railway trains, screen doors of subway stations, etc.

Although a preferred embodiment of the present invention has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

What is claimed:

~~1. An electric door lock comprsing:~~

a locking switch provided in a door frame for checking the locking state of a door body when the door body is closed, the door frame slidably supporting at least one door body;

a pair of screws capable of rotating forwards and rearwards and disposed parallel with each other in one side of the door frame in the direction towards which the door body slides;

a locking roller guide provided in the door frame in the proximity of the screws; and

a slide unit wherein one end thereof is rotatably connected to the screw and the other end thereof is connected to the door body, the slide unit including a locking switch-pressing plate actuated to operate the locking switch when the door body is ~~closed, such that a locking signal is generated by the locking~~

switch, and a locking roller acting in combination with the locking roller guide.

2. The electric door lock of claim 1,

wherein the locking roller guide comprises

a guide body;

an inclined section provided at a certain angle on one surface of the guide body to define a path along which the locking roller rolls, the angle being defined in the direction towards which the door body is closed; and

a vertical end formed at the utmost position of the inclined section such that the vertical end extends in the direction that intersects the direction in which the door body slides.

3. The electric door lock of claim 1,

wherein the locking roller is elastically biased towards the direction against which the locking roller approaches the locking roller guide.

4. The electric door lock of claim 2,

when the door body is closed, the locking switch-pressing plate is actuated to operate the locking switch in response to the interaction between the locking roller and the locking roller guide, when the locking roller that is moving on the inclined section of the locking roller guide passes through the utmost position of the inclined section of the locking roller guide, it falls down towards the vertical end so that the locking roller comes into contact with or confronts the vertical end of

~~the locking roller guide.~~

5. The electric door lock of claim 1,

wherein the sliding unit includes

a screw nut that is rotatably screw-coupled to the screw such that it is movable in the longitudinal direction of the screw;

a screw nut lump that surrounds and supports the screw nut and to which the locking switch-pressing plate and the locking roller are connected at one side; and

a screw nut lump housing that partially surrounds and supports the screw nut lump such that the screw nut lump can be rotated at a certain angle.

6. The electric door lock of claim 5,

wherein the screw nut lump housing includes:

a housing body;

an opening that is formed to one side of the housing body such that the locking switch-pressing plate is open towards the locking switch; and

a through-passage that is formed in one side of the housing body to allow a support for the locking roller, which connects and supports the locking roller and screw nut lump, to move therethrough.

7. The electric door lock of claim 6,

wherein the through-passage is composed of a long hole through which the locking switch-pressing plate reciprocates between ~~the switch-off position where the door body is opened so that~~

the locking switch is not actuated and the switch-on position where the door body is closed so that the locking switch is actuated.

8. The electric door lock of claim 5,

wherein the sliding unit further comprises:

a hanger connected with the door body;

a guide roller connected to one side of the hanger and coupled to a guide rail formed on the door frame such that it is able to roll along the guide rail; and

a link that connects and supports the other side of the hanger and the screw nut lump housing.

9. The electric door lock of claim 8,

wherein the sliding unit further comprises

a hinge pin that is coupled to the screw nut lump housing and the link such that it rotatably supports the screw nut lump housing in connection with the link.

10. The electric door lock of claim 1,

wherein the electric door body, the locking switch, the screw, the locking roller guide, and the sliding unit are provided in a pair unit, respectively, in which both elements are symmetric with each other, on the door frame.

11. The electric door lock of claim 10,

wherein the pair of screws have threads opposite to each other.

12. The electric door lock of claim 10, wherein the electric door lock further comprises a closing switch provided in the

~~door body so as to generate a signal indicative of the locked~~ state of the door body when the door body was closed.

13. The electric door lock of claim 5,

wherein the electric door lock further comprises a space between the screw nut lump and the screw nut lump housing, where the screw nut lump can move in the sliding direction of the door body or in the direction that intersects the sliding direction in connection with the screw nut lump housing.

