

TITLE: Railway vehicle

5 The present invention relates to a railway vehicle.

Many railway vehicles comprise driver's consoles, generally including control members provided to allow a driver of the vehicle to control a movement of the vehicle and to modify the speed of the vehicle.

10 Such driver's consoles are generally placed at the ends of the vehicle in order to allow the driver to observe the zone in which the vehicle is moving, and in particular to detect any obstacles without the assistance of additional sensors. There are generally two of these consoles, one at each end of the vehicle, in order to allow the vehicle to move in one direction or the other. As a result, when the vehicle is running, no more than one of the two consoles is used at any moment. In other cases, the vehicle is provided to be
15 controlled remotely, or even to move autonomously without the involvement of a driver, in which case the driver's consoles are used only under exceptional circumstances, for example in case of failure of the remote driving system, or to move the vehicle, in the absence of passengers, in storage areas of the vehicle.

20 As a result, it is known, in order to increase the available space and therefore the accommodation capacity of the vehicle, to allow passengers to access the area in which the driver's console is received when this console is not in use. For example, it is provided to place an additional cover on the consoles allowing the console to be made inaccessible to passengers. In other cases, the console is retractable by translation in lateral supports placed on either side of the front windshield of the vehicle.

25 However, these solutions are not optimized. In particular, the removable covers are complex to place, and their presence, on top of the console itself, limits the field of view of the passengers through the front windshield of the vehicle. Consoles retractable by translation in lateral supports in turn necessarily have substantial travel, which poses risks of the cables coupling the console to the other equipment of the vehicle being damaged
30 during the movement of the console, which therefore limits the reliability of the vehicle.

There is therefore a need for a vehicle including a driver's console that is compatible with the presence of passengers in the area surrounding the console, that allows a broad field of view for the passengers, while having better reliability than the vehicles of the state of the art.

35 To that end, proposed is a railway vehicle including a driver's console of the railway vehicle and a support, the support being configured to support the driver's console, the

support including a first upper face delimiting the support in an elevation direction of the railway vehicle, the console including driving means of the railway vehicle, the console being rotatable relative to the support between at least one deployed position in which the driving means are accessible for an operator and a retracted position in which the driving means are inaccessible for the operator, the console being accommodated in a cavity of the support when the console is in the retracted position, the console extending outside the support from the first upper face when the console is in the deployed position.

According to advantageous but optional aspects, the vehicle includes one or more of the following features, considered alone or in any technically possible combination:

- the cavity emerges on the first upper face, the console including a terminal bearing the driving means and a cover delimiting the console in the elevation direction, the cover closing off the cavity when the console is in the retracted position, the console being inserted between the cover and the support when the console is in the deployed position.

- the terminal has at least one active face bearing the driving means, the cover including a portion protruding relative to the active face in a direction substantially perpendicular to the active face, the protruding portion in particular having a length of between 10 centimeters and 20 centimeters.

- the cover is movable relative to the active face between a first position and a second position, the length of the portion protruding in the first position being strictly greater than the length of the portion protruding in the second position.

- the cover is configured to move from the first position to the second position when the console moves from the retracted position to the deployed position.

- the support includes at least one bearing face, the cover bearing against the bearing face when the console is in the retracted position, the cover being distant from the bearing face when the console is in the deployed position, the bearing face in particular being a face of a shoulder protruding inside the cavity.

- the rail vehicle includes a sealing gasket inserted between the cover and the bearing face when the console is in the retracted position, the sealing gasket being configured to prevent a liquid from penetrating in the cavity from the first upper face when the console is in the retracted position.

- the console has a second upper face delimiting the console in the elevation direction, the second upper face being level with the first upper face when the console is in the retracted position.

- an angular difference between the deployed position and the retracted position is between 30 degrees and 40 degrees.

- the console is rotatable relative to the support along a substantially horizontal axis, the axis in particular being perpendicular to a longitudinal direction of the railway vehicle, the vehicle being configured to move in the longitudinal direction.

Features and advantages of the invention will appear more clearly upon reading the following description, provided solely as a non-limiting example, and done in reference to the appended drawings, in which:

[Fig 1] figure 1 is a perspective view of an example driver's station of a railway vehicle according to the invention, including a driver's console, and

[Fig. 2] figure 2 is a schematic sectional illustration of the driver's console of figure 1.

