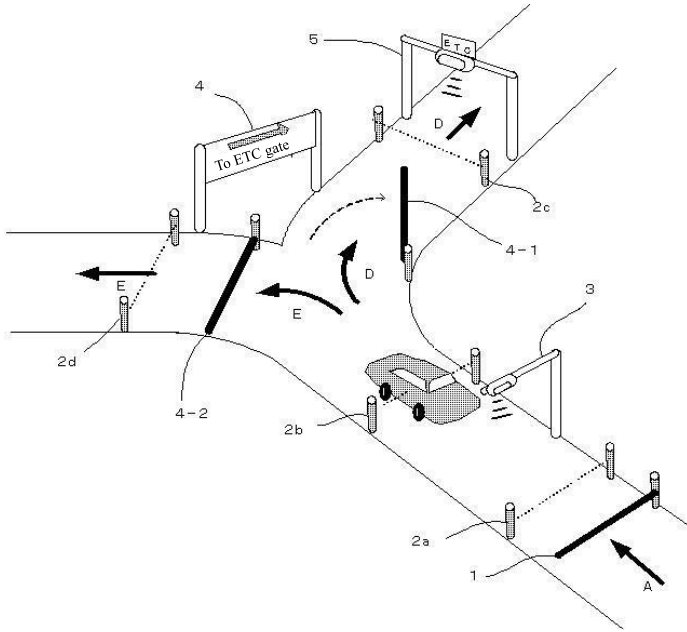
[FIG. 9] It is an example of modification of FIG. 4 and is a figure that shows the structure of an interchange with an enhanced function to prevent a vehicle from entering from the wrong direction

[FIG. 11] It is an application example of the present invention and a figure showing an application example for a smart interchange.

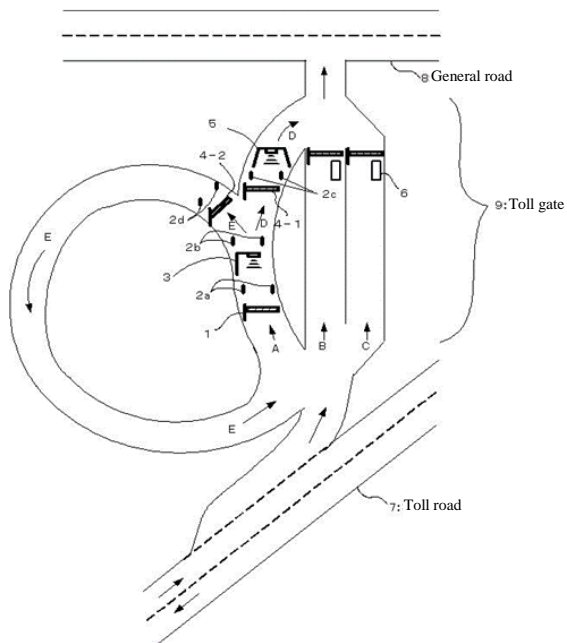
[FIG. 3]



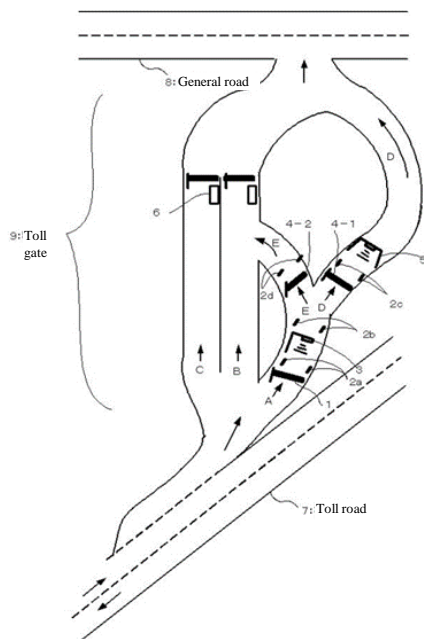
[FIG. 4]



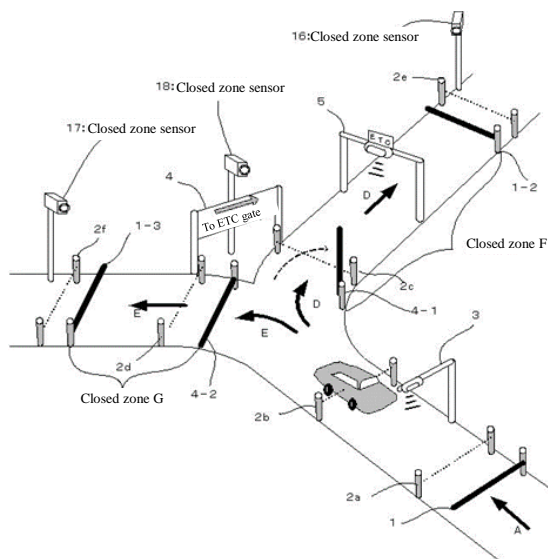
[FIG. 6]



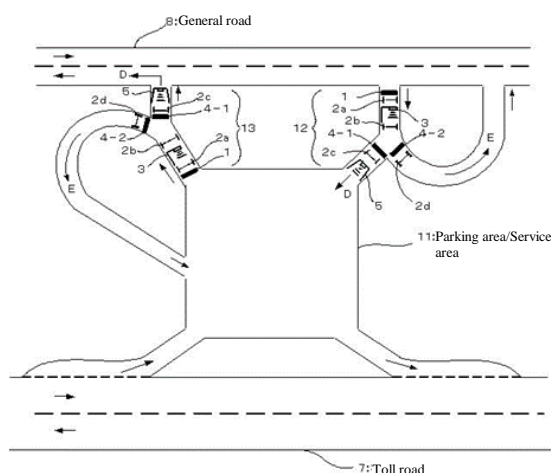
[FIG. 7]



[FIG. 9]



[FIG. 11]



(2) Problems and functions and effects of the Inventions

According to the structure expressed in the claims of the Patents and the statements in the Descriptions in (1) above, the Inventions are related to a vehicle guidance system to guide vehicles safely that is used at an ETC vehicle gate, which is installed at a toll road gate (paragraph [0001] of the Descriptions); there was the problem that when a vehicle from which tolls cannot be collected using the ETC system enters an ETC vehicle lane, the open-close bar lowers to make it impossible for the vehicle to move, and it becomes necessary to call an attendant using the intercom, which may facilitate traffic congestion, or if the driver of the vehicle attempts to back out, this may cause a collision with a following vehicle and is dangerous (paragraphs [0006] through [0008] in the Descriptions); and, therefore, the Inventions set the following as their problem and functions and effects by installing multiple bars, detection means, and communication means: [i] providing a vehicle guidance system to guide a vehicle safely even if a general vehicle enters an ETC vehicle gate or the ETC system does not operate normally with an ETC vehicle (hereinafter referred to as "Function and Effect 1") and [ii] providing a safe vehicle guidance system that does not allow a vehicle traveling in the wrong direction or it can avoid a collision between a preceding vehicle and a following vehicle by lowering the bars appropriately after a vehicle passes through them in a vehicle guidance system using the ETC system (hereinafter referred to as "Function and Effect 2") (paragraphs [0017], [0027], [0028], and [0058] in the Descriptions). In addition, the "vehicle traveling in the wrong direction" in [ii] above includes a vehicle intending to evade payment of the toll, etc. that enters an ETC vehicle lane in the wrong direction from the exit of an ETC vehicle lane or the exit of an exit lane, in addition to

a vehicle that entered the regular route but is trying to back out (paragraphs [0040] and [0054] in the Descriptions).

2. Issue 1 (Whether the Appellee's systems belong to the technical scope of Invention 1 and whether the Appellee's system 4 belongs to the technical scope of Invention 2)

(1) Issue 1-A (Whether the statements of Constituent Features A1 and A2 "a system to guide a vehicle" and Constituent Features J1 and K2 "a vehicle guidance system" are fulfilled)

A. All of the Appellee's systems listed in the Attachment to the judgment of prior instance "List of the Appellee's systems" are to guide a vehicle that attempts to pass through an ETC vehicle gate, if wireless communication is possible, by guiding the vehicle to travel to Sano SA, a general road, or a data obtaining zone (lane 'e') by opening start controllers [i] and [iv] [open-close bars] (steps S104 and S203), and if wireless communication is impossible or unavailable, by guiding the vehicle to exit route 'd' by opening start controllers [i] and [v] [open-close bars] through artificial manipulation (steps S106 and S205) and, therefore, they fall under "a system to guide a vehicle" and "a vehicle guidance system." Then, the Appellee's systems fulfill the statements of Constituent Features A1 and A2 "a system to guide a vehicle" and Constituent Features J1 and K2 "a vehicle guidance system."

B. The Appellee alleged that the Appellee's systems are substantially toll collection systems and therefore, they do not fall under the category of "a system to guide a vehicle" and "a vehicle guidance system." However, toll collection and vehicle guidance are compatible functions and it cannot be said that the Appellee's systems do not fall under the category of a vehicle guidance system based on the fact that the Appellee's systems are toll collection systems. Therefore, the aforementioned allegations of the Appellee are groundless.

C. In addition, the Appellee's systems are systems to guide a vehicle that enters and exits the Tohoku Expressway, which is a toll road, from an ETC vehicle gate that is installed in Sano SA. Therefore, they fulfill Constituent Features A1, A2, J1, and K2.

(2) Issue 1-B (Whether the Constituent Features B1, C1, D1, B2, C2, and D2 related to the positional relationship between "first detection means" and "first bar," and "communication means" are fulfilled)

A. (A) The statements in the claims of the Inventions are as stated in the corresponding part in the patent gazette (Patent No. 6159845 and Patent No. 5769141) as shown in the Attachment to the judgment in prior instance. Concerning the "first detection means," there are the following statements only: it detects a vehicle that enters or exits a toll gate, service area, or parking area on a toll road; the "first bar" is installed by

corresponding to the "first detection means"; and if the entry of a vehicle is detected by the "first detection means," it lowers the first bar after the vehicle passes through it. Other than the above, there is no statement to identify the positional relationship where the "first bar," "first detection means," and "communication means" are installed. Therefore, whether the constituent features are fulfilled is not determined by the positional relationship where each piece is installed.

