

No. 736,090.

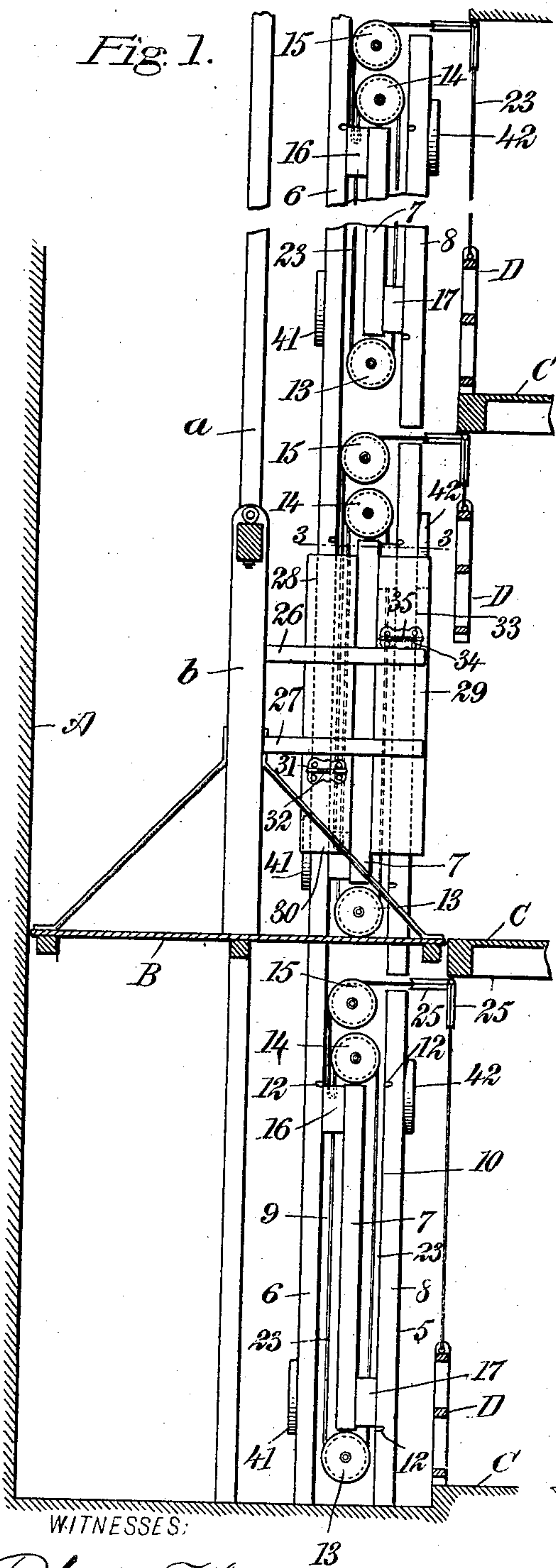
PATENTED AUG. 11, 1903.

H. J. GUTH.
DEVICE FOR OPERATING ELEVATOR GATES.

APPLICATION FILED JAN. 31, 1903.

NO MODEL.

