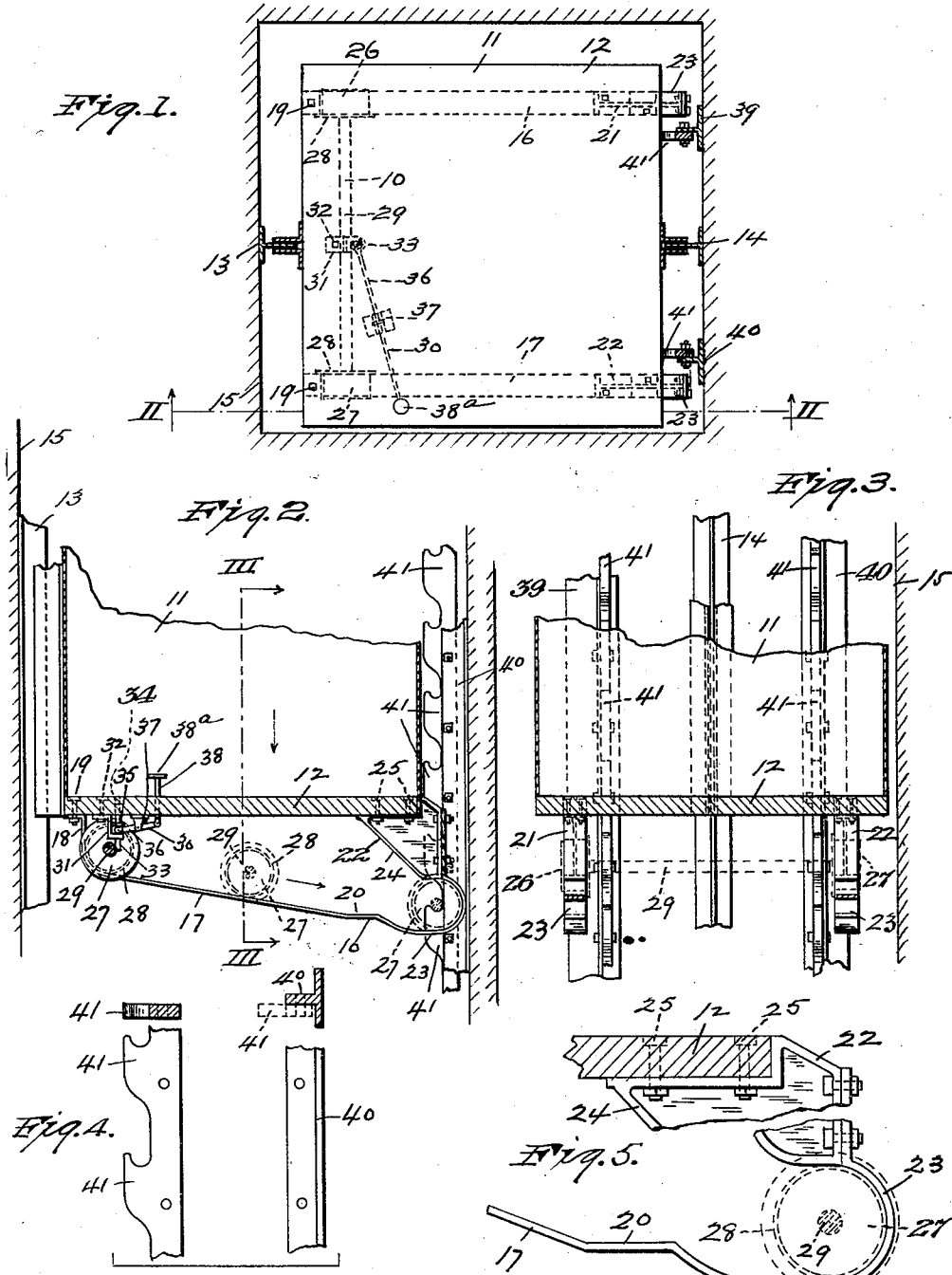


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SAFETY DEVICE FOR ELEVATORS.
APPLICATION FILED MAY 3, 1911.