(B) Looking at the Appellee's systems based on the above, vehicle sensor [ii] detects a vehicle passing through in the Appellee's systems (steps S105 and S204) and detects a vehicle that enters and exits Sano SA Smart interchange, which is a "service area" where the Appellee's systems are installed. Therefore, it falls under the "first detection means." When vehicle sensor [ii] detects a vehicle passing through, start controller [i] [open-close bar] closes (steps S105 and S204) and start controller [i] [open-close bar] falls under the "first bar" that is installed by corresponding to the vehicle sensor [ii], which is the "first detection means." In addition, roadside wireless device [iii] that performs wireless communication with a vehicle-mounted ETC device that is mounted on a vehicle (steps S103 and S202) falls under a "communication means" and it determines whether it falls under the case where wireless communication is possible or where it is impossible or unavailable based on the data that roadside wireless device [iii] received from a vehicle-mounted ETC device (steps S104, S106, S203, and S205), which means whether tolls can be collected using the ETC system is determined.

Then, the Appellee's systems fulfill Constituent Features B1, C1, D1, B2, C2, and D2.

B. (A) The Appellee alleged that, in Inventions, a "communication means" should be placed beyond the "first bar" and "first detection means," while in the Appellee's systems, roadside wireless device [iii] is placed in front of start controller [i] [open-close bar] and performs wireless communication with the vehicle that is stopped before start controller [i] [open-close bar], and therefore that the Appellee's systems fulfill none of Constituent Features B1, C1, D1, B2, C2, and D2 of the Inventions.

(B) However, as stated in A. (B) above, in the claims of the Patents, the positional relationship between the "communication means" and the "first bar" are not specified.

In addition, as stated in 1. (2) above, the Inventions show Function and Effect 1 (to provide a vehicle guidance system for safely guiding a vehicle even if a general vehicle enters an ETC vehicle gate or if an ETC system does not operate normally with an ETC vehicle). If it is possible to guide a vehicle safely by determining whether tolls can be collected using the ETC system based on the data that a "communication means" received from a vehicle-mounted ETC device and by working bars at an appropriate

timing, Function and Effect 1 is presented. Concerning the timing when a "communication means" receives data from a vehicle-mounted ETC device, Function and Effect 1 can be presented in both cases before and after a vehicle passes the first bar.

In addition, looking at Function and Effect 2 (in a vehicle guidance system using the ETC system, to provide a safe vehicle guidance system where a vehicle traveling in the wrong direction is not allowed to enter or where a collision between a preceding vehicle and a following vehicle can be avoided), the term "a vehicle traveling in the wrong direction" as used in the Inventions includes a vehicle intending to evade payment of tolls that enters an ETC vehicle lane in the wrong direction from the exit of the ETC vehicle lane and the exit of an exit lane. It is obvious that there is no relationship between preventing said "vehicle traveling in the wrong direction" from traveling in the wrong direction and the positional relationship of a "communication means" and the "first bar." Irrespective of the position of a communication means, it is possible to prevent a vehicle from traveling in the wrong direction through driving backwards by lowering the first bar after the vehicle passes through the first bar.

It is true that the Descriptions contain an example with a structure where a communication means (antenna 3 in front of the gate) is placed beyond the first bar (bar 1) and the first detection means (vehicle sensor 2a) ([FIG. 4]); however, it is only an embodiment and, in light of the above, there is no grounds to construe the Inventions by only limiting to the aforementioned structure.

Therefore, in the relationship of the problems and functions and effects of Inventions, it cannot be said that the positional relationship of a "communication means" and the "first bar" is specified as alleged by the Appellee.

(C) In addition, the Appellee alleged that, in the Inventions, wireless communication is performed with a vehicle that passed the first bar while it is still in a movement status, while in the Appellee's systems, wireless communication is performed with a vehicle that stops in front of start controller [i] [open-close bar], and therefore that it has a structure and functions different from those of the Inventions.

However, in the claims of the Patents, it is not specified whether a vehicle is in movement or stops when performing wireless communication and there is a statement in paragraph [0042] of the Descriptions that "when a vehicle enters the zone of vehicle sensors 2c and 2d from bar 1, this zone becomes a sort of closed area and the presence of only one vehicle is allowed. Therefore, in this closed area, there is no collision between a preceding vehicle and a following vehicle. As long as the ETC system operates normally, the time when bar 1 closes is the time when a vehicle passes through

from bar 1 to ETC gate 5, which is only a few seconds. Therefore, the original purpose of the ETC system, non-stop travel, is substantially secured." Therefore, in the Inventions, in cases where a preceding vehicle exists, it is planned that a following vehicle stops before the first bar. Then, concerning the Inventions, it cannot be construed in a limited manner that wireless communication is performed with the vehicle that passed the first bar while it is still in a moving status.

Therefore, it is not denied that the Appellee's systems fulfill Constituent Features B1, C1, D1, B2, C2, and D2 of the Inventions based on the fact that the vehicle is stopped when performing wireless communication.

(D) Based on the above, the aforementioned allegations of the Appellee cannot be accepted.

(3) Issue 1-C (Whether the statement of Constituent Features F1 and F2 "guiding means to guide a vehicle to the second lane" is fulfilled)

A. (A) In the Appellee's systems, in cases where "wireless communication is impossible or unavailable" with a vehicle-mounted ETC device, in other words, in cases where tolls cannot be collected using the ETC system, it is stated that "the driver is informed of that fact in sound via intercom, start controllers [i] and [v] [open-close bars] in front of lane 'd' are opened through artificial manipulation, and the vehicle exits into exit route 'd'" (steps S106 and S205). Exit route 'd' in the Appellee's systems falls under Constituent Features F1 and F2, "a route to go back to the entrance of the ETC vehicle gate." In addition, the Appellee's systems guide vehicles from which tolls cannot be collected using the ETC system to lane 'd' by opening start controllers [i] and [v] [open-close bars] in front of lane 'd' through artificial manipulation. Therefore, they are deemed to have a "guiding means to guide a vehicle to the second lane" that leads to "a route to go back to the entrance of the ETC vehicle gate" as defined in Constituent Features F1 and F2. Then, the Appellee's systems fulfill the statement of Constituent Features F1 and F2, "guiding means to guide a vehicle to the second lane."

(B) In the Appellee's systems, if wireless communication is possible based on the results of the determination of data received by roadside wireless device [iii], start controllers [i] and [iv] [open-close bars] are opened and the vehicle is guided to a lane to enter a service area or a lane leading to a route to exit to a general road from a service area (step S104), or to a data obtaining zone (lane 'e') (step S203). The data obtaining zone (lane 'e') exists on the route to a service area and therefore, guidance to the data obtaining zone (lane 'e') falls under guidance to the first lane leading to the route to enter a service area. In addition, as stated in (A) above, the Appellee's systems have a "guiding means to guide a vehicle to the second lane" that leads to "a route to go back

to the entrance of the ETC vehicle gate" in cases where wireless communication is impossible or unavailable.

Therefore, the Appellee's systems fulfill Constituent Features F1 and F2 of the Inventions.

B. The Appellee alleged that, in the Appellee's systems, a vehicle is not guided automatically to exit route 'd', but it requires the operation of an attendant and the ETC's original objective is not achieved, and therefore that they do not fulfill the statement of Constituent Features F1 and F2, "guiding means to guide a vehicle to the second lane."

However, looking at the statements in the claims of the Patents, there is no statement that a "guiding means to guide a vehicle to the second lane" is an automatic guidance, and in the Descriptions, there is also no statement to exclude involvement of an attendant regarding "a guiding means." In addition, in the Appellee's systems, start controllers [i] and [v] [open-close bars] are opened through artificial manipulation; however, it is not required to have an attendant on the spot via the intercom and a vehicle is not likely to back out of the lane since the vehicle can move forward in the direction of the second lane. Therefore, it can solve the problems of the Inventions, "it become necessary to call an attendant using an intercom, which may facilitate traffic congestion" and "if the driver of the vehicle attempts to back out, this may cause a collision with a following vehicle and is dangerous" and it can present the functions and effects "to provide a vehicle guidance system to safely guide a vehicle" and "to provide a safe vehicle guidance system where a collision between a preceding vehicle and a following vehicle can be avoided." In addition, in the Inventions, it is also assumed that a vehicle stops in front of the first bar, as explained in (2) B. (C) above.

Then, concerning a "guiding means to guide a vehicle to the second lane," there are no grounds to construe this in a limited manner as alleged by the Appellee, and the aforementioned allegations of the Appellee cannot be accepted.

(4) Issue 1-D (Whether Constituent Features I1, K1, J2, and L2 related to the structure to "lower a bar" and to open "the first bar" are fulfilled)

A. The Appellee's systems have a structure in which, when vehicle sensor [ii] detects the passing of a vehicle, start controller [i] [open-close bar] closes, and when vehicle sensor [vi] detects the passing of a vehicle, start controller [iv] [open-close bar] closes (steps S105 and S204); and when vehicle sensor [vii] detects the passing of a vehicle, start controller [v] [open-close bar] closes (there is no dispute between the parties). Vehicle sensor [ii] and start controller [i] [open-close bar] fall under "the first detection means" and "the first bar" respectively; vehicle sensor [vi] and start controller [iv] [open-close bar] fall under "the second detection means" and "the second bar"

respectively; and vehicle sensor [vii] and start controller [v] [open-close bar] fall under "the third detection means" and "the third bar" respectively; and therefore, the Appellee's systems fulfill Constituent Features I1, K1, J2, and L2.

B. The Appellee alleged on the grounds of the statement in paragraph [0042] of the Descriptions that the Appellee's systems do not fulfill Constituent Features I1, K1, J2, and L2 on the premise of the following interpretation: in the Inventions, in cases where the passing of a vehicle is detected by the second detection means and where the passing of a vehicle is detected by the third detection means, the second or third bar is lowered and the first bar is opened.

However, in the claims of the Patents, it is not specified to open the first bar in cases where the passing of a vehicle is detected by the second detection means and where the passing of a vehicle is detected by the third detection means.

In addition, paragraph [0042] of the Descriptions states that in cases where the passing of a vehicle is detected by the second detection means and where the passing of a vehicle is detected by the third detection means, the first bar is opened, and this statement is related to one embodiment, and therefore, it cannot be regarded as a general standard immediately. Furthermore, it does not mean that the functions and effects of the Inventions are not presented unless they have a structure that in cases where the passing of a vehicle is detected by the second detection means and where the passing of a vehicle is detected by the third detection means, the first bar is opened.

Based on the above, the aforementioned allegations of the Appellee cannot be accepted.

(5) Issue 1-E (Whether the statement of Constituent Feature I2 "to form a closed zone between the second bar and the fourth bar" is fulfilled)

A. Start controllers [iv] and [ix] [open-close bars] of Appellee's system 4 fall under "the second bar" and "the fourth bar" in Invention 2 respectively and vehicle sensor [x] falls under "the fourth detection means" in Invention 2. In addition, according to the evidence (Exhibits Ko 10 and 11), in Appellee's system 4, it is found that during the period from when vehicle sensor [vi] detects the passing of a vehicle and start controller [iv] [open-close bar] closes until the moment when start controller [ix] [open-close bar] opens after the end of the second wireless communication with roadside wireless device [xiii], both start controller [iv] [open-close bar] and start controller [ix] [open-close bar] are closed and a closed zone is formed.