An exemplary driver's station 10 of a railway vehicle is shown in figure 1.

The railway vehicle is for example a subway, tram or train.

The driver's station 10 is arranged at one end of the railway vehicle. In particular, the railway vehicle 10 is able to move in a longitudinal direction DL, the longitudinal direction DL in particular being a direction in which the railway vehicle has its largest dimension, the railway vehicle 10 being delimited in the longitudinal direction DL by the driver's station 10.

The driver's station 10 is in particular interposed along the longitudinal direction DL between a passenger compartment of the railway vehicle and the outside of the railway vehicle.

According to the example shown in figure 1, the driver's station 10 includes a windshield 15, a support 20, a driver's console 25, and optionally a seat 30 intended for the driver.

The windshield 15 is provided to allow a person present in the driver's station 10 to observe the outside of the railway vehicle in the longitudinal direction DL. According to the embodiment shown in figures 1 and 2, the windshield 15 is inclined toward the inside of the vehicle, that is to say, an upper end of the windshield 15 is interposed, in the longitudinal direction DL, between a lower end of the windshield 15 and the opposite end of the railway vehicle.

The support 20 is also called "trim", in particular "front trim" or "rear trim".

The support 20 is configured to support the console 25.

The support 20 is interposed, in the longitudinal direction DL, between the windshield 15 and the seat 30.

The support 20 is in particular accommodated in a space delimited, in an elevation direction Z of the vehicle, by a floor of the driver's station 10 and by the windshield 15. The elevation direction Z is a direction provided to be a vertical direction when the vehicle is running, in particular when the vehicle moves over a horizontal railroad track portion.

The support 20 extends transversely to the vehicle 10. In particular, the support 20 extends along a transverse direction DT perpendicular to the longitudinal direction DL and to the elevation direction Z. According to one embodiment, the support 20 extends transversely from one side wall to the other of the driver's station 10.

5 The support 20 has a first upper face 35, a first bearing face 37 and a longitudinal face 40. The support 20 further delimits a cavity 42.

The upper face 35 delimits the support 20 in the elevation direction Z. In particular, the support 20 is delimited, in the elevation direction Z, by the floor and by the first upper face 35.

10 The first upper face 35 is oriented away from the floor in the elevation direction Z.

The first upper face 35 is for example curved. In particular, the first upper face 35 has a convex profile in a plane perpendicular to the transverse direction DT.

A distance between the first upper face 35 and the floor is for example between 95 centimeters (cm) and 115 cm, in particular between 100 cm and 110 cm. However, this
15 distance may vary.

The longitudinal face 40 delimits the support 20 in the longitudinal direction DL. In particular, the longitudinal face 40 is oriented in the longitudinal direction DL toward the inside of the vehicle 10, in particular toward the seat 30 and/or the passenger compartment.

20 The cavity 42 emerges on the first upper face 35.

The cavity 42 for example extends substantially in the elevation direction Z.

The console 25 includes driving means 45 of the vehicle 10. In particular, the console 25 includes a driving console 50 of the vehicle and a cover 55. The console 25 further has a second upper face 60.

25 The console 25 is movable relative to the support 20 between a retracted position and a deployed position. In particular, the console 25 is rotatable between the retracted position and the deployed position around an axis of rotation A.

The axis of rotation A is for example substantially perpendicular to the longitudinal direction DL and the elevation direction Z. In particular, the axis of rotation A is parallel to
30 the transverse direction DT.

The term "substantially" refers, for a direction, in particular, to an orientation to within 15 degrees ($^{\circ}$). Thus, a direction "substantially perpendicular" to another forms an angle with the latter of between 75° and 105° .

35 The axis of rotation A is in particular inserted along the longitudinal direction DL between the console 25 and the end of the vehicle. The axis of rotation A is further inserted between the first upper face 35 and the floor.