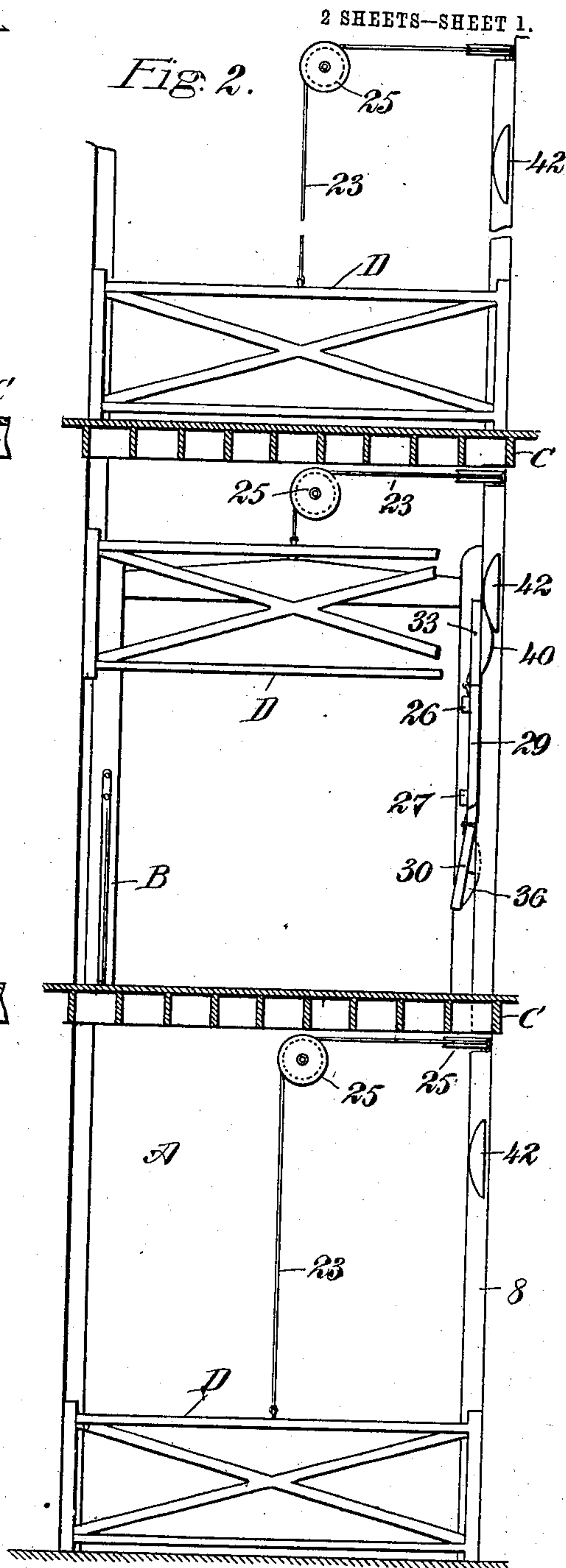
Fig. 1.



WITNESSES:

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Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

