W. S. ROSS.

FOOT GUARD FOR ELEVATORS.

APPLICATION FILED NOV. 16, 1911.

1,022,972. Patented Apr. 9, 1912.

FIG. 1.

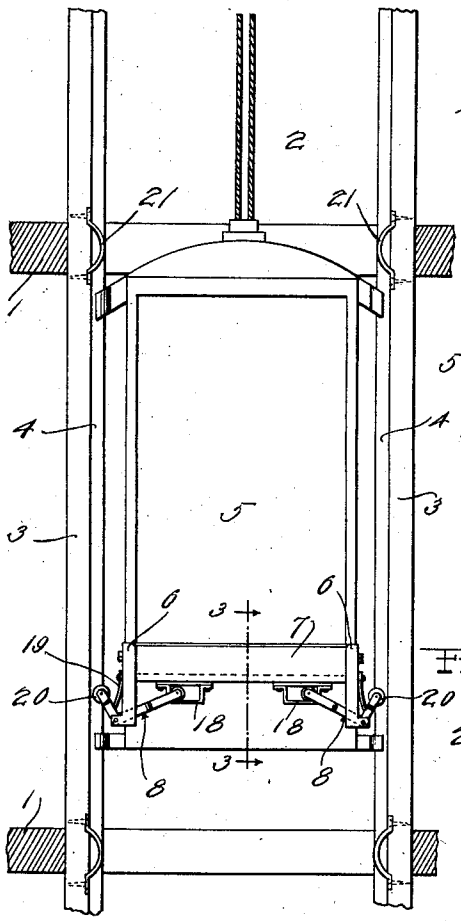


FIG. 2.

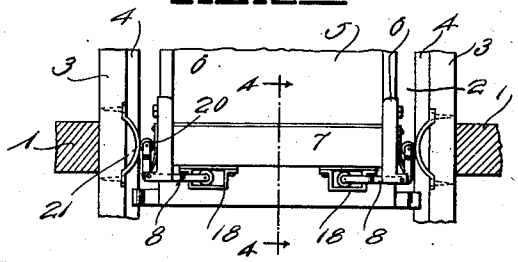


FIG. 3.

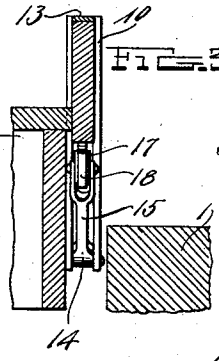


FIG. 4.

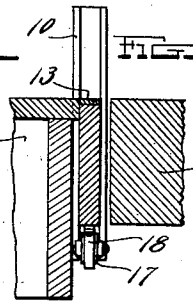


FIG. 6.

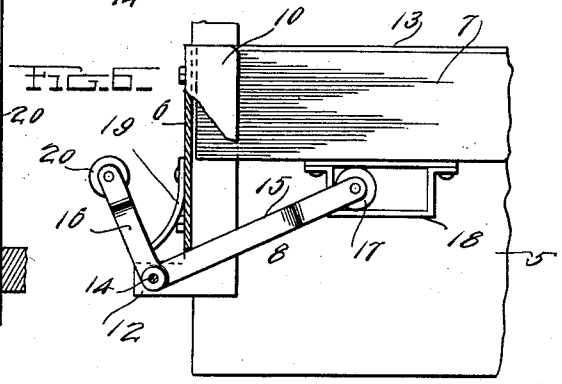


FIG. 5.

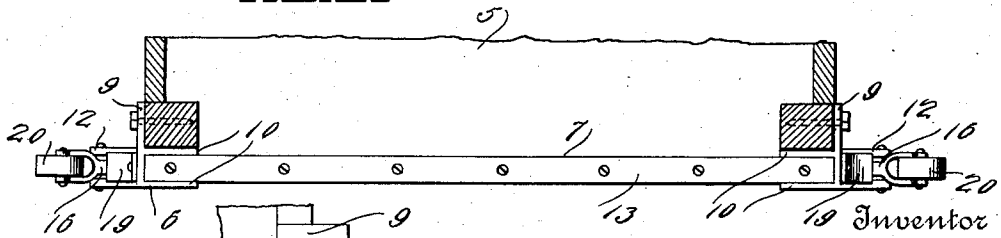
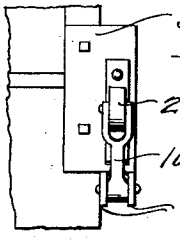


FIG. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

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FOOT-GUARD FOR ELEVATORS.

1,022,972. Specification of Letters Patent. Patented Apr. 9, 1912.

Application filed November 16, 1911. Serial No. 660,645.

To all whom it may concern:

Be it known that I, WILLIAM SHERMAN ROSS, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Foot-Guards for Elevators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in automatically operated foot guards for elevators.

One object of the invention is to provide a foot guard of this character having an improved construction and arrangement of operating devices adapted to normally raise the guard and to hold the same in raised or operative position, means being provided to automatically trip said operating devices and to retract the guard when the bottom of the car is brought opposite to the floors of the building.

Another object is to provide a guard of this character which will be simple, strong and durable in construction, efficient and reliable in operation and which will positively prevent the feet of the passengers or occupants of the car being caught between the bottom thereof and the floors of the building or walls of the elevator shaft.