Therefore, Appellee's system 4 fulfills Constituent Feature I2 of Invention 2.

B. The Appellee alleged that Constituent Feature I2 of Invention 2 has a meaning to prevent a collision by having only one vehicle present in the closed zone; however, in

Appellee's system 4, multiple vehicles can be present in the zone formed between start controllers [iv] and [ix] [open-close bars] and there is the possibility of a collision, and therefore, it does not fulfill Constituent Feature I2.

However, in the claims of Patent 2, whether there is only one vehicle in the closed zone as defined in Constituent Feature I2 is not specified.

In addition, according to paragraphs [0054] through [0058] and [FIG. 9] of Description 2, in Invention 2, the closed zone that is formed between the second bar and fourth bar is found to be a structure mainly to prevent a vehicle from entering an ETC vehicle lane in the wrong direction from the exit of an ETC vehicle lane. Based on this fact, it is found that it is not required that only one vehicle be present in the closed zone.

Consequently, the aforementioned allegations of the Appellee cannot be accepted.

(6) Summary

As stated in No. 2, 1. (5) in the judgment of prior instance that is corrected and then cited, the Appellee's systems fulfill the Constituent Features E1, E2, G1, G2, H1, and H2 of the Inventions.

In addition, as mentioned in (1) through (5) above, the Appellee's systems fulfill Constituent Features A1, B1, C1, D1, F1, I1, J1, K1, A2, B2, C2, D2, F2, J2, K2, and L2 of the Inventions and Appellee's system 4 fulfills Constituent Feature I2 of Invention 2. Therefore, it is found that Appellee's systems 1 through 3 belong to the technical scope of Invention 1 and Appellee's system 4 belongs to the technical scope of the Inventions.

3. Issue 2 (Whether there are Grounds for Invalidation 1 (breach of the clarity requirements related to the first detection means, the first bar, and communication means, etc. of the Inventions))

(1) Whether an invention for which a patent is sought is clear or not should be determined in consideration of the statements and drawings of the descriptions in addition to the statements in the claims, and from the perspective of whether the statements in the claims are unclear to the extent of causing unexpected losses to a third party based on the common general technical knowledge of a person skilled in the art at the time of filing an application.

(2) The Appellee alleged that the Inventions do not fulfill the clarity requirements as defined in Article 36, paragraph (6), item (ii) of the Patent Act since they do not clarify the following points respectively: [i] the status (form) of the lanes in which the Inventions are placed; [ii] the positions where the first detection means, the first bar, communication means, guiding means, the second detection means, the third detection

means, the third bar, means to lower the first bar, means to lower the second bar, and means to lower the third bar are placed and their positional relationship; [iii] the structure of the guiding means and how it guides a vehicle; [iv] the timing when the first, second, and fourth bars open; [v] the first bar's operation; [vi] operations of other structures and operation of the third bar when the third detection means detects a vehicle. Therefore, they are examined below.

A. [i] The status (form) of the lanes in which the Inventions are placed

In the claims of the Patents, it is stated that the first lane leads to a route to enter a toll gate, service area, or parking area on a toll road or to exit from a toll gate, service area, or parking area on a toll road, and that the second lane leads to a route to go back to the entrance of the ETC vehicle gate or to a general vehicle gate (Constituent Features F1 and F2). In the Descriptions, embodiments of the first lane and the second lane are shown in [FIG. 3], [FIG. 4], [FIG. 6], [FIG. 7], [FIG. 9], and [FIG. 11]. Therefore, the status (form) of the lanes in which the Inventions are placed are not unclear to the extent of causing unexpected losses to a third party.

B. [ii] Positions where bars, sensors, etc. are placed and their positional relationship

In the Inventions, the positional relationship of each constituent feature is not always specified; however, if the scope of an invention is clearly defined by identifying their functional relationship, it is not unclear to the extent of causing unexpected losses to a third party.

In the claims of the Patents, the following is stipulated respectively: when a vehicle passes the first detection means, the first bar lowers, and when a vehicle passes the second detection means, the second bar lowers (Constituent Features I1 and J2); when a vehicle passes the fourth detection means, the fourth bar lowers (Constituent Feature J2); whether tolls can be collected using the ETC system is determined based on the data that a communication means received from a vehicle-mounted ETC device (Constituent Features E1 and E2); and a guiding means including the second bar guides a vehicle to the first lane, or a guiding means including the third bar guides a vehicle to the second lane (Constituent Features F1, G1, F2, and G2). The constituent features of the Inventions need to be placed in a positional relationship that enables the above. In consideration of the above, along with [FIG. 3], [FIG. 4], [FIG. 6], [FIG. 7], [FIG. 9], and FIG. 11] of the Descriptions, it is understood that the first bar, the first detection means, and communication means are installed on an ETC vehicle lane before it branches off to the first route and the second route; the second bar, the second detection means, the fourth bar, and the fourth detection means are installed on the first route; and the third bar and the third detection means are installed on the second route

respectively.

Based on the above, the aforementioned [ii] is not unclear to the extent of causing unexpected losses to a third party.

C. [iii] Structure of the guiding means and way of guiding

In paragraph [0038] of the Descriptions, a method to guide a vehicle by opening or closing a bar as necessary, a method to guide a vehicle using letters, such as "Passable," etc., codes, illustrations, etc., and a method using bar-type and display panel-type together are stated as specific examples of guiding means. In addition, in [FIG. 4], as a specific example of a guiding means, a structure using a display panel showing a code, "→," is indicated.

Therefore, even if the structure of a guiding means and a guiding method are not concretely specified in the claims, it is not unclear to the extent of causing unexpected losses to a third party.

D. [iv] Timing when the first, second, and fourth bars open

In the claims of the Patents, the timing when the first and second bars open is not specified and in the claims of Patent 2, the timing when the fourth bar opens is not specified.

However, as stated in 1. (2) above, the Inventions are to provide a safe vehicle guidance system that can prevent wrong-way driving and to avoid a collision with a following vehicle by appropriately lowering bars after the vehicle passes through them (hereinafter referred to as "Function and Effect 2") and in which the timing to lower the bars is specified. Therefore, if bars lower for a period to the extent that the aforementioned effects of preventing the wrong-way driving, etc. are not undermined, the Inventions are found to present the aforementioned effects. In addition, when working the Inventions, a person skilled in the art can choose to open bars at a voluntary timing from the perspective of how much the aforementioned effects should be presented.

Based on the above, it cannot be said that the Inventions are not unclear to the extent of causing unexpected losses to a third party based on the fact that the timing when the first, second, and fourth bars open is not specified.

E. [v] Operation of the first bar

In the claims of the Patents, it is not specified how the first bar operates when a vehicle from which tolls cannot be collected using the ETC system comes (whether a vehicle can pass through without stopping).

In addition, in the Descriptions, there are statements such as [Best embodiment of the invention] that "bar 1 that was opened in advance" (paragraph [0033]), "When first

vehicle sensor 2a detects the entry of a vehicle (step S02), bar 1 is closed to make a specified interval with a following vehicle (step S03). Bar 1 does not open, as stated below, unless vehicle sensor 2c or 2d detects a vehicle, and therefore, it can avoid a collision between a preceding vehicle and a following vehicle and a preceding vehicle from traveling in Lane A in the wrong direction " (paragraph [0040]). The Descriptions show an embodiment of a structure where bar 1 (the first bar) was opened in advance, and it closes after a vehicle passes through it, and then it does not open unless vehicle sensor 2c (the second detection means) or 2d (the third detection means) detects a preceding vehicle.

However, the embodiment is the best embodiment to work the Inventions and it does not mean that the functions and effects of the Inventions will not be presented in other embodiments. Then, it cannot be said that the Inventions lack clarity to the extent of causing unexpected losses to a third party based on the fact that the structure indicated in the aforementioned embodiment is not specified in the claims.

F. [vi] Operations of other structures and the third bar when the third detection means detects a vehicle

In the Inventions, in cases where the third detection means detects the passing of a vehicle, it is specified that the third bar is lowered after the passing of the vehicle (Constituent Features K1 and L2), and therefore, it cannot be said that regarding the operations of other structures when the third detection means detects a vehicle, the Inventions lack clarity to the extent of causing unexpected losses to a third party.

The Appellee alleged based on the statement in paragraph [0059] of the Descriptions that since bar 1-3, closed zone sensor 17, and closed zone G as stated in said paragraph are not specified in the Inventions, they lack clarity. However, items indicated in the aforementioned paragraph are the best embodiment to work the Inventions, but not that functions and effects of the Inventions are not presented unless the structure of said embodiment is adopted. Therefore, the aforementioned allegations of the Appellee cannot be accepted.

(3) Based on the above, the Inventions do not breach the requirements for clarity.

4. Issue 3 (Whether there are Grounds for Invalidation 2 (lack of an inventive step of Inventions based on Exhibit Otsu 35 Invention))

(1) Exhibit Ko 35 has the following statements.

"2. Claims for utility model registration

A toll collection device, which is a toll collection device for toll roads having both a magnetic card system and contactless card system in a mixed manner in a toll collection system, and which is characterized by the structure where a toll gate is

comprised by dividing it into a magnetic card system vehicle lane and a contactless card system vehicle lane, by having a guiding means to guide a vehicle to a magnetic card system vehicle lane in which the entrance gate of a contactless card system vehicle lane is closed in cases where a contactless card has a reading failure or cannot be read, or where the card is defective is detected.

3. Detailed explanation of the idea

[Industrial applicability]

This idea is related to a toll collection device for a toll road." (Page 1 of the Descriptions in Exhibit Otsu 35)

"[Problems to be solved by the idea]

As mentioned above, in cases where a contactless card is used as a toll ticket with a toll collection system for a toll road, the entrance and exit of a toll gate may be unmanned; however, for example, in cases where the contactless card information cannot be read or where the card information transmitting and receiving unit breaks down, etc., or, for example, in cases of a card reading failure, tolls cannot be collected and therefore, a vehicle with such a card cannot travel on a toll road.