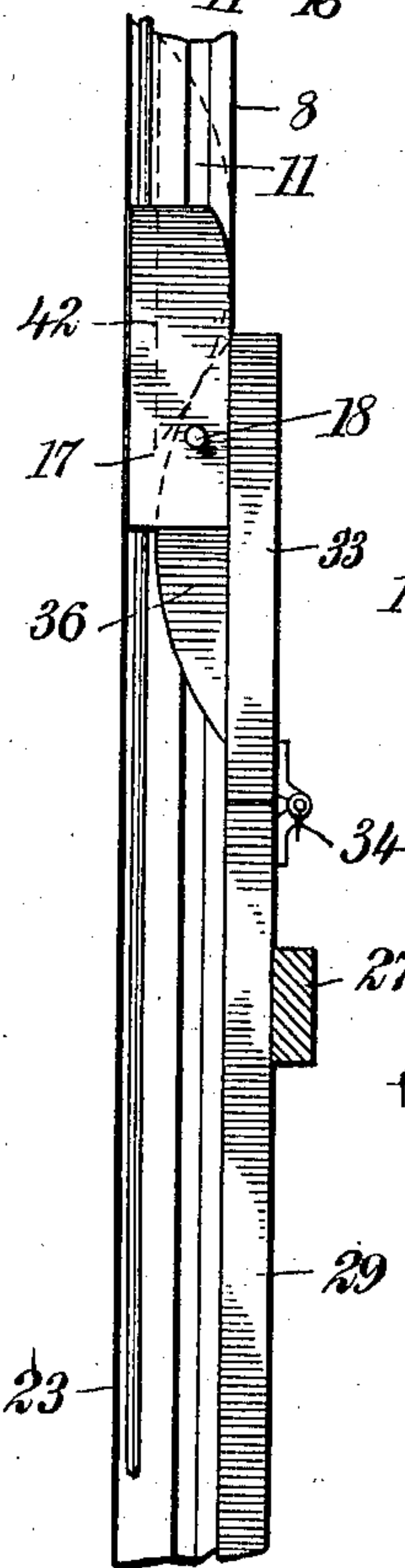
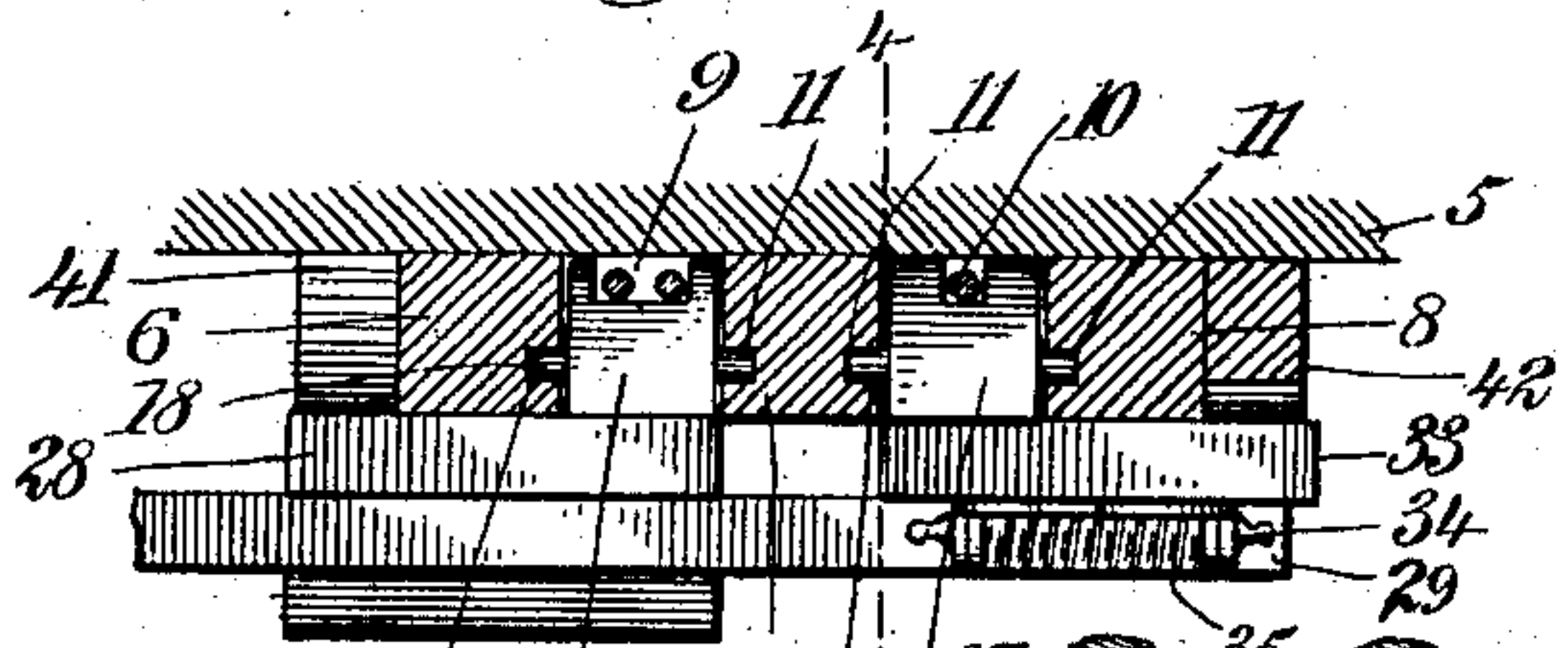


Fig. 4.

