G. F. & J. W. PEMBERTON.

AUTOMATIC GATE CONTROL FOR ELEVATORS.

APPLICATION FILED FEB. 4, 1913.

1,088,172.

Patented Feb. 24, 1914.

2 SHEETS—SHEET 1.

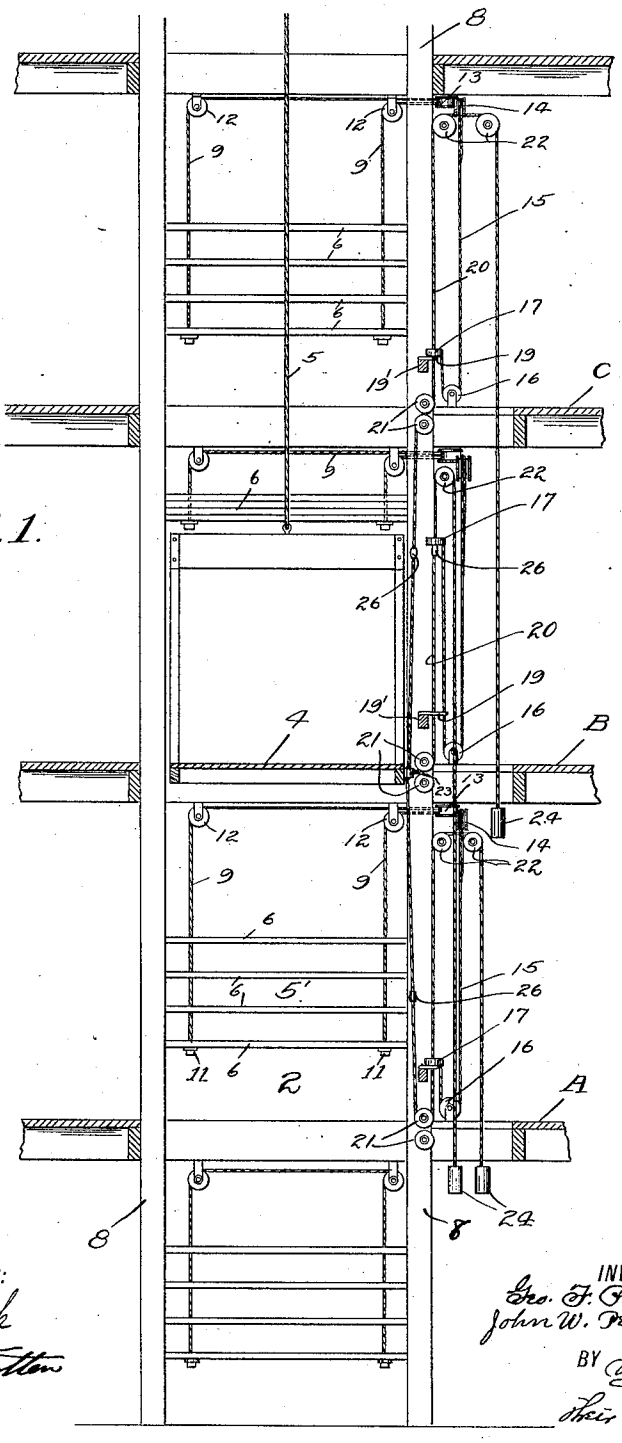


Fig. 1.

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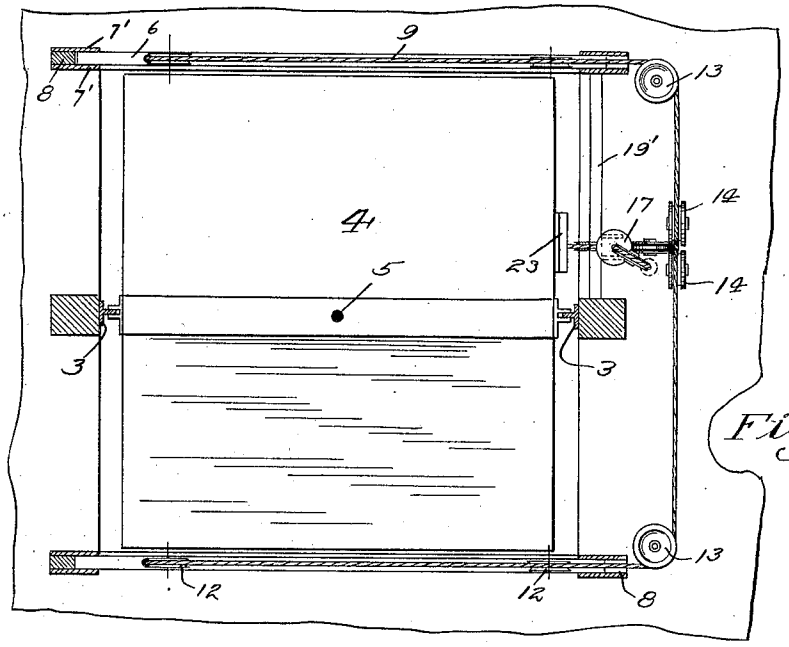


Fig. 2.