Therefore, a system to avoid these situations must be built."
(Pages 2 to 3 of said Descriptions)

"[Embodiment]

1. Structure

Figure 1 shows a layout of a toll gate of a toll collection system for a toll road in the present idea. Entrance (I) is a lane using a contactless card and entrance (II) is a lane using a magnetic card system. 11 and 12 are vehicle dividers and they divide and detect vehicles one by one. 13 is a sensor for the number of axles and track treads and it detects the number of axles and number of wheels of vehicles. 14 is an on-road device and it reads the information of the vehicle-mounted device. 15 is a lane control device and it controls a vehicle-mounted device at entrance (I) and entrance (II). 16 is a display board and it displays messages to a vehicle with which a contactless card cannot be read in order to guide the vehicle smoothly to a manned lane. 17 is a bar and it is usually kept open and it prevents a vehicle for which the contactless card cannot be read from entering from the contactless card lane. 18 and 19 are the same vehicle dividers as 11 and 12. 110 is an axle number sensor and it measures the number of axles of vehicles. It has a function to detect the passing of vehicles by the combination of vehicle dividers 18 and 19 and axle number sensor 110 and then, to return the contactless card lane system to the initial conditions. 111 and 112 are the same vehicle dividers as 11 and 12 as mentioned above. 113 is the same sensor for the number of axles and track treads as

13 as described above and it detects the number of axles and number of wheels of vehicles. 114 is a toll ticket machine and issues a toll ticket for the magnetic card lane entrance (II).

In Figure 1, bypass (III) is a bypass lane to guide a vehicle with a contactless card to a magnetic card lane in cases where there is a card reading failure, or where the card cannot be read, the card is defective, or no card is carried.

(omitted)

Figure 3 is a block configuration diagram of a toll collection system for a toll road in the present idea. (omitted) 34 is an on-road device and it sends information that is sent from a vehicle-mounted device (contactless card) on a vehicle to lane controller 35 in a form of signal." (Pages 4 to 6 of said Descriptions)

"37 is a bar and the bar is usually kept open, but it closes when the contactless card information cannot be read." (Page 7 of said Descriptions)

"[Effects of the idea]

In the present idea, both the magnetic card system and a contactless card system exist together and thereby, if an inconvenience, such as a card reading failure with a contactless card system, etc., occurs, the vehicle in question can be guided to the magnetic card lane from the contactless card lane so that there will be no inconvenience to the system." (Page 16 of said Descriptions)

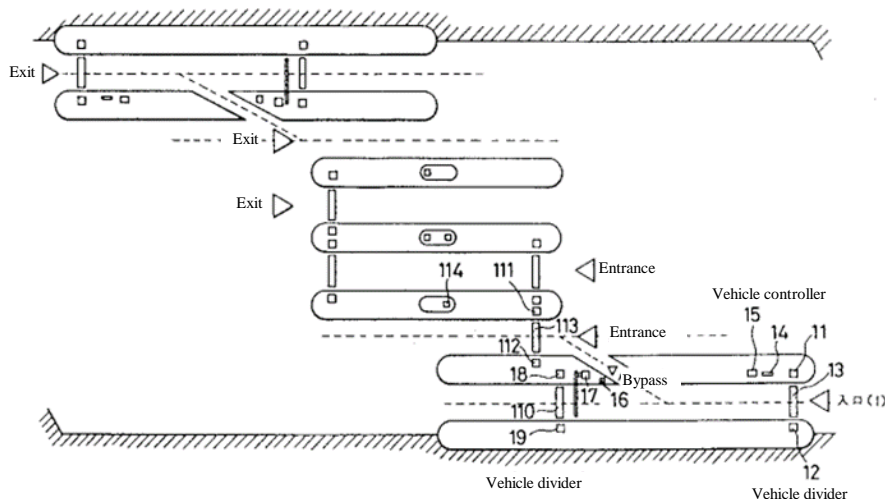


Figure 1: Layout of a toll collection system for a toll road in the present idea

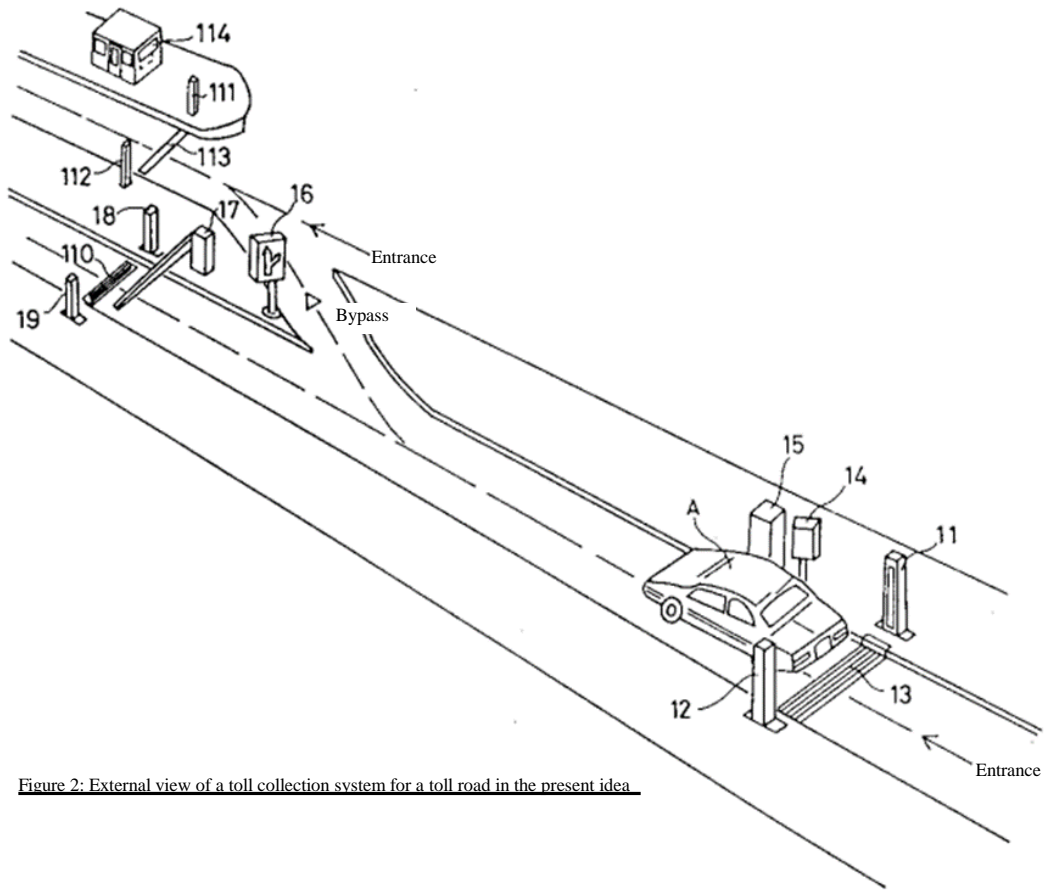


Figure 2: External view of a toll collection system for a toll road in the present idea

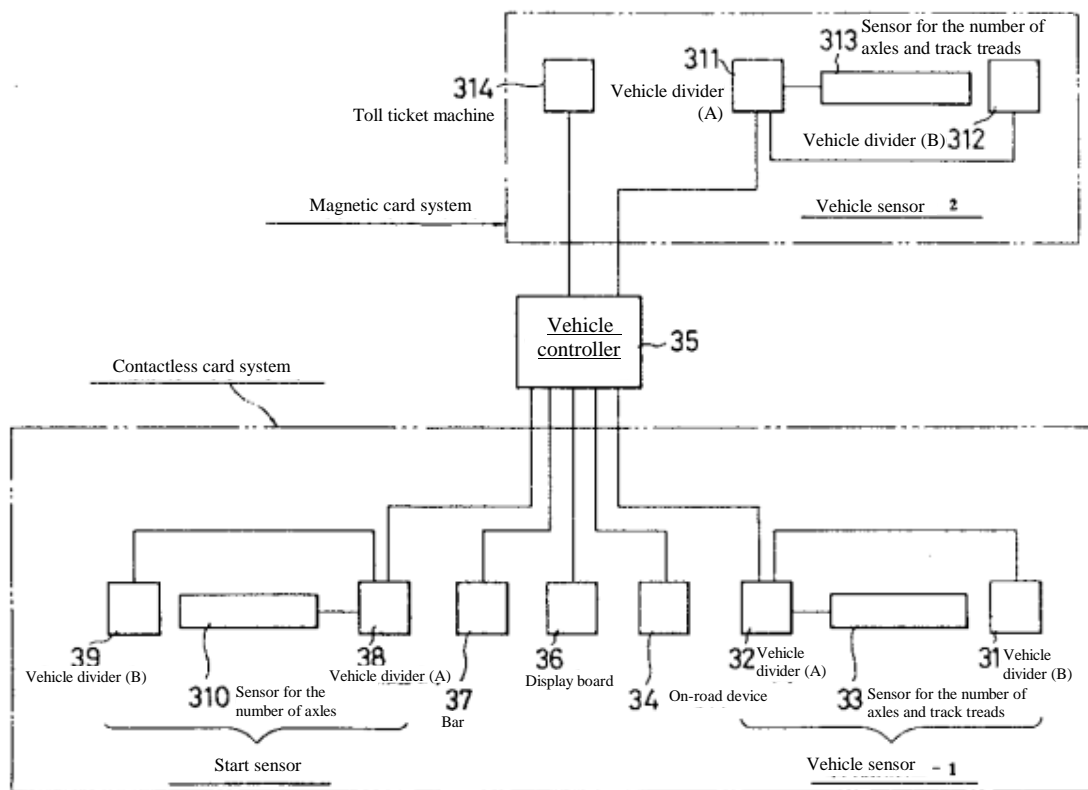


Figure 3: Block configuration diagram of a toll collection system for a toll road in the present idea

(2) Finding of Exhibit Otsu 35 Invention

Based on (1) above, Exhibit Otsu 35 Invention is found to have the following structure as alleged by the Appellee.

A. It is a toll collection device for a toll road having both a magnetic card system and a contactless card system in a mixed manner in a toll collection system.

B. It has vehicle dividers 11 and 12 that divide and detect vehicles one by one.

D. It has on-road device 14 that reads the information of a vehicle-mounted device.

E. It has on-road device 34 (14 in Figure 1 and Figure 2) that sends information that is sent from a vehicle-mounted device (contactless card) on a vehicle to lane controller 35 in a form of a signal.

F'. In Figure 1, bypass (III) is a bypass lane to guide a vehicle with a contactless card to a magnetic card lane in cases where there is a card reading failure, or where the card cannot be read, the card is defective, or no card is carried.

G'. In the block configuration diagram as shown in Figure 3, it has bar 37 that closes bar 17, which is always kept open, in cases where the contactless card information

cannot be read.

