Patent Claims

1. Elevator system with at least one traveling body (3, 4), which is arranged capable of travel along a guiderail (9) in an elevator hoistway (2), containing a safety gear (11, 11.1, 11.2, 11g) which is arranged on the traveling body (3, 4) and which is provided to brake and hold the traveling body (3, 4) on the guiderail (9), or on a braking rail, in case of need, and a device for actuating the safety gear (18, 18.1, 18.2), which is arranged on the traveling body (3, 4) and connected to the safety gear (11, 11.1, 11.2, 11g), wherein the device for actuating the safety gear contains at least one coupler body (20) which, in case of need, can be pressed against the elevator hoistway, preferably against the guiderail or braking rail (9), wherein the actuation of the safety gear is effected by a relative movement between the pressed-on coupler body (20) and the safety gear, characterized in that the coupler body (20) contains a preferably curved coupler surface (21), which is arranged swivelably about a swivel axle (22) in the device for actuating the safety gear (18, 18.1, 18.2).

2. Elevator system according to Claim 1, wherein the preferably curve-shaped coupler surface (21) is embodied in such manner that a press-on force of the coupler body (20) on the elevator hoistway, or guiderail or braking rail (9) respectively, increases over a swivel range of the coupler body (20).

3. Elevator system according to one of claims 1 or 2, wherein the traveling body (3, 4) is arranged capable of travel along at least two guiderails or braking rails (9), and, in each case, at least two safety gears (11, 11.1, 11.2, 11g) are arranged on the traveling body (3, 4) in such manner that a first safety gear (11, 11.1) interacts with a first guiderail or braking rail (9) and is actuatable through a first device for actuating the safety gear (18, 18.1), and wherein a second safety gear (11, 11.2) interacts with a second guiderail or braking rail (9), and is actuatable through a second device for actuating the safety gear (18, 18.2), and wherein further the swivel axle (22) of the coupler body couples the two devices for actuating the safety gear (18, 18.1, 18.2) together in such manner that both devices for actuating the safety gear, and thus both safety gears, can be actuated essentially synchronously.

4. Elevator system according to Claim 3, wherein each of the devices for actuating the safety gear (18, 18.1, 18.2) is designed in such manner that it alone can actuate the

safety gears which are coupled via the swivel axle (22) of the coupler body (20).

5. Elevator system according to one of the foregoing claims 1 to 4, wherein the preferably curved coupler surface (21) of the coupler body (20) is connected via a free-running device (26) to the safety gear (11, 11.1, 11.2, 11g) in such manner that, over a first range of the relative movement between the pressed-on coupler body (20) and the safety gear (11, 11.1, 11.2, 11g), the press-on force of the coupler body (20) against the elevator hoistway, or the guiderail or braking rail (9) respectively, is increased, and over a second range of the relative movement, the safety device is actuated.

6. Elevator system according to one of the foregoing claims 1 to 5, wherein the coupler body (20), by means of a press-on spring (24, 34), can be pressed against the elevator hoistway, or against the guiderail or braking rail (9) respectively, and can be held in a ready position by means of an electromagnet (29), and wherein the electromagnet (29) is preferably supplied with energy via an energy store (46).

7. Elevator system according to one of the foregoing claims 1 to 6, wherein the coupler body (20) contains a movable (20.2) and a fixed (20.1) coupler part, wherein, by means of the press-on spring (24, 34), the movable coupler part (20.2) can be pressed onto the guiderail or braking rail (9), and the electromagnet (29) can hold the movable coupler part (20.2) in the ready position, or the electromagnet (29) holds the press-on spring (24, 34) pressed back in such manner that the movable coupler part (20.2) is not pressed against the elevator hoistway, or against the guiderail or braking rail (9) respectively.

8. Elevator system according to one of the foregoing claims 1 to 7, wherein the device for actuating the safety gear (18, 18.1, 18.2) can actuate the safety gear (11, 11.1, 11.2, 11g), preferably an eccentric safety gear, in one of the directions of travel, wherein the device for actuating the safety gear (18, 18.1, 18.2) can actuate the safety gear (11, 11.1, 11.2, 11g), preferably an eccentric safety gear, in both directions of travel.