14. ~~A~~ electric door comprising the electric door lock of any ~~one of the claims 1 to 13,~~

railway trains, screen doors of subway stations, etc.

Although a preferred embodiment of the present invention has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

What is claimed;

1. An electric door lock comprising:

a locking switch provided in a door frame for checking the locking state of a door body when the door body is closed, the door frame slidably supporting at least one door body;

a pair of screws capable of rotating forwards and rearwards and disposed parallel with each other in one side of the door frame in the direction towards which the door body slides;

a locking roller guide provided in the door frame in the proximity of the screws; and

a slide unit wherein one end thereof is rotatably connected to the screw and the other end thereof is connected to the door body, the slide unit including a locking switch-pressing plate actuated to operate the locking switch when the door body is closed, such that a locking signal is generated by the locking switch, and a locking roller acting in combination with the locking roller guide.

2. The electric door lock of claim 1,

wherein the locking roller guide comprises

a guide body;

an inclined section provided at a certain angle on one surface of the guide body 20 to define a path along which the locking roller rolls, the angle being defined in the direction towards which the door body is closed; and

a vertical end formed at the utmost position of the inclined section such that the vertical end extends in the direction that intersects the direction in which the door body slides.

3. The electric door lock of claim 1,

wherein the locking roller is elastically biased towards the direction against which the locking roller approaches the locking roller guide.

4. The electric door lock of claim 2,

when the door body is closed, the locking switch-pressing plate is actuated to operate the locking switch in response to the interaction between the locking roller and the locking roller guide, when the locking roller that is moving on the inclined section of the locking roller guide passes through the utmost position of the inclined section of the locking roller guide, it falls down towards the vertical end so that the locking roller comes into contact with or confronts the vertical end of the locking roller guide.

5. The electric door lock of claim 1,

wherein the sliding unit includes

a screw nut that is rotatably screw-coupled to the screw such that it is movable in the longitudinal direction of the screw;

a screw nut lump that surrounds and supports the screw nut and to which the locking switch-pressing plate and the locking roller are connected at one side; and

a screw nut lump housing that partially surrounds and supports the screw nut lump such that the screw nut lump can be rotated at a certain angle.

6. The electric door lock of claim 5,

wherein the screw nut lump housing includes:

a housing body;

an opening that is formed to one side of the housing body such that the locking switch-pressing plate is open towards the locking switch; and

a through-passage that is formed in one side of the housing body to allow a support for the locking roller, which connects and supports the locking roller and screw nut lump, to move therethrough.

7. The electric door lock of claim 6,

wherein the through-passage is composed of a long hole through which the locking switch-pressing plate reciprocates between the switch-off position where the door body is opened

so that the locking switch is not actuated and the switch-on position where the door body is closed so that the locking switch is actuated.

8. The electric door lock of claim 5,

wherein the sliding unit further comprises:

a hanger connected with the door body;

a guide roller connected to one side of the hanger and coupled to a guide rail formed on the door frame such that it is able to roll along the guide rail; and

a link that connects and supports the other side of the hanger and the screw nut lump housing.

9. The electric door lock of claim 8,

wherein the sliding unit further comprises a hinge pin that is coupled to the screw nut lump housing and the link such that it rotatably supports the screw nut lump housing in connection with the link.

10. The electric door lock of claim 1,

wherein the electric door body, the locking switch, the screw, the locking roller guide, and the sliding unit are provided in a pair unit, respectively, in which both elements are symmetric with each other, on the door frame.

11. The electric door lock of claim 10,

wherein the pair of screws have threads opposite to each other.

12. The electric door lock of claim 1,

wherein the electric door lock further comprises a closing switch provided in the door body so as to generate a signal indicative of the locked state of the door body when the door body was closed.

13. The electric door lock of claim 5,

wherein the electric door lock further comprises a space between the screw nut lump and the screw nut lump housing, where the screw nut lump can move in the sliding direction of the door body or in the direction that intersects the sliding direction in connection with the screw nut lump housing.