H'. It includes vehicle dividers 18 and 19 (equivalent to the second detection means) that detect a vehicle passing through bar 17, and vehicle dividers 111 and 112 that detect vehicles traveling on the bypass (III).

I'. It has a function to detect the passing of vehicles by the combination of vehicle dividers 18 and 19 and axle number sensor 110 and then to return the contactless card lane system to the initial conditions (to open bar 17 that was closed).

J. It is a toll collection device for a toll road.

(3) Comparison between the Inventions and Exhibit Otsu 35 Invention

Comparing the structure of the Inventions and the structure of Exhibit Otsu 35 Invention in (2) above, the following differences are found.

A. Difference 1

Exhibit Otsu 35 Invention does not have a bar equivalent to the first bar that is installed corresponding to the first detection means in the Inventions.

B. Difference 2

Exhibit Otsu 35 Invention does not have a means to lower the first bar after a vehicle passes through in cases where the entry of the vehicle is detected by the first detection means.

C. Difference 3

Exhibit Otsu 35 Invention does not have a means to lower the second bar after a vehicle passes through in cases where the entry of the vehicle is detected by the second detection means.

D. Difference 4

Exhibit Otsu 35 Invention does not have a bar equivalent to the third bar that is installed on the second lane (bypass III).

E. Difference 5

Exhibit Otsu 35 Invention does not have a means to lower the third bar after a vehicle passes through in cases where the passing of the vehicle is detected by the third detection means.

F. Difference 6 (in the relationship with Invention 2 only)

Exhibit Otsu 35 Invention does not have a structure equivalent to the closed zone in Invention 2.

(4) Statements in Exhibits Otsu 20 through 22 and 36

A. Exhibit Otsu 20 has the following statements.

[Invention title] Automatic toll payment system for a toll road

[0001]

[Industrial applicability] The present invention is related to an automatic toll payment system for a toll automobile road and, in particular, an automatic toll payment system for a toll road with which tolls can be paid without stopping the vehicle by transmitting and receiving signals using a wireless communication device.

[0003]

[Problems to be solved by the invention] With the aforementioned conventional payment system, a vehicle (automobile) must stop once in order to receive a toll ticket at a toll road entrance and it causes traffic congestion. In particular, at the exit of a toll gate, a vehicle must stop once, pay the toll after calculation of the toll, and receive change, etc., and therefore, it takes time even though it is a small amount of time, and causes traffic congestion. ...

[0005]

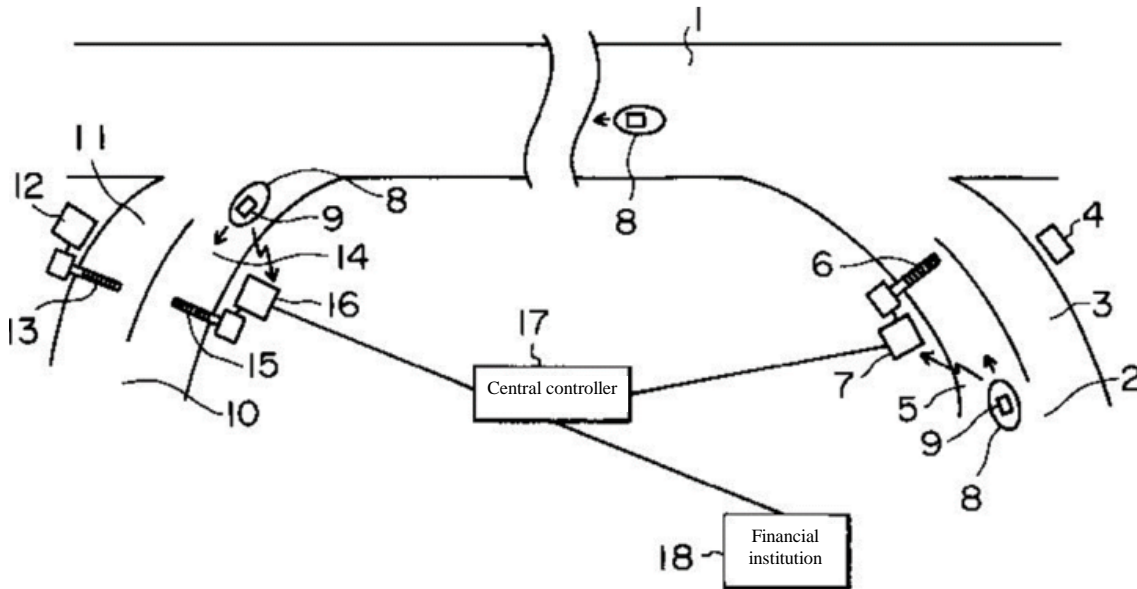
[Embodiment] FIG. 1 is a pattern diagram indicating an embodiment of the present invention, and 1 is a toll road (toll automobile road), 2 is the entrance of the toll automobile road, 3 is a general gate, and 4 is the ticketing station at general entrance 3. 5 is a dedicated entrance for the present invention system, 6 is the gate of the dedicated entrance, and 7 is a wireless communication device for the entrance that is installed around the dedicated entrance gate. 8 is a vehicle (automobile) mounted with wireless communication device 9. 10 is the exit of a toll road, 11 is a general exit, 12 is a toll payment station for the general exit 11, and 13 is the gate for toll payment station 12. 14 is a dedicated exit for the present invention system, 15 is the gate of the dedicated exit, and 16 is a wireless communication device for the exit that is installed around the dedicated exit gate. 17 is a central controller and 18 is a financial institution.

[0006] When vehicle 8 related to the present invention system enters near the entrance of a toll road, the vehicle ID signal is transmitted from wireless communication device 9 of vehicle 8. When the vehicle ID signal is received by wireless communication device 7 for the entrance that is installed near the entrance of a toll road, dedicated entrance gate 6 is opened to allow vehicle 8 enter toll road 1 and, after vehicle 8 enters, dedicated entrance gate 6 is closed. ...

[0009] FIG. 2 is an operation flow chart between devices in the aforementioned embodiment of the present invention indicating the transmitting and receiving of signals between the devices and the operation and control status of devices based on said signals. The phrase "(Gate opens or closes, or to a general exit)" in FIG. 2 means the following, as mentioned above: based on the information on whether the toll can be paid, which is sent from central controller 17 to wireless communication device 16 for exit, if the toll can be paid, dedicated exit gate 15 is opened or closed and if the toll

cannot be paid, dedicated exit gate 15 remains closed and the vehicle is guided to the general exit using a display, etc. ...

[FIG. 1]



[FIG. 2]

	Wireless communication device for vehicles	Wireless communication device for entrance and exit	Central controller	Financial institution
Entrance	Vehicle ID (Entrance)	(Entrance) Vehicle ID/Entrance ID (Gate open/close)	(Memory)	Account No. of vehicle ID
Traveling			Information on whether payment is possible from the account (Memory)	
Exit	Vehicle ID (Exit)	(Exit) Vehicle ID/Exit ID (Exit) Information on whether payment is possible (Gate opens or closes or to a general exit)		
After traveling			(Calculation) Requesting toll	Payment of toll (Electronic withdrawal)

B. Exhibit Otsu 21 has the following statements.

[Invention title] Parking lot elevator system

[0001]

[Industrial applicability] This invention is related to a parking lot elevator system.

[0004]

[Problems to be solved by the invention] As explained above, in the conventional parking lot elevator system, the decision on whether the parking lot is available on each parking lot floor is made only based on the number of vehicles parked. Therefore, there is the problem that if this parking lot elevator's driving device is used for a parking lot where the available floors differ by vehicle size, there are cases where a vehicle that is carried to the parking lot floor that is automatically selected by the first calling registration means 6 cannot park since the vehicle size does not meet the size available on the parking lot floor and the vehicle must be transferred to the available parking lot floor again, and therefore, the elevator operation becomes less efficient.

[0027] Embodiment 4 ..

[0028] FIG. 7 is a floor map of a parking lot that has parking zones by vehicle size. In FIG. 7, 13 is an elevator car, 27 is parking zone A to park vehicles of A size, 28 is parking zone B to park vehicles of B size, 29 is a parking zone guiding device to guide vehicle 12 that got off from elevator car 13 to the parking zone, and 30 is a pathway. ...

[0033] Embodiment 5

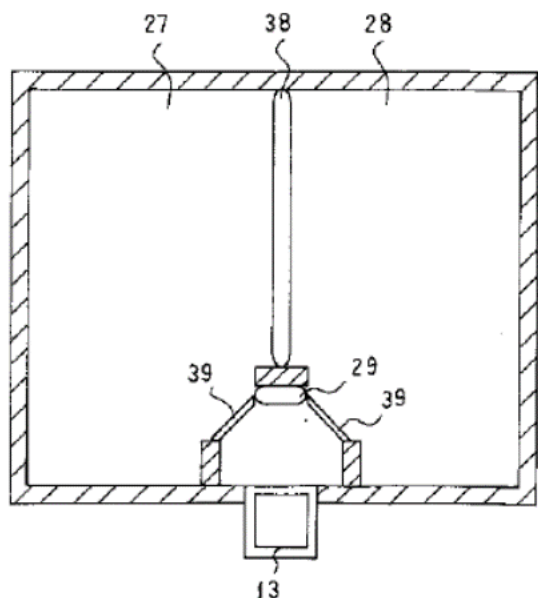
In addition, as another embodiment of a parking lot floor that has the parking zone as shown in embodiment 4, parking lot floor as shown in FIG. 11 is indicated as embodiment 5 and explained. This is a parking lot floor where it is ensured that a vehicle can be parked in a parking zone that meets the vehicle size.

In FIG. 11, the same codes as FIG. 7 refer to the same or equivalent parts. 38 is a parking zone separator that divides parking zone A27 and parking zone B28, 39 is a bar that opens and closes to prevent a vehicle from entering a parking zone other than the selected parking zone so that the vehicle that got off from elevator car 13 does not enter the wrong parking zone and to have the vehicle parked in the correct parking zone.

[0034] ... In FIG. 11, when elevator car 13 with a vehicle arrives at the parking lot floor, bar 39 that leads to the parking zone corresponding to the vehicle size alone opens by receiving a signal from controller 15, and the other bars remain closed. At the same time, parking zone guide means 29 operates by receiving a signal from controller 15 in order to guide the vehicle to a parking zone corresponding to the vehicle size.

[0035] Based on the aforementioned structure, a vehicle will not be parked in the wrong parking zone and, therefore, parking spaces can be controlled correctly. In addition, if the flow of vehicles exiting from the parking lot is controlled by bar 39, it can be identified from which parking zone each vehicle came and, therefore, it is no longer necessary to measure the size of a vehicle that exits from the parking lot.