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Patented Oct. 31, 1911.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH J. GROSS, a subject of the Emperor of Austria-Hungary, and a resident of New York, county and State of New York, have invented a certain new and useful Improvement in Safety Devices for Elevators, of which the following is a full, clear, and exact specification.

This invention relates to a safety device which may be used in conjunction with the elevator of a building adapted to carry passengers or freight.

My invention has for its object primarily to provide a safety device designed more especially to be applied underneath the bottom of the car of a passenger or freight elevator whereby in event of damage to the operating mechanism of the elevator the car thereof may be prevented from falling so as to prevent the persons within said car from being injured or killed; and to provide a device which may be readily operated in emergency by the person in charge of the car and which may be constructed so as to be very durable, compact and efficient in operation. These advantages are attained by providing two wheels which are connected by a rod or axle held at one side underneath the bottom of the car of the elevator so that in event of emergency the wheels may be released and rolled upon two inclined tracks to the opposite side of said car where the rod or axle thereof will engage hooks or stops whereby the car will be held at a standstill.

A further object of the invention is to provide a form of trip adapted to retain the wheels at one side of the car of the elevator so as to be in readiness to move to engagement with the stops, and which may be conveniently operated by the person in charge of the car as occasion requires.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawing which forms a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawing, Figure 1 is a top plan of the bottom of the car of an elevator with my improved safety device applied upon the underside thereof which is shown in dotted lines. Fig. 2 is a section taken on the line II—II of Fig. 1. Fig. 3 is a section taken on the line III—III of Fig. 2. Fig. 4 illustrates a fragmentary view of the stops and

rail used in conjunction with my safety device, and Fig. 5 is a detail fragmentary view, partly in section, of one of the brackets and rails of the safety device.

The safety device 10 may be applied to the usual or any preferred form of elevator provided with a car 11 which has a bottom, as 12, and guide rails 13 and 14 connected upon the walls of the elevator well 15. The device 10 has two depending tracks 16 and 17 which are spaced at a suitable distance from the underside of the bottom 12 of the elevator car 11 and in proximity to the front and rear edges of said bottom of the car. Each of the tracks 16 and 17 are alike in formation and are disposed on an incline, as shown in Figs. 2 and 5. Upon one end of each of the tracks 16 and 17 is a vertically disposed arm 18 which is fastened to one of the side edges of the bottom 12 of the car 11 by a bolt 19, or otherwise, and upon the opposite end of each of said tracks is a ridge or upwardly curved part 20. At the edges of the opposite side of the bottom 12 of the car 11 are brackets 21 and 22, each of which has a substantially U-shaped or curved portion 23. One arm of the U-shaped portion of each of the brackets 21 and 22 is formed upon the curved part or ridge 20 of each of the tracks 16 and 17, and upon the second arm of said U-shaped portion is provided an angular arm, as 24, which is fastened by bolts 25 to the bottom 12 of the car.

Two wheels 26 and 27 are provided underneath the car 11, and said wheels are adapted to travel upon the tracks 16 and 17. Each of the wheels 26 and 27 may be of the usual form of car wheels having a side flange 28 or may be grooved, if desired, and said wheels are connected by a rod or axle 29. When the safety device is not operated the wheels 26 and 27 are held against movement upon the tracks 16 and 17 adjacent to the vertical arm 18 by a trip, as 30. The trip 30 has a substantially L-shaped supporting bracket 31 which may be bolted, as at 32, upon the underside of the bottom 12 of the car 11, and in proximity to the free end of one of the arms of said bracket is directed a vertically movable pin or short rod 33. The upper part of the rod 33 is adapted to be guided through an aperture 34 provided in the bottom 12 of the car, and the lower end of said rod is normally adapted to engage the axle or rod 29 of the wheels 26 and 27 whereby said wheels may be held in readi-

ness to be released for stopping the car of the elevator in event of emergency.