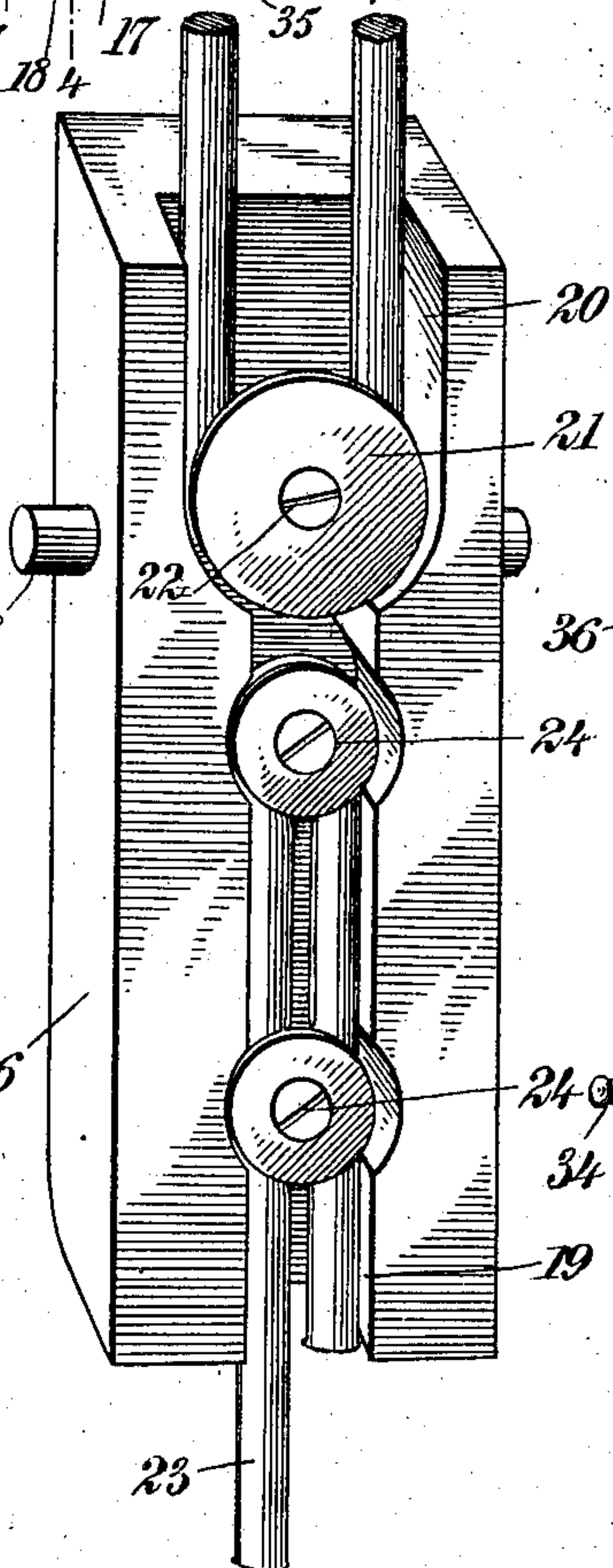
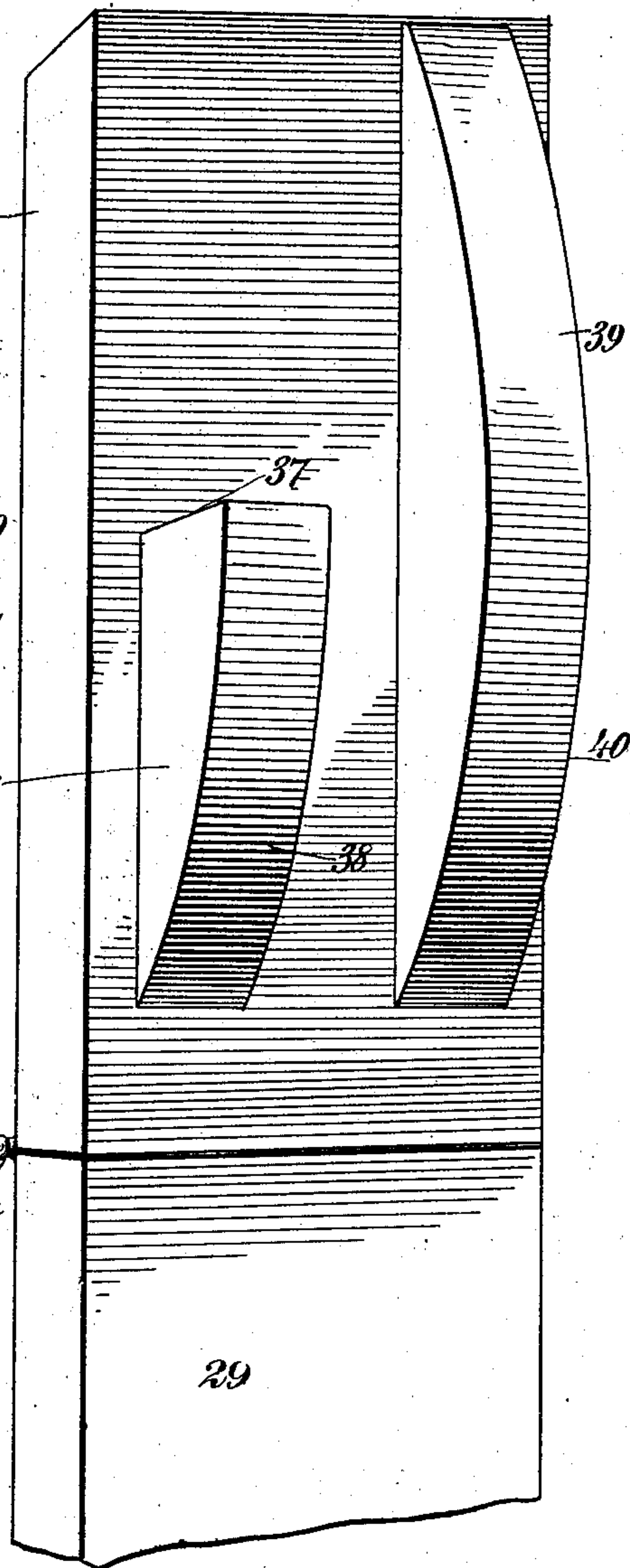