[Fig. 11]



C. Exhibit Otsu 22 has the following statements.

[Invention title] Parking management system

[0001]

[Technical field of the invention] The present invention is related to a parking management system and, in particular, to a parking management system to manage the traffic of the vehicle entrance route and exit route.

[0003] In a conventional parking management system for this type, when a vehicle enters, it detects the entering vehicle by a vehicle sensor, opens the gate, and allows its entry, and a parking ticket machine automatically issues a parking ticket on which information, such as entrance time, etc., is recorded. The passenger of the vehicle that entered takes out an issued parking ticket and parks the vehicle in an available parking space. When the vehicle exits, the passenger inserts the parking ticket that was issued at the entrance into a toll payment machine and settles the parking fees displayed based on the recorded information. When the parking fee is settled, the gate is opened and the vehicle is allowed to exit.

[0004]

[Problems to be solved by the invention] However, in the conventional parking management system, there is only one gate to control the entrance and exit of a vehicle. In addition, in consideration of the safety of passengers who pass through the gate and the prevention of disruptive vehicle accidents, etc., the lowering speed of the gate is configured to be rather slow. Therefore, when a preceding vehicle settles the parking

fees and the gate opens, tailgating, which means a vehicle wrongfully exits following a preceding vehicle without settling parking fees, is possible and was difficult to prevent.

[0005] The present invention was made by focusing on the aforementioned problem and aims to provide a parking management system that can prevent tailgating.

[0016]

[Embodiment of the invention] The embodiment of the present invention is explained below based on figures. ...

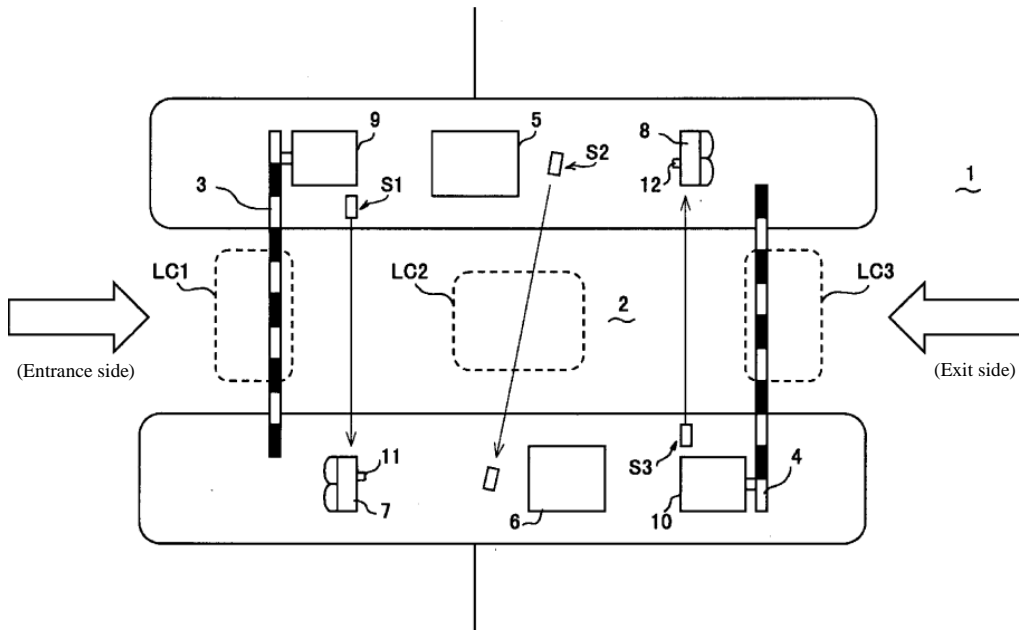
[0021] Next, vehicle traffic control using a parking management system of the embodiment is explained in accordance with a flowchart. In FIG. 3 and FIG. 4, the operations at entrance and exit in cases of a closed mode, where the first gate 3 at the entrance side is usually closed, are indicated.

[0022] First, the entrance operation is explained in accordance with FIG. 3.

[0024] In step 5, the system determines whether loop coil LC1 and optical sensor S1 detects a vehicle. Waiting for the time until there are no detection outputs from either device, it determines that the vehicle that entered completely passed through the first gate 3 when there is no detection output from either device, and then moves to step 6. Consequently, for a vehicle that entered, loop coil LC1 and optical sensor S1 comprise the first vehicle detection means.

[0025] In step 6, the first gate 3 is lowered and closed. This will close the area between gates 3 and 4 and allow only one vehicle that entered to move forward. In this case, signal lamp 7 changes to red and prohibits the entry of a following vehicle.

[FIG. 1]



D. Exhibit Otsu 36 has the following statements.

[Title of the invention] Traffic regulation method and traffic regulation device

[0001]

[Technical field of the invention] The present invention is related to a traffic regulation method and traffic regulation device to regulate the traffic volume of automobiles (hereinafter referred to as "vehicles") in a specified area.

[0004]

[Problems to be solved by the invention] However, in the aforementioned manned method, it is necessary to assign an attendant to each entrance lane. Therefore, there are problems with securing personnel and labor costs, as well as problems that the working environment and conditions due to weather or other reasons are severe. In addition, there is the problem that it is difficult to identify vehicles in an easy and secure manner. Furthermore, in cases of collecting fees from a general vehicle, a driver of the general vehicle does not always have the necessary amount or type of cash and difficulties often occur at toll payment. In addition, much effort is required for storage, transfer, and treatment of the collected cash and there is also a problem with crime prevention with the handling of the cash. The aforementioned unmanned method solves problems with the aforementioned manned method, such as securing personnel, labor costs, working conditions, and difficulty in identifying vehicles, etc.; however, the materials, printing, and distribution of toll tickets require costs and there is a problem of crime prevention

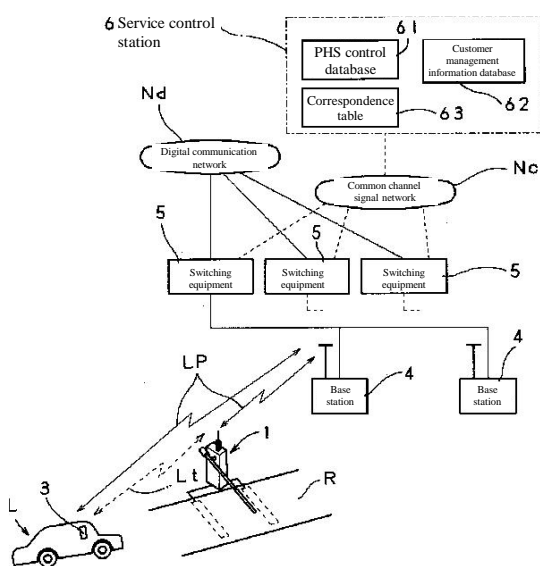
with the cash that is collected from the cash collecting machine. ...

[0015]

[Embodiment of invention] Next, the embodiment of the present invention is explained based on figures. The traffic regulation method of the present invention is explained along with the following traffic regulation device that uses the present invention method.

[0036] ... First, CPU100 stands by for input of the detection signal indicating an approach of a vehicle that is sent from approach sensor 15 (ST20). If ST20 is "Y," CPU 100 orders driving unit 12 to open bar 14 (ST21). Based on the above, driving unit 12 opens bar 14. Next, CPU 100 stands by for input of the detection signal indicating passing of a vehicle that is sent from approach sensor 16 (ST22). If ST22 is "Y," CPU 100 orders driving unit 12 to close bar 14 (ST23). Based on the above, driving unit 12 closes bar 14 and terminates its operation. Based on the aforementioned operations, a closed entrance lane can be opened and then closed again based on an approach and passing of a vehicle to bar 1, and therefore, accurate traffic regulation can be performed for a vehicle that passes bar 1.

[FIG. 1]



(5) Examination of differences

Looking at Difference 1 in (3) A. above, in Exhibit Otsu 35 Invention, vehicle dividers 11 and 12 are equivalent to "the first detection means" in the Inventions. There are no statements or suggestions in Exhibit Otsu 35 that any bar corresponding to vehicle dividers 11 and 12 is installed in addition to bar 17.

In Exhibits Otsu 20 and 36, inventions related to a system that is installed at an

entrance route to a toll road or specified area are stated; however, the inventions all control whether to allow a vehicle to pass by using one bar in the moving direction and there are no statements or suggestions to install two or more bars.

In addition, in Exhibit Otsu 22, a structure to install two bars in the moving direction is disclosed; however, Exhibit Otsu 22 is an invention in which two bars are installed in order to prevent a vehicle from exiting wrongfully without paying parking fees by following a preceding vehicle and it is not motivated to install the first bar corresponding to the first detection means with the aim of preventing a vehicle traveling in the wrong direction from traveling on the ETC lane of an expressway, as in the case of the Inventions. In addition, the invention stated in Exhibit Otsu 21 is related to an elevator system to move a vehicle in a parking lot with multiple stories, but it does not have a structure where two bars are installed in the moving direction.

Furthermore, there is no other evidence that is enough to find that it was well-known technology to install two bars in the moving direction on the ETC lane of an expressway.

Based on the above, it cannot be said that Difference 1 is easily conceived of by a person skilled in the art and, without the need to make determinations on the remaining matters, the allegations of the Appellee on the lack of an inventive step based on Exhibit Otsu 35 are groundless.

5. Issue 4 (Whether there are Grounds for Invalidation 3 (on the premise of a breach of requirements for division of Patent 1 Parent Application, lack of novelty and breach of support requirements of Invention 1 based on publications of Exhibit Otsu 45 or Exhibit Ko 12))

(1) The Appellee alleged that Patent 1 Parent Application (Patent Application No. 2015-098590) has a breach of requirements for the division and, therefore, it is not deemed to have been filed on the application date of the Parent Application pursuant to Article 44, paragraph (2) of the Patent Act, and the Appellee also alleged concerning Patent 1, which is a divisional application for part of Patent 1 Parent Application, that the application date does not reach back to before the application date of Patent 1 Parent Application (May 13, 2015).

(2) Concerning the above, the Appellee alleged that Patent 1 Parent Application was refused due to a breach of requirements for division and the judgment became final and binding, and therefore, it is examined.