Substantially midway of the vertical rod 23 is a collar 35, and upon said vertical rod 5 is pivoted one end of a lever 36. The central part of the lever 36 is pivotally held in a bracket 37 provided upon the underside of the bottom 12 of the car 11, and to the opposite end of said lever is a vertically disposed arm 38 which is movable through an opening in said bottom of the car. The vertical arm 38 extends for some distance interiorly of the car 11, and upon its free end is a cap or plate, as 38^a which may be 15 pressed by the foot of the person in charge of the car whereby the vertical arm 38 will be forced downwardly and the lever 36 will then be moved so as to force the vertical rod 33 upwardly from engagement with the 20 axle 29 to release the wheels 26 and 27 in order to operate the safety device.

When the wheels 26 and 27 are freed from engagement with the trip 30 in an emergency said wheels will travel down the inclined tracks 16 and 17 and pass into the U-shaped or curved portion 23 of each of the brackets 21 and 22. In order to stop the car I provide T-rails 39 and 40, upon the wall of the elevator well 15 and at suitable 30 distances from the guide rail 14, and to each of said T-rails are connected a plurality of stops or projecting hooks, as 41. The stops of each of the T-rails 39 and 40 are in alignment so that two of said stops will be engaged at the same time by the axle 29 of 35 the wheels 26 and 27 when said wheels are guided in the U-shaped portions of the brackets 21 and 22, and the car 11 will thereby be brought to a standstill in case of damage or accident to the operating mechanism of the elevator. 40

In the foregoing description I have embodied the preferred form of my invention, but I do not wish to be understood as limiting myself thereto, as I am aware that 45 modifications may be made therein without departing from the principle or sacrificing any of the advantages of this invention, therefore I reserve to myself the right to make such changes as fairly fall within the scope thereof. 50

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

55 1. In a safety device for elevators; the combination with a car; of two guide rails between which the car is adapted to be moved; a plurality of stops provided at spaced intervals in proximity to one of the 60 guide rails; two spaced apart tracks depending from the underside of the bottom of the car and each of said tracks being disposed on an incline; two wheels adapted to travel upon the tracks; an axle connecting 65 the wheels and which is adapted to be en-

gaged by one of said stops for preventing the car from falling; and means provided upon the car and adapted to hold the wheels against movement at the side of the car opposite to the stops and which may be operated in emergency for releasing said wheels 70 so as to travel by gravity along the inclined tracks to the side of the car for engagement with said stops.

2. In a safety device for elevators; the combination with a car; of two guide rails 75 between which the car is adapted to be moved; a vertically disposed rail in proximity to one of the guide rails; a plurality of stops provided at spaced intervals upon the vertical rail; two spaced apart tracks 80 depending from the underside of the bottom of the car and each of said tracks being disposed on an incline; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be 85 engaged by one of said stops for preventing the car from falling; and a trip provided upon the car and adapted to hold the wheels against movement at the side of the car opposite to the stops and which may be operated in emergency for releasing said wheels 90 so as to travel by gravity along the inclined tracks to the side of the car for engagement with said stops. 95

3. In a safety device for elevators; the combination with a car; of two guide rails 100 between which the car is adapted to be moved; a plurality of vertically disposed rails provided in proximity to one of the guide rails; a plurality of stops provided at spaced intervals upon each of the vertical 105 rails; two spaced apart tracks depending from the underside of the bottom of the car and each of said tracks being disposed on an incline; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by one of said stops for preventing the car from 110 falling; and a trip provided upon the car and adapted to hold the wheels against movement at the side of the car opposite to the stops and which may be operated in emergency for releasing said wheels so as 115 to travel by gravity along the inclined tracks to the side of the car for engagement with said stops.

