Claims

1. An elevator comprising:

an elevator car that causes an elevator hoistway disposed in a building structure to perform elevating movement;

a door part that covers an opening of the elevator car or a doorway disposed on each floor of the building structure so as to be openable and closeable;

an upper detection switch that outputs an upper door closing detection signal when it is detected that the door part moves to a closing end position which is a position where the door part covers and closes the opening or the doorway in an upper end portion in a vertical direction of the door part;

a lower detection switch that outputs a lower door closing detection signal when it is detected that the door part moves to the closing end position in a lower end portion in the vertical direction of the door part; and

a control unit that determines whether or not to cause the elevator car to perform the elevating movement, based on the upper door closing detection signal and the lower door closing detection signal,

wherein the control unit determines that the elevator car is capable of performing the elevating movement, when the control unit receives both the upper door closing detection signal and the lower door closing detection signal,

wherein the control unit has a failure prediction diagnostic unit for diagnosing a failure prediction of the door part, based on the upper door closing detection signal and the lower door closing detection signal, and

wherein the failure prediction diagnostic unit diagnoses the failure prediction of the door part, based on a timing at which the upper door closing detection signal is output from the upper detection switch and a timing at which the lower door closing detection signal is output from the lower detection switch.

2. The elevator according to claim 1,

wherein the control unit opens the door part in a case where the control unit does not receive any one of the upper door closing detection signal and the lower door closing detection signal, even though a predetermined time elapses after a door closing command to close the door part is output.

3. The elevator according to claim 1,

wherein the failure prediction diagnostic unit has a storage unit which stores a time spent until the lower door closing detection signal is output from the lower detection switch after the upper

door closing detection signal is output from the upper detection switch and a time spent until the upper door closing detection signal is output from the upper detection switch after the lower door closing detection signal is output from the lower detection switch.

4. The elevator according to claim 1,

wherein the upper detection switch and the lower detection switch are disposed in all of the door parts in the door part disposed in the elevator car and the door part disposed in the doorway on each floor of the building structure, and

wherein the control unit causes the elevator car to perform the elevating movement, when the control unit receives all of the upper door closing detection signal output from the upper detection switch disposed in all of the door parts and the lower door closing detection signal output from the lower detection switch disposed in all of the door parts.

5. The elevator according to claim 1, further comprising:

a door pocket that is disposed in an upper end portion in the vertical direction of the opening or the doorway, and that has a guide rail which supports the door part so as to be movable in an opening/closing direction of the door part; and

a door sill that is disposed in a lower end portion of the opening or the doorway in the vertical direction, and that supports the door part so as to be movable in the opening/closing direction of the door part,

wherein the upper detection switch has

an upper switch bracket fixed to the door pocket, and

an upper switch main body fixed to the upper switch bracket,

wherein the lower detection switch has

a lower switch bracket fixed to the door sill, and

a lower switch main body fixed to the lower switch bracket,

wherein an upper pressing member for pressing the upper detection switch at the closing end position is disposed in the upper end portion of the door part in the vertical direction,

wherein a lower pressing member for pressing the lower detection switch at the closing end position is disposed in the lower end portion of the door part in the vertical direction,

wherein the upper pressing member has

an upper support bracket fixed to the upper end portion of the door part, and

an upper cam switch piece fixed to the upper support bracket so as to press a contact roller disposed in the upper switch main body,

wherein the lower pressing member has

a lower support bracket fixed to the lower end portion of the door part, and

a lower cam switch piece fixed to the lower support bracket so as to press a contact roller disposed in the lower switch main body, and

wherein one end portion on a side in a door closing direction which is a direction in which the door part is closed in the upper cam switch piece and the lower cam switch piece has an inclined surface portion inclined downward in the vertical direction as the inclined surface portion faces a side in the door closing direction of the door part.