In the examiner's decision on refusal of Patent 1 Parent Application (Exhibit Otsu 42-1), there is a statement that "the application should be refused on the grounds indicated in the notice of grounds for refusal dated March 14, 2016"; however, in said notice of grounds for refusal (Exhibit Otsu 16), the lack of novelty and lack of an

inventive step are pointed out on the premise that the filing date does not reach back due to a breach of requirements for division. However, in said notice of grounds for refusal, it is pointed out that matters regarding the "unity of invention," "support requirements," and "clarity" also fall under the grounds for refusal in addition to the above. In the examiner's decision on refusal, there is also a statement of "filing date (retroactive date): September 13, 2004" and it is found that Patent 1 Parent Application is deemed to be filed on the filing date of the Patent Application. It is estimated that trial examiners of the Japan Patent Office refused the application on grounds other than lack of novelty and lack of an inventive step that are on the premise of a breach of requirements for division. Therefore, it cannot be found that trial examiners of the Japan Patent Office refused Patent 1 Parent Application on the grounds of a breach of requirements for division.

In addition, in the aforementioned notice of grounds for refusal, there is a statement that Patent 1 Parent Application falls under a breach of requirements for division on the grounds that inventions related to Claims 1 and 2 are not indicated in the descriptions, claims, or drawings at the initial filing of the Original Application (Patent Application No. 2014-243621); however, it is found that Claims 1 and 2 of Patent 1 Parent Application (Exhibit Otsu 46) completely match Claims 1 and 2 of the Original Application (Exhibit Ko 15) when comparing them. Therefore, it must be said that the statement in the aforementioned notice of grounds for refusal was an error and there is no other evidence that is enough to find that there was a breach of requirements for division concerning Patent 1 Parent Application.

(3) Based on the above, Grounds for Invalidation 3 alleged by the Appellee lack the premise. In addition, in light of the statements in Description 1, it cannot be said that Invention 1 is not the one stated in the detailed explanation of the invention of Description 1. Consequently, Grounds for Invalidation 3 alleged by the Appellee are groundless.

6. Issue 5 (Whether there are Grounds for Invalidation 4 (breach of support requirements related to the timing to open bars concerning Invention 2))

(1) The Appellee alleged that the fact that the timing to open the bars in Invention 2 is not specified falls under a breach of the support requirements. Whether a statement in the claims conforms to the support requirements should be determined by comparing the statement in the claims and the statement in the detailed explanation of the invention and by examining whether an invention stated in the claims is an invention stated in the detailed explanation of the invention and the invention is in the scope where a person skilled in the art can recognize that the problems of the invention can be solved based

on the statement in the detailed explanation of the invention, or whether it is in the scope where a person skilled in the art can solve the problems of the invention in light of the common general technical knowledge at the time of filing the application even without any statements or suggestions in the detailed explanation of the invention.

(2) In the claims of Patent 2, it is stated that if the first through fourth detection means detect the entry of a vehicle, the first through fourth bars corresponding thereto are lowered after the vehicle passes through them (Constituent Features J2 and L2); however, the timing to open bars is not specified.

However, in paragraph [0058] of Description 2, there are statements that (in FIG 9) "in cases where a vehicle enters lane D, when vehicle sensor 2c detects a vehicle (step S49), it closes bar 4-1 and opens bar 1-2 (step S50), and then, it keeps bar 4-1 closed until antenna 3 in front of the gate subsequently recognizes and determines a following vehicle (step S48)." "When vehicle zone sensor 16 confirms that there is no vehicle in closed zone F (step S54), it opens bar 1 (step S55) and the following vehicle can enter." In paragraph [0059] of Description 2, there are statements that "In cases where a vehicle enters lane E, when vehicle sensor 2d detects a vehicle (step S58), it closes bar 4-2 and opens bar 1-3 (step S59), and then, it keeps bar 4-2 closed until antenna 3 in front of the gate subsequently recognizes and determines a following vehicle (step S57). When vehicle sensor 2f detects a vehicle (step S60), it closes bar 1-3 (step S61) and prevents a wrong vehicle from entering in the wrong direction from the exit of lane E. When vehicle zone sensor 17 confirms that there is no vehicle in closed zone G (step S62), it opens bar 1 (step S63) and the following vehicle can enter." Thus, an example of the timing to open an appropriate bar in order to avoid a collision with a following vehicle and to prevent the wrong vehicle from entering from the wrong direction is shown.

In addition, Invention 2 shows effects to prevent a vehicle from driving the wrong way by lowering a bar after the vehicle passes through it and to avoid a collision between a preceding vehicle and a following vehicle. Therefore, a person skilled in the art can easily understand that it is enough to determine the timing to open a bar to the extent necessary to obtain the effects. In addition, concerning the second and the fourth bars, it is stated that they form a closed zone (Constituent Feature I2). Therefore, it can be said that it is specified that the second and the fourth bars are opened at a timing that is enough to form the closed zone.

Based on the above, a person skilled in the art can easily determine the timing to open the bars in Invention 2 based on the statements in Description 2, and it can be said that Invention 2 is an invention stated in the detailed explanation of the invention in Description 2 and is in the scope where a person skilled in the art can solve the problem

of the invention based on the statements of the detailed explanation of the invention.

(3) Based on the above, concerning Invention 2, the allegations of the Appellee that the fact that the timing to open bars is not specified falls under a breach of support requirements cannot be accepted.

7. Issue 6 Occurrence of damages or unjust enrichment and the amount thereof

(1) There is no dispute between the parties that the Appellee installed the Appellee's systems at Sano SA Smart Interchange on April 28, 2011 and has collected tolls from vehicles passing through using said systems.

The fact that the Appellee installed the Appellee's systems that are included in the technical scope of Inventions and guided vehicles that enter and exit from the Tohoku Expressway from Sano SA Smart Interchange using said systems falls under the work by "using" the Inventions (Article 2, paragraph (3), item (i) of the Patent Act).

In this case, the Appellant claimed damages for the amount equivalent to royalties pursuant to Article 102, paragraph (3) of the Patent Act. Generally, royalties are calculated by multiplying sales by the royalty rate. The amount that each vehicle that enters or exits from the Tohoku Expressway pays to the Appellee using the Appellee's systems (toll, etc.) is the total of the fixed amount of 150 yen (terminal charge) that is imposed per use of the expressway, and the variable amount that is imposed based on the distance used (toll). The toll is 24.6 yen per km (normal zone and normal vehicle) (Exhibit Otsu 48). When an expressway is used once, a vehicle passes the gate twice (concerning a vehicle that uses Sano SA Smart Interchange, two gates at Sano SA Smart Interchange and another Interchange). Therefore, at least half of the aforementioned terminal charge, 75 yen, falls under sales related to the use of the Appellee's systems. In addition, a vehicle that enters and exits from Sano SA Smart Interchange travels Tohoku Expressway at least between Sano-Fujioka Interchange or Sano-Tanuma SA Smart Interchange, which are adjacent interchanges, and Sano SA Smart Interchange. Therefore, the variable amount corresponding to the distance from Sano SA Smart Interchange to an adjacent interchange (toll) can be deemed to fall under the sales related to the use of the Appellee's systems. The aforementioned toll is calculated as follows: the distance from Sano-Fujioka Interchange to Sano SA Smart Interchange is 2.7km (Exhibit Ko 22-1) and the distance from Sano-Tanuma Interchange to Sano SA Smart Interchange by way of Iwafune Junction is 11.2km (Exhibit Ko 22); the average distance of 6.95km is multiplied by the amount per km of 24.6 yen; and the toll is 170 yen (any fraction of less than one yen is rounded down).

Based on the above, sales per vehicle by use of the Appellee's systems are at least 245 yen.

(2) Next, according to the evidence (Exhibit Ko 23 and Exhibit Ko 34-1 through 34-72), the number of vehicles (average per day) that pass through Sano SA Smart Interchange for each month from July 2015 through July 2021 is found to be as indicated in the column for "vehicles/day" in Attachment 2. When the number of vehicles passing per month is calculated by multiplying it by the number of days in each month, it is as indicated in the column for "vehicles/month" in said attachment (the number of vehicles passing for the period from July 3 through July 31, 2015 is calculated to be 74,153 vehicles; however, it is found to the extent of 74,152 vehicles that is alleged by the Appellant). In addition, four units of the Appellee's systems are installed at Sano SA Smart Interchange. Therefore, assuming that the number of vehicles that passed each system is one-fourth each, the number of vehicles that passed the Appellee's system 1 through 3 during the period from June 16, 2017, when Patent Right 1 was registered, until July 31, 2021 is estimated to be 3,085,926 vehicles and the number of vehicles that passed Appellee's system 4 for the period from July 3, 2015, when Patent Right 2 was registered, until July 31, 2021 is estimated to be 1,498,587 vehicles, and the total number of vehicles is 4,584,513 vehicles.

(3) Based on the above, the sales from the use of Appellee's systems are calculated to be 1,123,205,685 yen (= 245 yen × 4,584,513 vehicles).

(4) According to the evidence (Exhibits Ko 26 and 31 and Exhibits Otsu 51 and 55), the following can be found [i] the Appellee's systems are installed at a smart interchange; the Appellee improved the average distance between interchanges from 10km in the past to 5km, which is at the level of Europe and the U.S.A. by introducing smart interchanges; and thereby, the Appellee intends to promote the enhancement of regional life and revitalization of regional economies; [ii] the installation cost at a regular interchange is from 3 to 6 billion yen, while the installation cost at a smart interchange is 300 to 800 million yen; the management costs are 120 million yen/year for a regular interchange and 50 million yen/year for a smart interchange; and therefore, the Appellee could reduce costs by installing smart interchanges; [iii] if the Appellee's systems are installed at an existing service area, the number of gates can be increased and the convenience of expressways can be increased; and therefore, it may result in increasing users; [iv] the number of vehicles using the Tohoku Expressway did not significantly increase by the installation of the Sano SA Smart Interchange; [v] the Appellee also installed a smart interchange that does not conflict with the Patents and has substitute technology (according to the allegation of the Appellee, there are nearly half of the smart interchanges that do not conflict with the Patents); [vi] the Appellant has not worked the Patents by itself and there is no possibility to work the Patents in the future

as well; [vii] the composition percentage of the Appellee's systems that account for facilities in the Sano SA Smart Interchange (percentage of price) is 7.8%; and [viii] the Appellee continues to work the Patents even after receiving a warning from the Appellant.

In consideration of the aforementioned circumstances together, it is reasonable to find that the royalty rate of the Patents is 2%.

(5) Based on the above, the amount of damages is calculated.

A. The amount equivalent to royalties: $1,123,205,685 \text{ yen} \times 2\% = 22,464,114 \text{ yen}$

(Rounded off to the nearest 1 yen; the same applies hereinafter.)