4. In a safety device for elevators; the combination with a car; of two guide rails 120 between which the car is adapted to be moved; two vertically disposed rails provided in proximity to one of the guide rails at each side thereof; a plurality of hooks provided at spaced intervals upon each of the vertical rails; two spaced apart tracks 125 depending from the underside of the bottom of the car and each of said tracks being disposed on an incline; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be 130

engaged by one of said stops for preventing the car from falling; and a trip provided upon the car and adapted to hold the wheels against movement at the side of the car opposite to the stops and which may be operated in emergency for releasing said wheels so as to travel by gravity along the inclined tracks to the side of the car for engagement with said stops.

5 5. In a safety device for elevators; the combination with a car; of two guide rails between which the car is adapted to be moved; a plurality of stops provided at spaced intervals in proximity to one of the
10 guide rails; two spaced apart tracks; two vertical arms one of which is formed upon an end of each of the tracks and connected to the underside of the bottom of the car at one side edge thereof; two brackets one
15 of which is formed upon the opposite end of each of said tracks and also connected to the underside of the bottom of the car at the edge thereof, which is adjacent to said stops; two wheels adapted to travel upon the tracks;
20 an axle connecting the wheels and which is adapted to be engaged by one of the stops for preventing the car from falling; and means provided upon the car and adapted to hold the wheels against movement at the side
25 of the car adjacent to the vertical arm of each of the tracks and which may be operated in emergency for releasing said wheels so as to travel by gravity along the tracks to the bracket of each of said tracks whereby
30 the axle of the wheels may engage one of the stops.

6. In a safety device for elevators; the combination with a car; of two guide rails between which the car is adapted to be
40 moved; a plurality of stops provided at spaced intervals in proximity to one of the guide rails; two spaced apart tracks; two vertical arms, one of which is formed upon one end of each of the tracks and connected
45 to the underside of the bottom of the car at one side thereof; two brackets, one of which is formed upon the opposite end of each of said tracks and also connected to the underside of the bottom of the car at
50 the edge thereof which is adjacent to said stops; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by one of the stops for preventing the car from
55 falling; and a trip provided upon the car and adapted to hold the wheels against movement at the side of the car adjacent to the vertical arm of each of the tracks and which may be operated in emergency for
60 releasing said wheels so as to travel by gravity along the tracks to the bracket of each of said tracks whereby the axle of the wheels may engage one of the stops.

7. In a safety device for elevators; the combination with a car; of two guide rails

between which the car is adapted to be moved; two vertically disposed rails provided in proximity to one of the guide rails at each side thereof; a plurality of hooks
70 provided at spaced intervals upon each of the vertical rails; two spaced apart tracks, each disposed on an incline; two vertical arms, one of which is formed upon one end of each of the tracks and connected to the underside of the bottom of the car at one
75 side thereof; two brackets, one of which is formed upon the opposite end of each of the tracks and also connected to the underside of the bottom of the car at the edge thereof which is adjacent to said stops; two wheels
80 adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by two of said stops for preventing the car from falling; and a trip provided upon the car and adapted to hold the wheels against movement at the side
85 of the car adjacent to the vertical arms of each of the tracks and which may be operated in emergency for releasing said wheels so as to travel by gravity along the inclined tracks to the brackets of the tracks whereby the axle of the wheels may engage two of the stops.

8. In a safety device for elevators; the combination with a car; of two guide rails
95 between which the car is adapted to be moved; two vertically disposed rails provided in proximity to one of the guide rails at each side thereof; a plurality of hooks provided at spaced intervals upon each of the vertical rails; two spaced apart tracks,
100 each disposed on an incline; two vertical arms, one of which is formed upon one end of each of the tracks and connected to the underside of the bottom of the car at one side thereof; two substantially U-shaped
105 brackets, one of which is formed upon the opposite end of each of the tracks and also connected to the underside of the bottom of the car at the edge thereof which is adjacent to said stops; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by two of said stops for preventing
110 the car from falling; and means provided upon the car and adapted to hold the wheels against movement at the side of the car adjacent to the vertical arms of each of the tracks and which may be operated in emergency for releasing said wheels so as to
115 travel by gravity along the inclined tracks to the brackets of the tracks whereby the axle of the wheels may engage two of the stops.