9. Elevator system according to one of the foregoing claims 1 to 8, wherein the device for actuating the safety gear (18, 18.1, 18.2) further contains a counterpressure roller (37), which is arranged on a surface of the elevator hoistway, or guiderail or braking rail (9) respectively, and which assures the position of the device for actuating the

safety gear (18, 18.1, 18.2) relative to the elevator hoistway, or guiderail or braking rail (9) respectively.

10. Elevator system according to Claim 9, wherein the counterpressure roller (37) contains a speed measuring device (40), and a speed-monitoring device uses the speed measuring device (40) to monitor a travel speed, and, in the event of a limit speed being exceeded, can activate the device for actuating the safety gear (18, 18.1, 18.2).

11. Elevator system according to one of the foregoing claims 1 to 10, wherein, in the event of the traveling body (3, 4) coming to a halt, the device for actuating the safety gear (18, 18.1, 18.2) can be actuated, and, in the event of an uncontrolled drifting away of the traveling body (3, 4) from the halted state, the device for actuating the safety gear (18, 18.1, 18.2) can actuate the safety gear (11, 11.1, 11.2, 11g).

12. Elevator system according to one of the foregoing claims 1 to 11, wherein the traveling body (3, 4) is an elevator car (3), and the device for actuating the safety gear (18, 18.1, 18.2) is connected to an electronic safety device (41), which can determine a deviation of the travel speed from a reference speed, and which, upon detection of an impermissible deviation, can trigger the device for actuating the safety gear (18, 18.1, 18.2).

13. Elevator system according to one of the foregoing claims 1 to 12, wherein the traveling body (3, 4) is an elevator car (3), and the device for actuating the safety gear (18, 18.1, 18.2) is connected to a monitoring device (42), which, in the event of a standstill of the elevator car (3), is activated to detect a possible unexpected drifting away of the elevator car (3) from standstill, and which, on detection of an unexpected drifting away, can trigger the device for actuating the safety gear (18, 18.1, 18.2).

14. Elevator system according to one of the foregoing claims 12 or 13, wherein a further traveling body (3, 4), or the traveling body (3, 4) respectively, is a counterweight, and the device for actuating the safety gear (18, 18.1, 18.2) contains a speed-monitoring device to monitor a travel speed, and, in the event of a limit speed being exceeded, to activate the device for actuating the safety gear (18,18.1, 18.2), or the device for actuating the safety gear (18, 18.1, 18.2) is triggered via a signal conductor of a traveling cable or

suspension rope (8), or the device for actuating the safety gear (18, 18.1, 18.2) is triggered via a wireless connection.

15. Elevator system according to one of the foregoing claims 12 or 13, wherein a further traveling body (3, 4), or the traveling body respectively, is a counterweight (4), and this counterweight (4) contains a safety gear (11, 11g) and a slack-rope trigger (38) for actuating the safety gear.

16. Elevator system according to Claim 15, wherein the slack-rope trigger (38) is embodied with a triggering delayer (39).

17. Method for actuating a safety gear (11, 11.1, 11.2, 11g) in an elevator system by means of a device for actuating the safety gear (18, 18.1, 18.2),
wherein the device for actuating the safety gear contains at least one coupler body (20) with a curved coupler surface (21), the coupler body (20) is arranged swivelably about a swivel axle (22) within the device for actuation of the safety gear (18, 18.1, 18.2), and, in case of need, the coupler body (20) can be pressed against the elevator hoistway, preferably against the guiderail or braking rail (9), and actuation of the safety gear (11, 11.1, 11.2, 11g) is effected by a relative movement between the pressed-on coupler body (20) and the safety gear (11, 11.1, 11.2, 11g),
wherein the method comprises the steps of:
- pressing the coupler body (20) against the elevator hoistway, preferably against the guiderail or
braking rail;
- swiveling the coupler body (20) about the swivel axle (22); and,
- through the relative movement between the pressed-on coupler body (20) and the safety gear
(11, 11.1, 11.2, 11g), actuating the safety gear (11, 11.1, 11.2, 11g).