With these and other objects in view the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings; Figure 1 is a vertical sectional view through a portion of an elevator shaft and two floors of the building showing a front view of an elevator car having my improved foot guard applied thereto; Fig. 2 is a view similar to Fig. 1 showing the lower end of the elevator shaft and illustrating the manner in which the foot guard is retracted when the bottom of the car is brought opposite to one of the floors of the building; Fig. 3 is a detail vertical sectional view through a portion of the bottom of the elevator car and through the guard, taken on the line 3—3 of Fig. 1, showing the guard in an operative position; Fig. 4 is a similar view taken on the line 4—4 of Fig. 2 showing the guard in an inoperative position; Fig. 5 is a horizontal sectional view through a portion of the front of the car showing a top plan view of the foot guard; Fig. 6 is an enlarged front view partly in section of one of the lower corners of the car showing one end of the guard and illustrating more clearly the construction and arrangement of the guard operating devices; Fig. 7 is an outer side view of one side of the car and the guard operating devices arranged thereon.

Referring more particularly to the drawings, 1 denotes the floors of a building through which is arranged the elevator shaft 2. Arranged in the shaft and secured to the sides of the shaft openings in the floors are elevator supporting standards or guide bars 3 to which are secured the vertical tracks 4 on which the car 5 is adapted to travel. The guide bars 3 and track bars 4 may be of the usual or any suitable construction and the car 5 may be engaged therewith in any suitable manner.

Secured to the opposite sides and at the lower front corners of the car are combined guiding and supporting brackets 6 between which a guard 7 is slidably mounted and to which the guard operating devices 8 are pivotally connected. The brackets 6 comprise attaching plates 9 which are secured to the sides of the car and which have formed on their inner sides, pairs of inwardly projecting vertical guide flanges 10 between which the guard 7 is adapted to slide. On the outer sides of the plates 9 near their lower ends are formed apertured bearing lugs 12 between which the guard operating devices are pivotally mounted.

The guard 7 is in the form of a board or plate of suitable width and having its ends slidably engaged between the guide flanges 10. On the upper edge of the board forming the guard is preferably secured a metal wear strip 13 whereby it is protected from wear. The operating devices 8 for the guard are in the form of two bell crank levers 14 pivoted at their angles between the lugs 12 as shown. The inwardly projecting arms 15 of the levers are of greater length than the outer arms 16 and the free ends of said arms 15 are bifurcated to form bearing forks in which are revolubly mounted guide rollers 17, said rollers engaging in brackets or guides 18 secured to the lower edge of the guard plate or board 7 whereby when said levers are rocked in one direction or the other the guard board or plate 7 will be raised or lowered. The levers 14 are

normally held in proper position for raising and holding the door or guard up in operative position, by means of flat springs 19 which are secured to the outer sides of the brackets 6 and have their free ends engaging the inner sides of the bell crank arms 16 as clearly shown in Figs. 1 and 6 of the drawing. The outer ends of the arms 16 of the bell crank levers are bifurcated to form bearing forks in which are revolubly mounted trip-engaging rollers 20 which are adapted to be brought into engagement with cam operating devices 21 secured to the guide bars 3 in line with each of the floors of the building. The tripping devices 21 are here shown and are preferably in the form of curved plates, the ends of which are secured in any suitable manner to the bars 3 while the curved portions of the plates project inwardly in the path of movement of the rollers 20 in the outer ends of the arms 16 so that when the car is brought opposite to any of the floors of the building the rollers in said arms 16 will engage the cam tripping devices which will force the arms 16 inwardly thereby rocking the levers and swinging the arms 15 downwardly, thus lowering the guard plate 7 to a position wherein the upper edge of said plate will be on a level with or below the floors or landings of the building. As soon as the elevator car moves either upwardly or downwardly past the floors, the springs 19 will rock the bell crank lever in the opposite direction thus raising the foot guard to the position shown in Figs. 1, 3 and 6 in which position said guard projects above the bottom of the car and effectually prevents the feet of the occupant of the car projecting beyond the edge of the bottom thereof and thus being caught between said bottom and the floors of the building or walls of the elevator shaft.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanaton.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is:

1. In an elevator a foot guard mounted at the bottom of the door of the car and vertically slidable, a bell crank lever pivoted at the lower corner of the door having an inner arm connected slidably to the bottom of the guard and an outer arm outside of the car body, a spring normally holding the outer arm at an angle to the side of the car and the inner arm in its uppermost position thereby holding the guard raised and across the lower part of the doorway, and a cam plate secured to a guide standard of the elevator on a level with each floor to press the outer arm of the bell crank inward and its inner arm downward to lower the guard below the top of the car floor.

2. In an elevator a foot guard comprising a plate having a sliding engagement with the elevator car, bell crank guard operating levers pivotally connected to the lower end of the elevator car, rollers revolubly mounted in the outer ends of the arms of the bell crank levers, lever attaching brackets secured to the guard plate and adapted to receive the rollers on the ends of the inner arms of the levers whereby the latter are operatively connected with the guard, springs engaged with said levers whereby the latter are actuated to project and normally hold the guard in a projected or operative position, cam tripping devices arranged in the elevator shaft opposite each floor of the building and in the path of movement of the rollers in the ends of the outer arms of said bell crank levers whereby the latter are rocked when the bottom of the elevator is brought opposite to the floors and said guard thereby retracted to an inoperative position.

3. In an elevator, a foot guard comprising guide brackets secured to the lower end of the elevator car, a guard plate slidably mounted in said brackets, lever attaching brackets secured to the lower edge of said plate, bell crank levers pivotally mounted in said brackets, rollers revolubly mounted in the arms of said levers, the rollers of one set of said arms having a sliding engagement with the frames on said plate, springs secured to said brackets and adapted to engage said levers whereby the latter are actuated in the proper direction for raising said guard plate into its operative position, curved tripping plates secured to the guide standards of the elevator opposite each floor of the building and in the path of movement of the rollers in the outer arms of the bell crank levers whereby the latter are rocked when the elevator is brought opposite to the floors of the building thereby lowering said guard plate to an inoperative and out of the way position.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM SHERMAN ROSS.

Witnesses:

D. S. LINDSEY,

FRANK GEHLE.