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

HENRY JOHN GUTH, OF EVANSVILLE, INDIANA.

DEVICE FOR OPERATING ELEVATOR-GATES.

SPECIFICATION forming part of Letters Patent No. 736,090, dated August 11, 1903.

Application filed January 31, 1903. Serial No. 141,286. (No model.)

To all whom it may concern:

Be it known that I, HENRY JOHN GUTH, a citizen of the United States, and a resident of Evansville, in the county of Vanderburg and State of Indiana, have invented a new and Improved Device for Operating Elevator-Gates, of which the following is a full, clear, and exact description.

This invention relates to a device for operating the gates adjacent to an elevator-hatchway, said gates being closed normally by gravity.

In the present invention I seek to provide means for positively opening or raising the elevator-gate on the ascending and descending movements of an elevator cage or car; said devices acting automatically to impart the required movement to the gate and some of the devices being in like manner moved out of operative position temporarily, so as to avoid breakage, and thereby insure the desired operation of the mechanism.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation through a portion of an elevator-hatchway, showing my automatic devices therein for opening the elevator-gates on the ascending and descending movements of a cage or car. Fig. 2 is a sectional elevation in a plane at right angles to Fig. 1. Fig. 3 is a transverse horizontal section, on an enlarged scale, in the plane of the dotted line 3 3 of Fig. 1. Fig. 4 is an enlarged detail section in the plane of the dotted line 4 4 of Fig. 3. Fig. 5 is a detail perspective view of one of the travelers associated with an elevator-gate, and Fig. 6 is another detail perspective view of one of the operating-arms adapted to be carried by the car and to positively move a gate-traveler.

A indicates a portion of an elevator-hatchway in which is erected a guide *a* for the cage or car B, the latter being adapted to travel past a series of floors C in a building or other structure. Communication between the hatchway and each floor is normally cut off

by a gate D, adapted to be closed by gravity. All these parts may be of the usual or any preferred construction, and they are referred to in this specification merely for the sake of clearly illustrating the application of my improvements.