B. Consumption tax amount

(A) The portion until September 2019: The number of vehicles that passed: 2,859,269 vehicles, consumption tax rate: 8%

$$(245 \text{ yen} \times 2,859,269 \text{ vehicles}) \times 2\% \times 8\% = 1,120,833 \text{ yen}$$

(B) The portion after October 2019: The number of vehicles that passed: 1,725,244 vehicles, consumption tax rate: 10%

$$(245 \text{ yen} \times 1,725,244 \text{ vehicles}) \times 2\% \times 10\% = 845,370 \text{ yen}$$

(C) Subtotal: 1,966,203 yen

C. Court costs

In consideration of the difficulty of the case, the claimed amount, the approved amount, and other circumstances, it is reasonable to find the court costs that are in the corresponding causal relationship with the tort in this case to be 2.5 million yen.

D. Total amount: 26,930,317 yen

The Appellant demands payment of delay damages for the portion of 10 million yen from the claimed amount accrued thereon at the rate of 5% per annum as prescribed by the Civil Code before Amendment for the period from April 2, 2019, until the completion of the payment. Since the part exceeding 10 million yen out of the aforementioned 26,930,317 yen arose due to the tort that was made before said date, concerning delay damages, the court upheld the claim to demand payment of delay damages for the portion of 10 million yen out of 26,930,317 yen accrued thereon at the rate of 5% per annum as prescribed by the Civil Code before Amendment for the period from April 2, 2019, until the completion of the payment, and the claim to demand payment of delay damages for the remaining portion accrued thereon at the rate of 3% per annum as prescribed by the Civil Code for the period from November 12, 2021, until the completion of the payment. In addition, in this case, the claimed amount based on the unjust enrichment is not found to exceed the aforementioned amount. Therefore, the court upheld the claims based on the tort.

(6) The Appellee alleged that the terminal charge and tolls are received for the reimbursement of construction costs, etc. and therefore, they do not fall under sales; however, it is only an allegation related to the use of the sales and it does not fall under grounds that terminal charge and tolls should not be considered as sales that serve as the basis for calculation of royalties.

In addition, the Appellee alleged that the toll, etc. is charged not only using a smart interchange and therefore, the toll, etc. has no relationship with the use of Inventions and there is no increase in the number of vehicles using the systems by installation of the Sano SA Smart Interchange. However, these circumstances are enough for taking into consideration in making determinations on the royalty rate and do not fall under circumstances to deny deeming tolls, etc. to be sales. The Appellee alleged that there is also a case where a vehicle gets off the expressway earlier than before as a result of the installation of the Sano SA Smart Interchange and the toll to be paid has decreased. However, as mentioned above, a vehicle that enters or exits from a Sano SA Smart Interchange uses the Appellee's systems and the toll paid by the vehicle falls under sales related to the use of Appellee's systems, and therefore, the aforementioned allegations of the Appellee do not affect the determination to consider tolls, etc. to be sales.

Furthermore, the Appellee alleged that, as a result of determining whether ETC communication is available, vehicles with which communication could not be performed and that are guided to an exit lane are very limited among vehicles that pass through a smart interchange and there are no vehicles that back off or enter in the wrong direction in a narrow line in a smart interchange; since the terminal charge, etc. cannot be collected from vehicles that cannot use ETC communication or vehicles that enter from the wrong direction, the features of the Inventions have no relationship with the collection of terminal charge, etc. by the Appellee; and even if the terminal charge is deemed to be the royalty base, it should be allocated in proportion of the component percentage of the Appellee's systems (7.8%) and the percentage of vehicles that are guided to the second lane (exit lane) (0.22%). However, it is found that all vehicles that enter and exit from Sano SA Smart Interchange use the Appellee's systems and vehicles that are guided to the first lane by the Appellee's systems also use the Inventions; in addition, passengers in vehicles receive profits to secure smooth and safe travel at an interchange by using the Appellee's systems, and tolls, including terminal charge, are paid as a compensation including that for said profits. Therefore, the aforementioned allegations of the Appellee cannot be accepted.

No. 4 Conclusion

As mentioned above, all the Appellant's claims in the prior instance to demand payment

of compensation for damages of 10 million yen and delay damages accrued thereon at the rate of 5% per annum for the period from April 2, 2019 until the completion of the payment have grounds and should be granted. The judgment in prior instance that rejected all of the claims is unjust. Therefore, the appeal in this case has grounds. The Appellant's expanded claim in this instance has grounds to the extent of demanding that the Appellee pay 16,930,317 yen and delay damages accrued thereon at the rate of 3% per annum for the period from November 12, 2021 until the completion of the payment, and it is granted to that extent. The remaining claims of the Appellant are dismissed and the judgment is rendered as indicated in the main text.

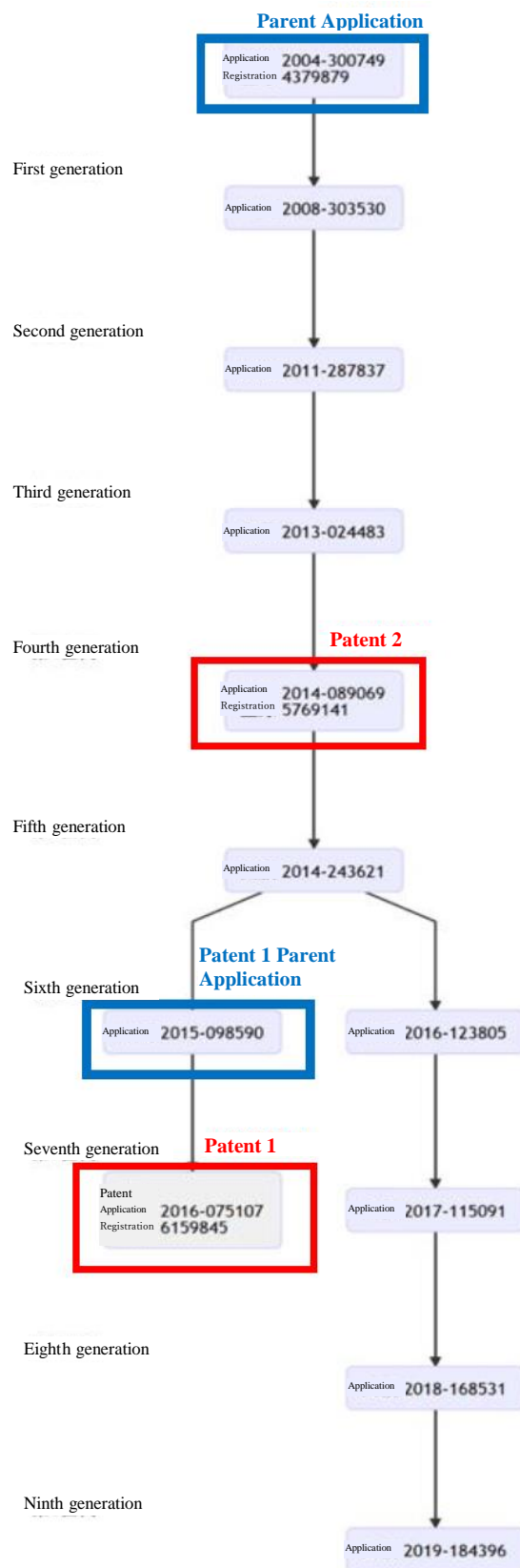
Intellectual Property High Court, Second Division

Presiding judge: HONDA Tomonari

Judge: ASAI Ken

Judge: KATSUMATA Kumiko

(Attachment 1)



(Attachment 2)

Number of vehicles that used the Sano Smart Interchange

year/month	vehicles/day	vehicles/month	Target patents/systems	
July 2015 (1-2)		5,115	-	-
(3-31)	2,557	74,152	-	-
August 2015	2,518	77,996	-	-
September 2015	2,460	73,800	-	-
October 2015	2,583	80,073	-	-
November 2015	2,676	80,280	-	-
December 2015	2,642	81,902	-	-
January 2016	2,715	84,165	-	-
February 2016	2,489	72,181	-	-
March 2016	2,648	82,088	-	-
April 2016	2,582	77,480	-	-
May 2016	2,680	83,080	-	-
June 2016	2,543	76,290	-	-
July 2016	2,648	82,088	-	-
August 2016	2,509	77,779	-	-
September 2016	2,579	77,370	-	-
October 2016	2,698	83,638	-	-
November 2016	2,621	78,630	-	-
December 2016	2,674	82,894	-	-
January 2017	2,813	87,203	-	-
February 2017	2,539	71,082	-	-
March 2017	2,746	85,126	-	-
April 2017	2,716	81,480	-	-
May 2017	2,834	87,854	-	-
June 2017 (1-15)		41,180	-	-
(16-30)	2,744	41,180	-	-
July 2017	2,746	85,126	-	-
August 2017	2,710	84,010	-	-
September 2017	2,762	82,860	-	-
October 2017	2,700	83,700	-	-
November 2017	2,860	86,400	-	-
December 2017	2,818	87,358	-	-
January 2018	2,910	90,210	-	-
February 2018	2,605	72,940	-	-
March 2018	2,836	87,916	-	-
April 2018	2,834	88,020	-	-
May 2018	2,839	88,009	-	-
June 2018	2,844	85,320	-	-
July 2018	2,810	87,110	-	-
August 2018	2,809	87,079	-	-
September 2018	2,758	82,740	-	-
October 2018	2,862	88,722	-	-
November 2018	3,001	90,030	-	-
December 2018	2,904	90,024	-	-
January 2019	3,056	94,736	-	-
February 2019	2,770	77,560	-	-
March 2019	3,006	93,186	-	-
April 2019	2,876	86,280	-	-
May 2019	2,874	89,084	-	-
June 2019	2,787	83,610	-	-
July 2019	2,834	87,854	-	-
August 2019	2,890	89,590	-	-
September 2019	2,956	88,680	-	-
October 2019	2,751	85,281	-	-
November 2019	3,058	91,740	-	-
December 2019	2,952	91,512	-	-
January 2020	3,234	100,254	-	-
February 2020	2,801	81,229	-	-
March 2020	2,726	84,506	-	-
April 2020	2,004	60,120	-	-
May 2020	1,856	57,536	-	-
June 2020	2,460	73,800	-	-
July 2020	2,559	79,329	-	-
August 2020	2,548	78,988	-	-
September 2020	2,663	79,890	-	-
October 2020	2,796	86,676	-	-
November 2020	2,881	86,430	-	-
December 2020	2,737	84,847	-	-
January 2021	2,236	69,316	-	-
February 2021	2,506	70,188	-	-
March 2021	2,765	85,715	-	-
April 2021	2,825	84,750	-	-
May 2021	2,471	76,601	-	-
June 2021	2,063	61,890	-	-
July 2021	2,086	64,666	-	-
Total number of vehicles			3,065,926	1,490,587

Patent 2
System 4

Patent 1
Systems 1 to 3