

WHAT IS CLAIMED IS:

1. A travelling vehicle system that allows travelling vehicles to travel in sections containing a curve in a travelling route under control of a ground controller,

5 wherein the travelling vehicles travel along the travelling route comprise an obstacle sensor for curved travel and a communication unit for communication with the ground controller, and are configured and programmed to make a request for a travel permission to the ground controller via the communication unit before travelling in sections containing a curve,

10 the ground controller controls travelling of the travelling vehicles and comprises:

a memory in which travel permissions for a section containing a curve that are already given to the travelling vehicles are stored, and from which the travel permissions are deleted when the travelling vehicles leave the section; and

15 a travel permission unit configured and programmed to, when a request for a permission to travel in the section is received from a travelling vehicle, reference the memory, give a first travel permission if a permission to travel has not been given to another travelling vehicle, and give a low-order travel permission that permits travel with a lower speed than the first travel permission if a permission to
20 travel has been given to another travelling vehicle.

2. The travelling vehicle system according to claim 1,

wherein the travel permission unit is configured and programmed to, when the travelling vehicle farthest ahead in the section leaves the section, change the travel
25 permission for the travelling vehicle immediately subsequent to the farthest ahead travelling vehicle in the section to the first travel permission.

3. The travelling vehicle system according to claim 1 or 2,

wherein the ground controller further comprises a means for, for each travelling vehicle, storing a frequency of interferences with leading vehicles or rapid speed reductions in sections, and

5 the travel permission unit is configured and programmed to, when giving the low-order travel permission, give a travel permission with a lower speed when the frequency is high, and give a travel permission with a higher speed when the frequency is low.

10 4. The travelling vehicle system according to any of claims 1 to 3,

wherein the section is a diverging section or a merging section, and the travel permission unit is configured and programmed to not give the low-order travel permission when a request for a travel permission to a different side from the other travelling vehicle in the diverging section is received, or when a request for a travel
15 permission from a different side from the other travelling vehicle in the merging section is received.

5. A method of controlling travelling of travelling vehicles in curved sections, for allowing travelling vehicles to travel in sections containing a curve in a travelling
20 route under control of a ground controller,

wherein the travelling vehicles make a request for a travel permission to the ground controller before travelling in a section containing a curve, monitor an obstacle in the section with an obstacle sensor for curved travel, and stop or perform speed reduction to avoid interference if an obstacle is detected, and

25 the ground controller

stores travel permissions for the section that are already given to the travelling vehicles in a memory, and deletes the travel permissions from the memory

when the travelling vehicles leave the section, and

- when a request for a permission to travel in the section is received from a travelling vehicle, references the memory, gives a first travel permission if a permission to travel has not been given to another travelling vehicle, and gives a
- 5 low-order travel permission that permits travel with a lower speed than the first travel permission if a permission to travel has been given to another travelling vehicle.

WHAT IS CLAIMED IS:

1. A travelling vehicle system that allows travelling vehicles to travel along a travelling route and in a curved section under control of a ground controller,

wherein the travelling vehicles travel along the travelling route, are provided with an obstacle sensor for the curved section and a communication unit for communication with the ground controller, and are configured to make a request for a travel permission to the ground controller via the communication unit before travelling the curved section,

wherein the ground controller controls travelling of the travelling vehicles and comprises:

a memory in which travel permissions for the curved section given to the travelling vehicles are stored and from which the travel permissions are deleted when the travelling vehicles leave the curved section; and

a travel permission unit configured to give a first travel permission, unless a permission to another travelling vehicle to travel has not been given, and to give a lower-order travel permission that permits travel with a lower speed than the first travel permission, if a permission to another travelling vehicle to travel has been given with reference to the memory, when a travel permission in the curved section is requested by a travelling vehicle,

wherein the travelling vehicles are configured to enter into the curved section if given the travel permission from the ground controller and wait if the travel permission is not given, and

wherein the travelling vehicle with the first travel permission and the travelling vehicle with the lower-order travel permission are configured to travel in the curved section simultaneously, and the travelling vehicle with the lower-order travel permission is configured to monitor a leading

travelling vehicle by the obstacle sensor for the curved section.

2. The travelling vehicle system according to claim 1,

wherein the travel permission unit is configured to change the travel permission for a travelling vehicle just next to a most leading travelling vehicle in the curved section to the first travel permission, when the most leading travelling vehicle leaves the curved section,

3. The travelling vehicle system according to claim 1 or 2,

wherein the ground controller further comprises a means for storing a frequency of interferences with leading vehicles or rapid speed reductions in the curved section for each travelling vehicle, and

wherein the travel permission unit is configured to give a travel permission with a lower speed, when the frequency is high, and give a travel permission with a higher speed, when the frequency is low, when giving the lower-order travel permission.

4. The travelling vehicle system according to any of claims 1 to 3,

wherein the curved section is a diverging section or a merging section, and the travel permission unit is configured to give the lower-order travel permission, when requested a travel permission to a same side to another travelling vehicle in the diverging section or when requested a travel permission from a same side to another travelling vehicle in the merging section, and not to give the lower-order travel permission, when requested a travel permission to a different side to another travelling vehicle in the diverging section, or when requested a travel permission from a different side to another travelling vehicle in the merging section.

5. A method for controlling travelling of travelling vehicles in a curved section,

for allowing travelling vehicles to travel along a travelling route and in the curved section under control of a ground controller,

wherein the travelling vehicles make a request for a travel permission to the ground controller before travelling in the curved section, monitor an obstacle in the curved section with an obstacle sensor for the curved section, and stop or decelerate to avoid interference if an obstacle is detected, and

the ground controller

stores travel permissions for the curved section for the travelling vehicles in a memory, and deletes the travel permissions from the memory when the travelling vehicles leave the curved section, and

gives a first travel permission, unless a permission to another travelling vehicle to travel has not been given, and gives a lower-order travel permission that permits travel with a lower speed than the first travel permission, if a permission to another travelling vehicle to travel has been given with reference to the memory, when a travel permission in the curved section is requested by a travelling vehicle,

the travelling vehicles enter into the curved section if given the travel permission from the ground controller and wait if the travel permission is not given, and

the travelling vehicle with the first travel permission and the travelling vehicle with the lower-order travel permission travel in the curved section simultaneously, and the travelling vehicle with the lower-order travel permission monitors a leading travelling vehicle by the obstacle sensor for the curved section.