Patent Claims

1. Elevator system with at least one traveling body (3, 4), which is arranged capable of travel along a guiderail (9) in an elevator hoistway (2), containing a safety gear (11, 11.1, 11.2, 11g) which is arranged on the traveling body (3, 4) and which is provided to brake and hold the traveling body (3, 4) on the guiderail (9), or on a braking rail, in case of need, and a device for actuating the safety gear (18, 18.1, 18.2), which is arranged on the traveling body (3, 4) and connected to the safety gear (11, 11.1, 11.2, 11g), wherein the device for actuating the safety gear contains at least one coupler body (20) which, in case of need, can be pressed against the elevator hoistway, preferably against the guiderail or braking rail (9), wherein the actuation of the safety gear is effected by a relative movement between the pressed-on coupler body (20) and the safety gear, characterized in that the coupler body (20) contains a preferably curved coupler surface (21), which is arranged swivelably about a swivel axle (22) in the device for actuating the safety gear (18, 18.1, 18.2) and wherein the device for actuating the safety gear is arranged adjacent to and above or below the safety gear.

2. Elevator system according to Claim 1, wherein the preferably curve-shaped coupler surface (21) is embodied in such manner that a press-on force of the coupler body (20) on the elevator hoistway, or guiderail or braking rail (9) respectively, increases over a swivel range of the coupler body (20).

3. Elevator system according to one of claims 1 or 2, wherein the traveling body (3, 4) is arranged capable of travel along at least two guiderails or braking rails (9), and, in each case, at least two safety gears (11, 11.1, 11.2, 11g) are arranged on the traveling body (3, 4) in such manner that a first safety gear (11, 11.1) interacts with a first guiderail or braking rail (9) and is actuatable through a first device for actuating the safety gear (18, 18.1), and wherein a second safety gear (11, 11.2) interacts with a second guiderail or braking rail (9), and is actuatable through a second device for actuating the safety gear (18, 18.2), and wherein further the swivel axle (22) of the coupler body couples the two devices for actuating the safety gear (18, 18.1, 18.2) together in such manner that both devices for actuating the safety gear, and thus both safety gears, can be actuated essentially synchronously.

4. Elevator system according to Claim 3, wherein each of the devices for actuating the safety gear (18, 18.1, 18.2) is designed in such manner that it alone can actuate the safety gears which are coupled via the swivel axle (22) of the coupler body (20).

5. Elevator system according to one of the foregoing claims 1 to 4, wherein the preferably curved coupler surface (21) of the coupler body (20) is connected via a free-running device (26) to the safety gear (11, 11.1, 11.2, 11g) in such manner that, over a first range of the relative movement between the pressed-on coupler body (20) and the safety gear (11, 11.1, 11.2, 11g), the press-on force of the coupler body (20) against the elevator hoistway, or the guiderail or braking rail (9) respectively, is increased, and over a second range of the relative movement, the safety device is actuated.

6. Elevator system according to one of the foregoing claims 1 to 5, wherein the coupler body (20), by means of a press-on spring (24, 34), can be pressed against the elevator hoistway, or against the guiderail or braking rail (9) respectively, and can be held in a ready position by means of an electromagnet (29), and wherein the electromagnet (29) is preferably supplied with energy via an energy store (46).

7. Elevator system according to one of the foregoing claims 1 to 6, wherein the coupler body (20) contains a movable (20.2) and a fixed (20.1) coupler part, wherein, by means of the press-on spring (24, 34), the movable coupler part (20.2) can be pressed onto the guiderail or braking rail (9), and the electromagnet (29) can hold the movable coupler part (20.2) in the ready position, or the electromagnet (29) holds the press-on spring (24, 34) pressed back in such manner that the movable coupler part (20.2) is not pressed against the elevator hoistway, or against the guiderail or braking rail (9) respectively.

8. Elevator system according to one of the foregoing claims 1 to 7, wherein the device for actuating the safety gear (18, 18.1, 18.2) can actuate the safety gear (11, 11.1, 11.2, 11g), preferably an eccentric safety gear, in one of the directions of travel, wherein the device for actuating the safety gear (18, 18.1, 18.2) can actuate the safety gear (11, 11.1, 11.2, 11g), preferably an eccentric safety gear, in both directions of travel.