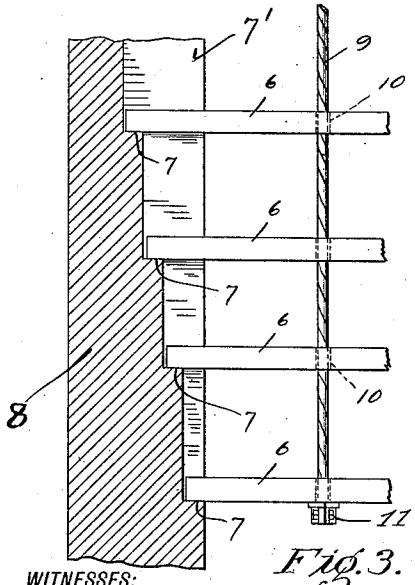


Fig. 3.

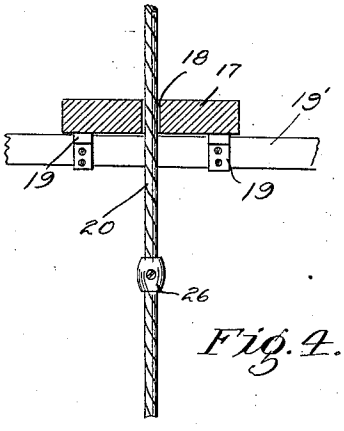


Fig. 4.

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GEORGE F. PEMBERTON AND JOHN W. PEMBERTON, OF LINCOLN, CALIFORNIA, ASSIGNORS OF FORTY-NINE ONE-HUNDREDTHS TO AUGUST W. RAY AND WADE H. DE GUERRE, OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC GATE CONTROL FOR ELEVATORS.

1,088,172. Specification of Letters Patent. **Patented Feb. 24, 1914.**

Application filed February 4, 1913. Serial No. 746,169.

To all whom it may concern:

Be it known that we, GEORGE F. PEMBERTON and JOHN W. PEMBERTON, citizens of the United States, residing at Lincoln, in the county of Placer and State of California, have invented certain new and useful Improvements in Automatic Gate Control for Elevators, of which the following is a specification.

The hereinafter described invention relates to improvements in elevator gates and operating mechanism therefor and to a type particularly adapted to be employed in connection with what are commonly termed freight elevators, and which are usually employed in factories, storage houses, lofts or like structures, and the invention has for its principal object to provide a gate structure adapted to be controlled by the movement of the elevator and so constructed that the gates of the successive floors or landings will open as the elevator approaches the same from either direction, and will close as the elevator passes the same going in either direction.

A further and important object is to provide an apparatus for the above purpose which will always permit the gates to remain in a closed position when the elevator car is not opposite the same, and which will automatically operate to open and close the gates and thus dispense with the operator of the elevator car opening or closing the gates when the car reaches the respective floors.

A further object is to provide an improved gate by the employment of which the supporting track so commonly extended across the entrance passage to the elevator is dispensed with, thus facilitating the wheeling of trucks on or off the elevator car.

Other objects are to provide a simple and efficient apparatus, constructed of but few parts, and one which is automatic in all of its operations.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts, hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more fully comprehend the invention reference must be had to the accompanying drawings forming a part of this specification and in which—

Figure 1 is a view in elevation of the intermediate floors of an elevator shaft, with an elevator positioned therein disclosing the safety gate operating means controlled by the movement of the elevator. Fig. 2 is a top plan view of Fig. 1, disclosing the shaft, the elevator mounted therein and a portion of the safety gate operating means. Fig. 3 is an enlarged detail view of a portion of one of our improved collapsible gates, disclosing the stepped seats in the uprights in which the gate members are raised when in a closed position. Fig. 4 is an enlarged detail view of the collar carried at the end of the safety gate supporting connection, disclosing the controlling connection extended therethrough, the button carried thereby, and the bracket for supporting the collar when in its lowermost position.

Referring more particularly to the drawings, wherein like letters of reference designate corresponding parts throughout the several views, the letters A, B and C designate the intermediate floors of a suitable structure, provided with an elevator shaft 2, in which is mounted on guides 3, an elevator car 4, supported and operated by the cable 5.

Guarding the passages to and from the car 4 at each floor are suitable collapsible gates 5′, each comprising a plurality of horizontal bars 6, adapted to extend to the sides of the passages, and the ends of the bars adapted to be received in suitable stepped seats 7, provided at the lower ends of parallel guides 7′, formed in suitable uprights 8, positioned one on each side of the passages to the elevator car. The rods or bars of the gates increase slightly in length upwardly, so that when the gates are in their closed position, the ends of the bars will be seated in their respective seats.

The bars 6 of the respective gates are flexibly connected adjacent their outer ends by suitable ropes or other flexible connections 9, which extend through suitable openings 10 therein, and are provided on their lower ends with clamp collars 11 which pre-

vent the ends of the connections from slipping through the opening in the lowermost bar.