When the console 25 is in the deployed position, the driving means 45 are accessible to an operator. For example, when the console 25 is in the deployed position, the console 25 extends outside the support from the first upper face 35. In other words, in the deployed position, the console 25 protrudes from the first upper face 35. In this position, the first upper face 35 is inserted, in the elevation direction Z, between at least one part of the console 25 and the floor.

When the console 25 is in the retracted position, the driving means 45 are inaccessible to the operator. In particular, when the console 25 is in the retracted position, the console 25 is received in the cavity 42, in particular completely received in the cavity 42.

An angular difference α between the deployed position and the retracted position is, for example, between 30° and 40° . The angular difference α is measured in a vertical plane between a line passing through a point of the console 25 and the axis of rotation A when the console 25 is in the deployed position, and a line passing through the same point of the console 25 and the axis of rotation A when the console 25 is in the retracted position.

In figure 1, the console 25 is shown in the deployed position. The console 25 is shown in figure 2 in solid lines in the deployed position, and in the retracted position in broken lines.

The console 25 is configured to cooperate with the support 20 in order to keep the console 25 in its retracted position and/or in its deployed position in the absence of action by an operator. For example, the console 25 and/or the support 20 include means for locking the console 25 in the deployed position and/or in the retracted position. These locking means for example comprise electromechanical means for moving a locking pin carried by the support 20 toward a corresponding cavity of the console 25.

The locking means are in particular provided to allow the console 25 to bear a load greater than or equal to 60 kilograms, for example greater than or equal to 80 kilograms, when the console 25 is in the deployed position.

The console 25 includes, in certain embodiments, movement means able to move the console from the retracted position to the deployed position or vice versa. These movement means for example include one or several gas cylinder(s), one or several springs, or other types of movement means or actuators.

The second upper face 60 delimits the console 25 in the elevation direction Z. The second upper face 60 is in particular oriented away from the floor.

In particular, the second upper face 60 is, among the faces of the console 25 delimiting the console 25 in the elevation direction Z, the face furthest from the floor.

The second upper face 60 is for example level with the first upper face when the console 25 is in the retracted position.

The driving means 45 are configured to allow a driver of the vehicle to control a movement of the vehicle in at least the longitudinal direction DL. The driving means 45 for example include a member able to be actuated by the driver in order to control a movement of the vehicle, a member able to be actuated by the driver to modify a speed and/or an acceleration of the vehicle, and/or means for displaying at least one speed of the vehicle. It should be noted that many other members that can be actuated by the driver and/or means for communicating information to the driver can be comprised in the driving means 45.

The terminal 50 bears the driving means 45. For example, the terminal 50 comprises a housing 65 and one or several control means.

The housing 65 has at least one driving face bearing the driving means 45. In the example shown in figures 1 and 2, the housing 65 includes two active faces, one being substantially vertical when the console 25 is in the deployed position, the other active face being substantially horizontal when the console 25 is in the deployed position.

The substantially horizontal active face is for example arranged at a height, measured from the floor in the elevation direction Z, of between 95 cm and 115 cm, in particular between 100 cm and 110 cm. However, this height may vary.

Each active face is accessible to the driver when the console 25 is in the deployed position.

The housing 65 is for example made from plastic.

Each control module is configured to convert information sent by the driving means 45 into commands comprehensible for active members of the vehicle, and vice versa. The active members for example comprise at least one engine, brakes, or a light of the vehicle.

Each control module is received in a chamber delimited by the housing 65.

Each control module and/or the corresponding driving means is (are) coupled to the corresponding active members via electrical connectors and/or pneumatic or hydraulic pipes. These connectors and/or these pipes for example pass through the housing 65 at a rear face of the housing 65, that is to say, a face oriented in the longitudinal direction DL toward the windshield 15. In a variant, these connectors and/or these pipes pass through the housing 65 at a lower face of the housing 65.

The distance between the axis of rotation A and an outlet orifice of at least one connector and/or of at least one pipe of the housing 65 is for example between 80 millimeters (mm) and 200 mm.

The cover 55 delimits the console in the elevation direction Z. In particular, the second upper face 60 is a face of the cover 55.

The cover 55 is configured to close off the cavity 42 when the console 25 is in the retracted position. For example, the cover 55 is complementary to the opening formed by the cavity 42 on the first upper face 35.

