B. E. CEDERSTROM AND J. H. MULLOY.

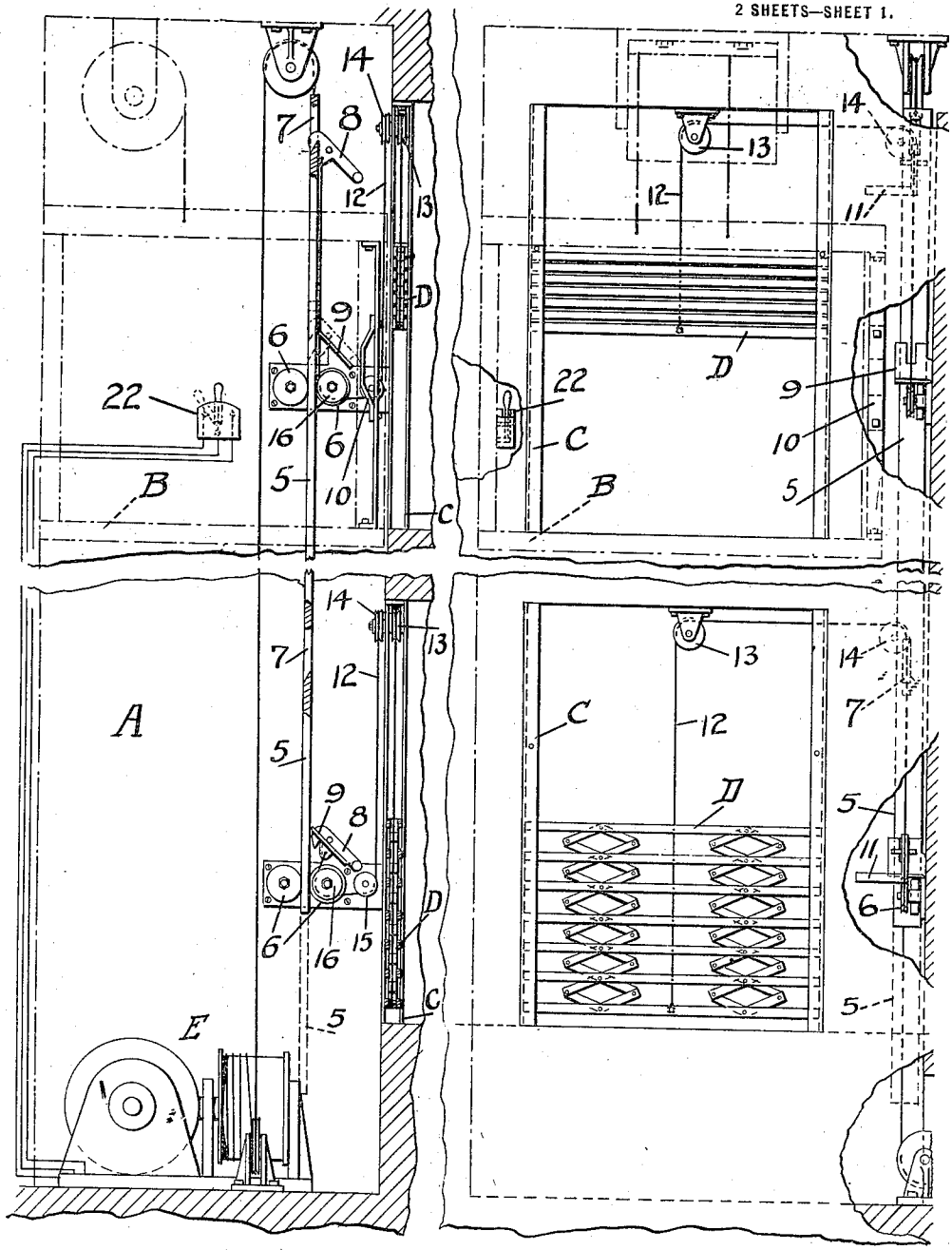
GATE CONTROLLING APPARATUS.

APPLICATION FILED JULY 29, 1915.

1,320,201.

Patented Oct. 28, 1919.

2 SHEETS—SHEET 1.



WITNESS:

Fig. 1.

Fig. 2.

