Claims:

1. An emergency stop device provided in a cage and operating when a pull-up lever is pulled up; comprising:

a brake that applies a brake to the cage;

a brake operating mechanism that is actuated when the pull-up lever is pulled up to operate the brake; and

deterrent application means provided at the brake operating mechanism and applying, to the pull-up lever, a force in a direction opposite to a pulling-up direction of the pull-up lever,

wherein

the pull-up lever is rotatable about a fulcrum and is configured to receive, at one end, a rotation force to rotate about the fulcrum, and

the pull-up lever is held in a normal state at a position below a horizontal position where the fulcrum and the one end receiving the rotation force become horizontal by a predetermined angle, and the brake operates in a range until the pull-up lever is pulled up to reach the horizontal position where the fulcrum and the one end receiving the rotation force become horizontal.

2. The emergency stop device according to claim 1, comprising a governor rope connected to the one end of the pull-up lever receiving the rotation force, the governor rope being wound and hung around a governor and a tension pulley, wherein the pull-up lever receives a rotation force to rotate about the fulcrum via the governor rope.

3. The emergency stop device according to claim 2, comprising a disk-shaped rotation inertial mass coaxially added to a part of the governor around which the governor rope is wound and hung or the tension pulley or to both of the part of the governor around which the governor rope is wound and hung and the tension pulley.

4. The emergency stop device according to claim 3, wherein a plurality of pieces of the rotation inertial mass can be added to the part of the governor around which the governor rope is wound and hung or the tension pulley or to both of the part of the governor around which the governor rope is wound and hung and the tension pulley, and an inertial force acting on the governor rope is adjusted by adjusting the number of pieces of the rotation inertial mass to be added.

5. The emergency stop device according to claim 1, wherein a position to operate the brake operating mechanism is at a position where the fulcrum and the one end receiving the rotation force of the pull-up lever become horizontal or in a vicinity thereof.

6. An elevator, comprising a cage and a traction machine that hoists the cage; the cage including an emergency stop device that operates when a pull-up lever is pulled up; the emergency stop device comprising:

a brake that applies a brake to the cage;

a brake operating mechanism that is actuated when the pull-up lever is pulled up to operate the brake; and

deterrent application means provided at the brake operating mechanism and applying, to the pull-up lever, a force in a direction opposite to a pulling-up direction of the pull-up lever,

wherein

the pull-up lever is rotatable about a fulcrum and is configured to receive, at one end, a rotation force to rotate about the fulcrum, and

the pull-up lever is held in a normal state at a position below a horizontal position where the fulcrum and the one end receiving the rotation force become horizontal by a predetermined angle, and the brake operating mechanism is actuated at a position where or in a range until the pull-up lever is pulled up to reach the horizontal position where the fulcrum and the one end receiving the rotation force become horizontal.

7. The elevator according to claim 6, wherein the cage comprises an upper cage or a lower cage, or both of the upper cage and the lower cage in a double-deck elevator including a cage frame moving up and down in a shaft, the upper cage disposed in the cage frame to be vertically movable in the cage frame, the lower cage disposed below the upper cage in the cage frame to be vertically movable in the cage frame, and a cage driving device to move the upper cage and the lower cage up and down in the cage frame.

Claims:

1. An emergency stop device provided in a cage and operating when a pull-up lever is pulled up; comprising:

a brake that applies a brake to the cage;

a brake operating mechanism that is actuated when the pull-up lever is pulled up to operate the brake; and

deterrent application means provided at the brake operating mechanism and applying, to the pull-up lever, a force in a direction opposite to a pulling-up direction of the pull-up lever,

wherein

the pull-up lever is rotatable about a fulcrum and is configured to receive, at one end, a rotation force to rotate about the fulcrum, and

the pull-up lever is held in a normal state at a position below a horizontal position where the fulcrum and the one end receiving the rotation force become horizontal by a predetermined angle, and the brake operates in a range until the pull-up lever is pulled up to reach the horizontal position where the fulcrum and the one end receiving the rotation force become horizontal;

further comprising a governor rope connected to the one end of the pull-up lever receiving the rotation force, the governor rope being wound and hung around a governor and a tension pulley, wherein the pull-up lever receives a rotation force to rotate about the fulcrum via the governor rope; and

further comprising a disk-shaped rotation inertial mass coaxially added to a part of the governor around which the governor rope is wound and hung or the tension pulley or to both of the part of the governor around which the governor rope is wound and hung and the tension pulley.

2. The emergency stop device according to claim 1, wherein a plurality of pieces of the rotation inertial mass can be added to the part of the governor around which the governor rope is wound and hung or the tension pulley or to both of the part of the governor around which the governor rope is wound and hung and the tension pulley, and an inertial force acting on the governor rope is adjusted by adjusting the number of pieces of the rotation inertial mass to be added.

3. The emergency stop device according to claim 1, wherein a position to operate the brake operating mechanism is at a position where the fulcrum and the one end receiving the rotation force of the pull-up lever become horizontal or in a vicinity thereof.

4. An elevator, comprising a cage and a traction machine that hoists the cage; the cage including an emergency stop device that operates when a pull-up lever is pulled up; the emergency stop device comprising:

a brake that applies a brake to the cage;

a brake operating mechanism that is actuated when the pull-up lever is pulled up to operate the brake; and

deterrent application means provided at the brake operating mechanism and applying, to the pull-up lever, a force in a direction opposite to a pulling-up direction of the pull-up lever,

wherein

the pull-up lever is rotatable about a fulcrum and is configured to receive, at one end, a rotation force to rotate about the fulcrum, and

the pull-up lever is held in a normal state at a position below a horizontal position where the fulcrum and the one end receiving the rotation force become horizontal by a predetermined angle, and the brake operating mechanism is actuated at a position where or in a range until the pull-up lever is pulled up to reach the horizontal position where the fulcrum and the one end receiving the rotation force become horizontal

further comprising a governor rope connected to the one end of the pull-up lever receiving the rotation force, the governor rope being wound and hung around a governor and a tension pulley, wherein the pull-up lever receives a rotation force to rotate about the fulcrum via the governor rope; and

further comprising a disk-shaped rotation inertial mass coaxially added to a part of the governor around which the governor rope is wound and hung or the tension pulley or to both of the part of the governor around which the governor rope is wound and hung and the tension pulley.

5. The elevator according to claim 4, wherein the cage comprises an upper cage or a lower cage, or both of the upper cage and the lower cage in a double-deck

elevator including a cage frame moving up and down in a shaft, the upper cage disposed in the cage frame to be vertically movable in the cage frame, the lower cage disposed below the upper cage in the cage frame to be vertically movable in the cage frame, and a cage driving device to move the upper cage and the lower cage up and down in the cage frame.