The cover 55 delimits the terminal 50 in the elevation direction Z, the terminal 50 in particular being inserted in the elevation direction Z between the support 20 and the cover 55 when the console 25 is in the deployed position.

The cover 55 is configured to bear against the bearing face 37 when the console 25 is in the retracted position. When the console 25 is in the deployed position, the cover 55 is distant from the bearing face 37.

The bearing face 37 is for example an upper face of a ring extending radially inward in the cavity 42, in particular a face delimiting the ring in the elevation direction Z. The ring is, for example, formed by a shoulder arranged in the faces of the support 20 that delimit the cavity 42. The shoulder then protrudes in the cavity 42. The ring or the shoulder for example surrounds the cavity 42 in a plane perpendicular to the elevation direction Z.

In a variant, the bearing face 37 is a portion of the first upper face 35.

A sealing gasket is in particular inserted between the bearing face 37 and the cover 55 when the cover 55 is in the retracted position. This sealing gasket is configured to prevent a liquid from penetrating the cavity 42 from the first upper face 35 when the console 25 is in the retracted position. The seal is, for example, a peripheral seal surrounding the terminal 55 in a plane perpendicular to the elevation direction Z.

The cover 55 is configured to bear a load greater than or equal to 100 kilograms (kg), in particular greater than or equal to 200 kg, when the cover 55 bears against the bearing face 37. In particular, the cover 55 is configured to bear a load greater than or equal to 240 kg when the cover 55 bears against the bearing face 37.

The cover 55 is for example made in the form of a sheet or plate of a plastic or metal material, for example a sheet of polyester. According to one embodiment, the sheet of polyester further includes glass or carbon fibers.

The cover 55 is for example made from an opaque material.

The cover 55 has a thickness of between 4 mm and 7 mm.

The cover 55 includes at least one portion 70 protruding relative to one of the active faces, in particular relative to a substantially vertical active face when the console 25 is in the deployed position. In the deployed position, the cover 55 protrudes relative to the corresponding active face in the longitudinal direction DL, in particular in a direction

opposite the windshield 15. In the deployed position, the cover 55 protrudes over a length in particular of between 10 centimeters (cm) and 20 cm.

The cover 55 is movable relative to the terminal 50 between a first position and a second position.

5 The cover 55 is in particular configured to move between the first position and the second position when the console 25 is moved between the retracted position and the deployed position.

When the console 25 is in the retracted position, the cover 55 is in the first position. When the console 25 is in the deployed position, the cover 55 is in the second position.

10 When the cover 55 is in the first position, the length of the protruding portion 70 is strictly greater than the length of this same portion in the second position. For example, when the cover 55 goes from the first position to second position, the cover 55 moves in the longitudinal direction DL toward the windshield 15. A difference between the length of the portion 70 in the first position and the length of the portion 70 in the second position is
15 between 130 mm and 150 mm.

The rotatable console 25 allows the driving means 45 to be inaccessible to the passengers when the console 25 is in the retracted position, while limiting the stresses exerted on the cables coupling the console 25 to the rest of the vehicle, since the amplitude of the movement of the console 25 at the rear part of the console 25 is small.
20 The railway vehicle is therefore more reliable.

Furthermore, the console 25, in the retracted position, does not obstruct the vision of the passengers, whose traveling comfort is therefore improved.

The closing of the cavity 42 by the cover 55 in the retracted position prevents objects from being introduced by the passengers in the cavity and interfering with the
25 operation of the console 25. The sealing gasket in particular makes it possible to protect the driving means 45 and the associated electronics from any liquids spilled by the passengers.

The protruding portion 70 serves as a visor and allows a good view of the driving means 45 by the driver even in case of direct sunlight. A length of 10 to 20 cm is
30 particularly appropriate for that purpose.

When the cover 55 bears against the support 20, in particular against the bearing face 37, the console 25 is better able to bear loads in its retracted position.

An angular difference of 30 to 40° between the deployed and retracted positions in particular makes it possible for the console 25, and in particular the active faces, to be
35 oriented in the retracted position such that the liquid introduced into the cavity 42 does not

stagnate on the active faces, but runs along them. The risk of subsequent damage of the console 25 is therefore reduced.