9. In a safety device for elevators; the combination with a car; of two guide rails
125 between which the car is adapted to be moved; two vertically disposed rails provided in proximity to one of the guide rails at each side thereof; a plurality of hooks
130

provided at spaced intervals upon each of the vertical rails; two spaced apart tracks, each disposed on an incline; two vertical arms one of which is formed upon one end of each of the tracks, and connected to the underside of the bottom of the car at one side thereof; two substantially U-shaped brackets, one of which is formed upon the opposite end of each of the tracks and also connected to the underside of the bottom of the car at the edge thereof which is adjacent to said stops; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by two of said stops for preventing the car from falling; a vertical rod movable in an opening provided in the bottom of the car, the lower end of said rod being adapted to engage the axle of the wheels when positioned at the vertical arms of the tracks; a lever having one of its ends pivoted to the movable vertical rod; a bracket fastened upon the underside of the bottom of the car and supporting the central part of the lever; an arm having one end pivotally held upon the opposite end of the lever and movable through an opening in the bottom of the car; and a cap provided upon the opposite end of the arm within the car.

10. In a safety device for elevators; the combination with a car; of two guide rails between which the car is adapted to be moved; a plurality of stops provided at spaced intervals in proximity to one of the guide rails; two spaced apart tracks depending from the underside of the bottom of the car and each of said tracks being disposed on an incline; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by one of said stops for preventing the car from falling; a vertical rod movable in an opening provided in the bottom of the car, the lower end of said rod being adapted to engage the axle of the wheels when positioned at the side of the car opposite to the stops; a lever having one of its ends pivoted to the movable vertical rod; a bracket fastened upon the underside of the bottom of the car and supporting the central part of the lever; an arm having one end pivotally held upon the opposite end of the lever and movable through an opening in the bottom of the car; and a cap provided upon the opposite end of said arm within the car.

11. In a safety device for elevators; the combination with a car; of two guide rails between which the car is adapted to be moved; two vertically disposed rails, each provided in proximity to one of the guide rails at one side thereof; a plurality of stops

provided at spaced intervals upon each of the vertical rails; two spaced apart tracks depending from the underside of the bottom of the car and each of said tracks being disposed on an incline; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by two of said stops for preventing the car from falling; a vertical rod movable in an opening provided in the bottom of the car, the lower end of said rod being adapted to engage the axle of the wheels when positioned at the side of the car opposite to the stops; a lever having one of its ends pivoted to the movable vertical rod; a bracket fastened upon the underside of the bottom of the car and supporting the central part of the lever; and an arm having one end pivotally held upon the opposite end of the lever and movable through an opening in the bottom of the car.

12. In a safety device for elevators; the combination with a car; of two guide rails between which the car is adapted to be moved; two vertically disposed rails, each provided in proximity to one of the guide rails at one side thereof; a plurality of hooks provided at spaced intervals upon each side of the vertical rails; two spaced apart tracks depending from the underside of the bottom of the car and each of said tracks being disposed on an incline; two wheels adapted to travel upon the tracks; an axle connecting the wheels and which is adapted to be engaged by two of said stops for preventing the car from falling; a substantially L-shaped bracket provided upon the underside of the bottom of the car at the edge thereof which is opposite to the stops, said bracket having an opening in one of its arms; a vertical rod movable in the opening of the L-shaped bracket and movable in an opening provided in the bottom of the car, the lower end of said vertical rod being adapted to engage the axle of the wheels when positioned upon the tracks opposite to said stops; a lever having one of its ends pivoted to the movable vertical rod; a bracket fastened upon the underside of the bottom of the car and supporting the lever; and an arm having one end pivotally held upon the opposite end of the lever and movable through an opening in the bottom of the car.

This specification signed and witnessed this second day of May A. D. 1911.

JOSEPH J. GROSS.

Witnesses:

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