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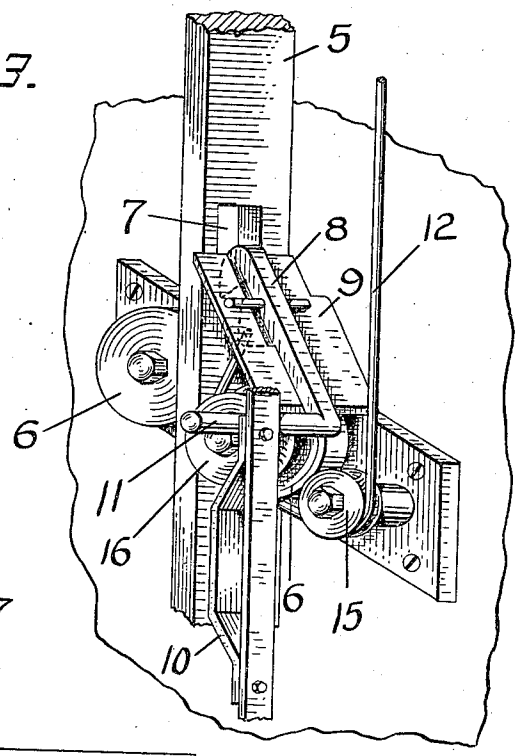
2 SHEETS—SHEET 2.

Fig. 3.



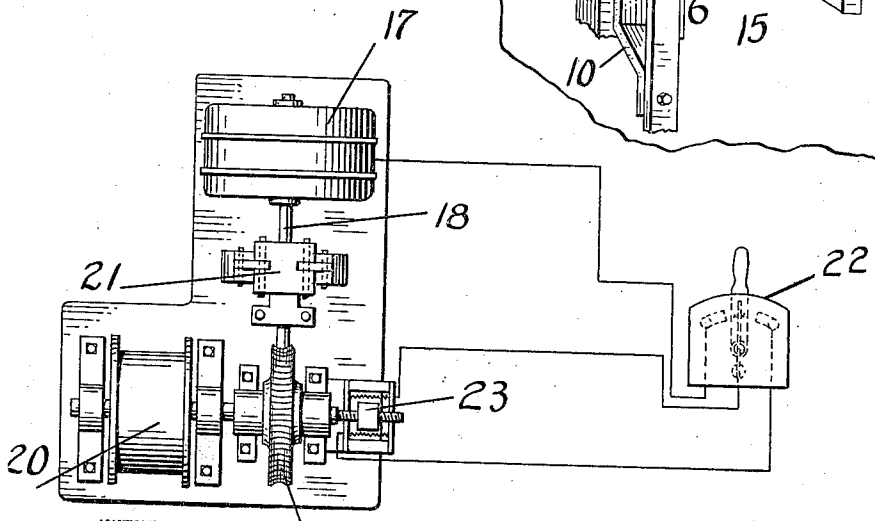


Fig. 4.

WITNESS:

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UNITED STATES PATENT OFFICE.

BROR E. CEDERSTROM AND JOHN H. MULLOY, OF DETROIT, MICHIGAN, ASSIGNORS TO MORGAN & WRIGHT, A CORPORATION OF MICHIGAN.

GATE-CONTROLLING APPARATUS.

1,320,201. Specification of Letters Patent. Patented Oct. 28, 1919.

Application filed July 29, 1915. Serial No. 42,574.

To all whom it may concern:

Be it known that we, BROR E. CEDERSTROM and JOHN H. MULLOY, both citizens of the United States, and residents, respectively, of Detroit, county of Wayne, and State of Michigan, and Detroit, county of Wayne, and State of Michigan, have invented certain new and useful Improvements in Gate-Controlling Apparatus, of which the following is a full, clear, and exact description.

This invention relates to gate controlling apparatus, more particularly apparatus for opening and closing the gates communicating from the respective floors of a building to an elevator shaft.

The object of this invention is to provide a single power operated mechanism capable of independently opening and closing any one of a plurality of such gates, said mechanism being distinct from that which operates the elevator.

Heretofore, most of the gate opening devices for elevators have been actuated by the car itself, the gates at all floors passed by the car successively opening and closing whether or not the car was stopped. By this invention we provide an apparatus capable of opening but one gate at a time, and that only when the elevator car is at the floor with which said gate communicates.