Ordinarily I prefer to erect a vertical column or base 5 within the hatchway, and on this column or base is secured or provided in any suitable way a series of vertical guides 6, 7, and 8. The guides 6 8 may extend continuously from top to bottom of the hatchway; but the guide 7 is shorter than the distance between adjacent floors, as will be seen by reference to Fig. 1. This guide 7 is between the guides 6 8 and parallel thereto to form vertical grooves or ways 9 10, and the opposing edges of the guides 6 7 8 are provided with narrow channels 11. (See Fig. 3.) The guides 6 8 are also provided with transverse notches 12, which are situated opposite to the terminal portions of the intermediate short guide 7 for a purpose which will hereinafter appear. Between adjacent floors the base or column 5 is adapted to support three sheaves 13 14 15, which are preferably disposed in the same vertical plane and which may be mounted on suitable fixed spindles or arbors. The sheaves 13 14 are arranged at opposite ends of the short intermediate guide 7, although they may be supported on the end portions thereof; but the sheave 15 lies above the upper sheave 14 and in a position to direct a rope or cable to one of the elevator-gates D.

In the grooves 9 10 are disposed travelers 16 17, preferably arranged flush with the exposed faces of the guides 6 7 8, as shown by Fig. 3, and each traveler is provided with a transverse pin 18, arranged for its end portions to extend into the narrow channels 11, which are provided in the opposing faces of the series of guides, whereby the pins retain the travelers in position between the guides and allow them to have the desired slidable movement in vertical directions. The traveler 16 of each pair is shown by Fig. 5 as having a longitudinal groove 19, which is widened or enlarged at 20 at the upper portion of said traveler, and in this enlarged portion of the groove is arranged a guide-sheave 21, that is free to turn on a suitable arbor 22, attached to the traveler. The

travelers are connected in pairs with each other and with one of the gates D by a single rope or cable 23, which has one end portion thereof secured in the groove 19 of the traveler 16 by means of the headed bolts 24, as shown by Fig. 5. One end of the cable is thus fastened securely to the traveler 16, and this cable extends downwardly from said traveler to and beneath the sheave 13, from whence the cable passes in an upward direction to the traveler 17, said cable being fastened in any approved way to said traveler 17 in order to make it move simultaneously with the traveler 16 and in an opposite direction thereto. From the traveler 17 the cable 23 passes in an upward direction to and over the pulley 14, from whence it passes in a downward direction to and beneath the sheave 21 of the traveler 16, after which the cable is carried in an upward direction to and over the sheave 15, and finally the cable passes over suitable guide-pulleys, such as 25, to the gate D, said end of the cable being fixed to the gate, as shown more clearly by Figs. 1 and 2. The principal purpose of the guide-sheave 21 is to enable proper direction to be given to the cable 23 for effecting the lifting or raising of the gate, as is apparent. It will be understood that the single continuous cable has its end portions fastened to the gate D and the traveler 16 and that said cable is reeved around the series of stationary pulleys 13 14 15 and the shiftable pulley 21, which is carried by the traveler 16. The object of this arrangement of the cable is to connect the travelers with each other and the gate in a way to make the travelers move simultaneously in opposite directions under the action of suitable operating devices on the cage or car B and to effect in a positive way the opening or elevation of the gate on the descent or ascent of said cage B, the gate being normally closed by gravity.

One of the upright posts *b* of the cage is provided with laterally-extending supports 26 27, which are firmly fastened to said upright to move with the car and are disposed to extend across the column 5 and the series of guides 6 7 8 thereon. These supports carry the operating-arms 28 29, arranged to ride against the faces of the guides 6 8, respectively. The operating-arm 28 is provided at its lower portion with a movable member 30, which is hinged or pivoted thereto, as at 31, and normally pressed to an alined relation with said arm 28 by a suitable spring 32, said hinge 31 being shown in the drawings as a spring-hinge of ordinary construction. The other operating-arm 29 is provided at its upper end with a movable member 33, likewise connected to the arm by a hinge 34 and pressed into alined relation to the arm by a spring 35. (See Fig. 1.) From this description it will be seen that the arms 28 29 are equipped with movable members arranged to project from the lower and upper portions thereof, respectively, and these movable members are furnished with means