9. Elevator system according to one of the foregoing claims 1 to 8, wherein the

device for actuating the safety gear (18, 18.1, 18.2) further contains a counterpressure roller (37), which is arranged on a surface of the elevator hoistway, or guiderail or braking rail (9) respectively, and which assures the position of the device for actuating the safety gear (18, 18.1, 18.2) relative to the elevator hoistway, or guiderail or braking rail (9) respectively.

10. Elevator system according to Claim 9, wherein the counterpressure roller (37) contains a speed measuring device (40), and a speed-monitoring device uses the speed measuring device (40) to monitor a travel speed, and, in the event of a limit speed being exceeded, can activate the device for actuating the safety gear (18, 18.1, 18.2).

11. Elevator system according to one of the foregoing claims 1 to 10, wherein, in the event of the traveling body (3, 4) coming to a halt, the device for actuating the safety gear (18, 18.1, 18.2) can be actuated, and, in the event of an uncontrolled drifting away of the traveling body (3, 4) from the halted state, the device for actuating the safety gear (18, 18.1, 18.2) can actuate the safety gear (11, 11.1, 11.2, 11g).

12. Elevator system according to one of the foregoing claims 1 to 11, wherein the traveling body (3, 4) is an elevator car (3), and the device for actuating the safety gear (18, 18.1, 18.2) is connected to an electronic safety device (41), which can determine a deviation of the travel speed from a reference speed, and which, upon detection of an impermissible deviation, can trigger the device for actuating the safety gear (18, 18.1, 18.2).

13. Elevator system according to one of the foregoing claims 1 to 12, wherein the traveling body (3, 4) is an elevator car (3), and the device for actuating the safety gear (18, 18.1, 18.2) is connected to a monitoring device (42), which, in the event of a standstill of the elevator car (3), is activated to detect a possible unexpected drifting away of the elevator car (3) from standstill, and which, on detection of an unexpected drifting away, can trigger the device for actuating the safety gear (18, 18.1, 18.2).

14. Elevator system according to one of the foregoing claims 12 or 13, wherein a further traveling body (3, 4), or the traveling body (3, 4) respectively, is a counterweight, and the device for actuating the safety gear (18, 18.1, 18.2) contains a speed-monitoring

device to monitor a travel speed, and , in the event of a limit speed being exceeded, to activate the device for actuating the safety gear (18, 18.1, 18.2), or the device for actuating the safety gear (18, 18.1, 18.2) is triggered via a signal conductor of a traveling cable or suspension rope (8), or the device for actuating the safety gear (18, 18.1, 18.2) is triggered via a wireless connection.

15. Elevator system according to one of the foregoing claims 12 or 13, wherein a further traveling body (3, 4), or the traveling body respectively, is a counterweight (4), and this counterweight (4) contains a safety gear (11, 11g) and a slack-rope trigger (38) for actuating the safety gear.

16. Elevator system according to Claim 15, wherein the slack-rope trigger (38) is embodied with a triggering delayer (39).

17. Method for actuating a safety gear (11, 11.1, 11.2, 11g) in an elevator system by means of a device for actuating the safety gear (18, 18.1, 18.2),
wherein the device for actuating the safety gear is arranged adjacent to and above or below the safety gear,
wherein the device for actuating the safety gear contains at least one coupler body (20) with a curved coupler surface (21), the coupler body (20) is arranged swivelably about a swivel axle (22) within the device for actuation of the safety gear (18, 18.1, 18.2), and, in case of need, the coupler body (20) can be pressed against the elevator hoistway, preferably against the guiderail or braking rail (9), and actuation of the safety gear (11, 11.1, 11.2, 11g) is effected by a relative movement between the pressed-on coupler body (20) and the safety gear (11, 11.1, 11.2, 11g),
wherein the method comprises the steps of:
- pressing the coupler body (20) against the elevator hoistway, preferably against the guiderail or
braking rail;
- swiveling the coupler body (20) about the swivel axle (22); and,
- through the relative movement between the pressed-on coupler body (20) and the safety gear (11, 11.1, 11.2, 11g), actuating the safety gear (11, 11.1, 11.2, 11g).