For a clearer understanding of the operation of our apparatus, reference is made to the following description and the accompanying drawings, wherein:—

Figure 1 is a longitudinal sectional view of a part of an elevator shaft having our device installed therein;

Fig. 2 is a front elevation of the same, partly in section;

Fig. 3 is a detail view showing the means for establishing engagement between the actuating mechanism and any particular gate; and

Fig. 4 is a diagrammatic plan view of a motor and drum suitable for actuating my device.

In the drawings A designates a shaft for an elevator B. Communicating with the shaft A are doorways C equipped respectively with gates D. Mounted on the wall of the shaft A is a bar 5 adapted to be raised and lowered by a suitable hoisting apparatus E and maintained in position by guide rollers 6, 6. Opposite each doorway in the shaft A the bar 5 is provided with a slot 7 for receiving a hook 8 which normally rests on a slotted inclined plate 9 attached to the wall of the shaft. The elevator B has mounted on its frame a shoe 10 so placed that when the car comes into position for a stop it strikes against the projecting arm 11 of the hook 8, sliding it up the plate 9 into the slot 7 in the bar 5.

To each of the gates D is attached a cable 12 which passes over pulleys 13, 14, 15 and 16 to a lug on hook 8.

The hoisting apparatus we have found to be best suited to our purpose consists of a reversible electric motor 17, the shaft 18 of which terminates in a worm engaging a worm gear 19 keyed to the shaft of the drum 20. A brake 21 is provided on the motor shaft 18, the type we have found most satisfactory consisting of a contracting band which when the motor is idle is held in frictional engagement with a drum on the shaft 18 by a weight attached to the core of a solenoid. When the motor 17 is started in either direction the current energizes the solenoid, which lifts the weight and releases the brake.

The motor is controlled by a switch 22 preferably located in the elevator and connected with the motor by a suitable flexible cable.

The operation of our apparatus is as follows:—When the car B comes into place opposite one of the doorways of the shaft, the shoe 10 strikes the arm 11 on the hook 8 forcing the same up the inclined plate 9 into the slot 7 of the bar 5. To open the gate D the operator then throws in the switch 22 to start the motor 17, the bar 5 is raised thereby, carrying with it the hook 8 which by means of the cable 12 lifts the gate D. In order to obviate accidents through carelessness of the operator we provide a circuit breaking mechanism 23 on the shaft of the drum 20 which automatically breaks the circuit and stops the motor when the gate is fully opened, thereby setting the brake to prevent reclosing of the gate by gravity.

To close the gate the switch 22 is reversed, whereby the brake is released and the motor is started in the opposite direction, lowering the bar 5 until the gate is closed. When the bar reaches its original lowered position the hook 8 engages the plate 9 and slides thereon clear of the slot 7 in the bar 5 to its

original position. The circuit breaking mechanism 23 stops the motor at the proper time, as before, thereby causing the release of the brake-weight by the solenoid in the breaking mechanism 21.

As the elevator car passes each floor the corresponding hook 8 is caused by the shoe 10 to project into a slot 7 in the bar 5, but in case no stop is made, immediately the car has passed it drops back into place on the plate 9.

By placing the gate controlling switch near the elevator control it is possible for the operator to open and close the gates with a minimum of time and effort. Inasmuch as it is impossible to open a gate except when the elevator car is in position at the door, our invention eliminates the danger of accident occasioned by premature opening of the gate.

The control switch 22 is provided with means for normally maintaining it in the neutral and inoperative position shown in full lines in the drawing, and to complete the circuit for raising or lowering the gate it must be held in contact by the operator. Thus if his attention is distracted and he releases his hold on the switch lever it of itself assumes the neutral position and movement of the gate at once ceases.

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

1. In an apparatus of the character described, an elevator, a gate, a flexible connector secured to said gate, a hook secured to said connector, a bar slidably mounted adjacent to said hook, means mounted on said elevator for automatically effecting engagement between said hook and said bar when the elevator is adjacent said gate, means for raising and lowering said bar, and a stationary member adapted to disengage the said hook from said bar when the bar is lowered.

2. In an apparatus of the character described, an elevator, a gate, a flexible connector secured to said gate, a hook secured to said connector, a bar slidably mounted adjacent to said hook, means mounted on said elevator for automatically effecting engagement between said hook and said bar when the elevator is adjacent said gate, means for raising and lowering said bar, and a stationary inclined plate adapted to disengage the said hook from said bar when the bar is lowered.

Signed at Detroit, Mich., this 21st day of July, 1915.

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J. H. MULLOY.