The flexible connections 9 are supported by suitable sheaves 12 positioned above the passages to and from the elevator car and extend to one side of the elevator shaft 2 where they operate over sheaves 13 and 14. After passing over the sheaves 14 the flexible connections 9 are united to form single controlling ropes or cables 15, which extend downwardly and under sheaves 16 and carry at their lower ends suitable collars 17 provided with openings 18, the collars resting on the parallel spaced supporting brackets 19, carried by supports 19′, when the gate bars are in their lowermost position.

From the above description it will be observed that by exerting pressure on the underside of the collars 17 to force the same upwardly, the controlling cables 15 will be drawn downwardly and the flexible connections 9 will be drawn upwardly raising the bars 6, as at the floor B in Fig. 1, and upon the release of pressure on the underside of the collars the weight of the bars 6 will draw the collars downwardly until the same rest on the brackets 19 when the bars will be in a position to close the passages from the floor to the elevator shaft.

Through the openings 18 in the respective collars 17 pass the gate operating ropes or cables 20, which operate between spaced sheaves 21, positioned adjacent the floors and are supported and operated over sheaves 22, positioned adjacent the sheaves 14, and said cables are attached at one end to a bracket 23 secured to the elevator car 4 and carry at their opposite ends weights 24 which are heavier than the gates composed of bars 6.

Suitable clamp collars or lugs 26 are adjustably secured to the gate operating cables 20 adjacent the ends secured to the bracket 23, and the same pass between the sheaves 21 and between the brackets 19, and are adapted to contact with the underside of the collars 17, as the elevator car approaches the respective floors, raise the collars which in turn raise the bars 6 associated therewith.

Assuming that the respective parts are mounted as in the drawings, the elevator car is stopped at floor B, the gate controlling that floor is raised and the elevator is to ascend to the floor C, the apparatus operates in the following manner:—As the operator starts the car upwardly, the gate operating cables 20 will be operated thereby and the lug 26 carried by the cable associated with floor 13 will be drawn downwardly and the weight of the bars 6 will cause the collar 17 to follow the lug, until the collar rests on the brackets 19, at which time the bars will be in their lowermost position and close the passage to the elevator shaft. Simultaneously therewith the lug 26 carried by the gate operating cable 20 associated with floor C is being caused to move upwardly by the weight 24 and the lug passes between the sheaves 21 and brackets 19, and contacts with the under side of the collar 17, forcing the same upwardly, and the collar through the controlling connections 15 and 9 will cause the bars 6 to raise and the same will be in their highest position when the floor of the car is level with the floor C.

While the above operations have been taking place the gate operating cable 20 associated with floor A has been following the car, and the lug 26 carried thereby has been disengaged from the underside of the collar 17 associated therewith permitting the gate controlled thereby to remain in closed position.

On the descent of the car, the above operations will be reversed and as the car leaves the floor C, the gate associated therewith will be closed and as the car approaches the floor B, the gate associated therewith will be opened, and upon the car leaving the floor B the gate associated therewith will be closed and upon approaching the floor A, the gate associated therewith will be opened.

From the above description it will be apparent that a mechanism has been provided which will open the elevator gates of a floor upon the approach thereto of the car from either direction, and which will cause the elevator gates of a floor to close upon the car leaving the same and going to another floor in either direction.

If desirable, the bar 6 may be extended to the floor and it will be apparent that the above structure is adapted to buildings of two or more floors.

Having thus described our invention what we claim and desire to protect by Letters Patent is:—

1. In a device of the class described and in combination with an elevator car, a gate associated with each floor and controlling the passage therefrom to the elevator car, flexible controlling connections associated with each gate, independent flexible operating connections each weighted at one end and each attached at its opposite end to the elevator car, a gate operating button carried by each operating connection, and means carried by each controlling connection and actuated by the movement of the respective operating buttons in one direction for operating the respective controlling connections to open the gates controlled thereby on the car approaching the respective floor controlled thereby and actuated on the movement of said buttons in an opposite direction and the car leaving said floors to permit said gates to close by gravity.

2. In a device of the class described and in combination with an elevator car, a gate

associated with each floor and controlling the passage therefrom to the elevator car, a flexible controlling connection associated with each gate, an independent operating connection for each controlling connection, weighted at one end and attached at its opposite end to the elevator car, and coacting instrumentalities carried by each operating and controlling connection and actuated by the movement of the elevator car on approaching a floor to open the gate associated therewith and on the elevator leaving a floor to permit the gate to close by gravity.

3. In a device of the class described, and in combination with an elevator car, a gate associated with each floor and controlling the passage therefrom to the elevator car, a flexible gate controlling connection associated with each gate and carrying at one end a collar, an independent operating connection associated with the collar of each gate controlling connection, weighted at one end and attached at its opposite end to the elevator car, a gate operating button carried by each operating connection and adapted on the approaching of the car to a floor to contact with the collar and cause the gate associated therewith to open and on the car leaving the floor to disengage from the collar and permit the gate to close by gravity.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE F. PEMBERTON.
JOHN W. PEMBERTON.

Witnesses:
JAMES H. RYAN,
R. J. STRANG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."