A horizontal axis of rotation A allows a console 25 with a simple shape to interact easily in most of the supports 20 having standard shapes, with a simple rotation mechanism.

A variant of the exemplary vehicle shown in figure 1 will now be described. The elements identical to the example of figure 1 are not described again. Only the differences are shown.

Two or more distinct positions are defined for the console 25.

For example, in a first deployed position, the substantially horizontal active face is arranged at a height of between 80 cm and 90 cm, while in a second deployed position, this height is between 100 cm and 110 cm.

In particular, when the console 25 is in the first deployed position, the cover 55 is in its first position, but the cover 55 is in its second position when the console 25 is in the second deployed position.

Thus, the console 25 in the second deployed position is configured for driving by a standing driver, the portion 70 not forming an obstacle to the view by the pilot of the active faces even if the pilot is tall.

The locking means are able to lock the console 25 indifferently in each of its deployed positions.

This variant allows the console 25 to be easily adapted to different positions of the driver, in particular positions in which the driver is seated or standing, and to different sizes of the driver. Indeed, it suffices to choose a deployed position adapted to the morphology or the position of the driver, without the console 25 or the support 20 having to be modified.

1. A railway vehicle including a driver's console (25) of the railway vehicle and a support (20), the support (20) being configured to support the driver's console (25), the support (20) including a first upper face (35) delimiting the support (20) in an elevation direction (Z) of the railway vehicle, the console (25) including driving means (45) of the railway vehicle,

characterized in that the console (25) is rotatable relative to the support (20) between at least one deployed position in which the driving means (45) are accessible for an operator and a retracted position in which the driving means (45) are inaccessible for the operator, the console (25) being accommodated in a cavity (42) of the support (20) when the console (25) is in the retracted position, the console (25) extending outside the support (20) from the first upper face (35) when the console (25) is in the deployed position,

wherein the cavity (42) emerges on the first upper face (35), the console (25) including a terminal (50) bearing the driving means (45) and a cover (55) delimiting the console (25) in the elevation direction (Z), the cover (55) closing off the cavity (42) when the console (25) is in the retracted position, the console (50) being inserted between the cover (55) and the support (20) when the console (25) is in the deployed position,

wherein the terminal (50) has at least one active face bearing the driving means (45), the cover (55) including a portion (70) protruding relative to the at least one active face in a direction substantially perpendicular to said active face over a length, and

wherein the cover (55) is movable relative to the active face between a first position and a second position, the length of the portion (70) protruding in the first position being strictly greater than the length of the portion (70) protruding in the second position.

2. The railway vehicle according to claim 1, wherein the protruding portion (70) has a length of between 10 centimeters and 20 centimeters.

3. The railway vehicle according to claim 1 or 2, wherein the cover (55) is configured to move from the first position to the second position when the console (25) moves from the retracted position to the deployed position.

4. The railway vehicle according to any one of claims 1 to 3, wherein the support (20) includes at least one bearing face (37), the cover (55) bearing against the bearing face (37) when the console (25) is in the retracted position, the cover (55) being distant from the bearing face (37) when the console (25) is in the deployed position, the bearing face (37) in particular being a face of a shoulder protruding inside the cavity (42).

5. The railway vehicle according to claim 4, including a sealing gasket inserted between the cover (55) and the bearing face (37) when the console (25) is in the retracted position, the sealing gasket being configured to prevent a liquid from penetrating in the cavity (42) from the first upper face (35) when the console (25) is in the retracted position.

6. The railway vehicle according to any one of the preceding claims, wherein the console (25) has a second upper face (60) delimiting the console (25) in the elevation direction (Z), the second upper face (60) being level with the first upper face (35) when the console (25) is in the retracted position.

7. The railway vehicle according to any one of the preceding claims, wherein an angular difference between the deployed position and the retracted position is between 30 degrees and 40 degrees.

8. The railway vehicle according to any one of the preceding claims, wherein the console (25) is rotatable relative to the support (20) along a substantially horizontal axis (A), the axis (A) in particular being perpendicular to a longitudinal direction (DL) of the railway vehicle, the vehicle being configured to move in the longitudinal direction.