arranged to engage with the travelers 16 17 on the ascending and descending movements of the car in a way to open the gate D. Each movable member is furnished with a lug 36, which terminates in an abrupt shoulder 37 and is provided with a beveled or inclined face 38, as shown more clearly by Figs. 4 and 6, and said movable member is also equipped with a shoe 39, having a curved or beveled face 40, as also shown by Fig. 6. The shoe 39 is longer than the lug 36, so that one end portion of the shoe extends beyond the shoulder 37 of said lug, and this shoe is disposed at one side of and parallel to said lug. The face 40 of the shoe curves or inclines toward both ends of the shoe and the face of the movable member of the arm. The lugs 36 are provided on the movable members 30 33 of the arms 28 29, respectively, in positions to ride within the grooves 9 10, in which the travelers 16 17 are slidably fitted; but the shoes 39 of the movable arm members travel outside of the guides 6 and 8 in a manner to ride against cams 41 42, said cams being secured to the base or column 5 outside of the guides 6 8 and adjacent to the pulleys 13 14, respectively.

In the closed position of the gate D the cable or rope 23 is strained to take up any slack therein by keeping the rope taut, and the traveler 16 is at the upper part of the guide 7, while the other traveler 17 is at the bottom part of said guide 7. On the ascent of the cage or car the lug 36 of the movable member 33, forming a part of the arm 29, engages with the lower portion of the traveler 17, thereby lifting said traveler in the groove 10 and pulling on the cable 23 in a way to raise the gate D and cause a downward movement of the traveler 16; but this traveler is adapted to ride against the curved face 38 of the lug 36, carried by the movable member 30 on the other arm 28, thus permitting the cage to pass the downwardly-moving traveler 16. If the cage stops at the floor, the lug 36 of the arm member 33 remains in engagement with the traveler 17 to hold the gate D in an open position; but a continued upward movement of the cage causes the shoe 39 of said arm 33 to ride against the cam 42, whereupon the lug 36 of the arm member 33 is positively lifted out of engagement with the traveler 17, thus releasing the gate-operating mechanism from engagement with the traveler and allowing the gate to return by gravity to its normal lowered position, whereupon the cable is pulled to elevate the traveler 16 and lower the traveler 17, thus restoring the travelers to their normal positions. On the descent of the cage the lug 36 of the member 30, forming a part of the arm 28, is brought into engagement with the upper traveler 16 of the pair, thereby lowering said traveler 16, with the cage, and straining the cable 23 to raise the traveler 17 and the gate D, said traveler 17 in its upward movement riding against the curved face 38 of the lug 36 on the member 33 of the arm 29. When the cage

stops at the floor, the lug of the arm member 30 remains in engagement with the traveler 16 to keep the gate and the traveler 17 in their raised positions; but a continued downward movement of the cage causes the shoe 39 of the arm member 30 to ride against the cam 40, thus withdrawing the lug 36 from engagement with the traveler 16 and allowing the weight of the gate to return it to the normal lowered position and to strain the cable 23 in a way to move the travelers 16 17 to their raised and lowered normal positions, respectively. The notches 12 in the guides 6 8 allow the pins 18 of the travelers to be drawn through them and displace said travelers from the grooves 9 10 and from positions between the guides 6 8, thus making provision for ready access to the cable should it become disarranged without tearing away either of the series of guides.

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

1. In gate-operating mechanism for elevators, the combination of a column constructed with triplicate guides, forming duplicate parallel ways, the intermediate guide terminating short of the others at the ends, a pulley beneath the lower end of this guide, vertically-disposed duplicate pulleys above the upper end thereof, a car, a gravity-gate, reversely-movable travelers normally located in the upper and lower parts, respectively, of the ways, the upper traveler carrying a guide, a cable secured at one end to said upper traveler, thence passing downwardly and about the pulley first named and secured to the lower traveler, said cable thence being passed over one of the duplicate pulleys, to and beneath said guide, and over the other one of said duplicate pulleys, whence the cable passes to the gate and is connected thereto, and means on the car for engaging the travelers on the vertical movements of said car.

2. In gate-operating mechanism for elevators, the combination of a column having guides, forming duplicate parallel ways, a car, a gravity-gate, reversely-movable travelers normally located in the upper and lower parts, respectively, of the ways, a movable flexible connection between said travelers, and leading also to the gate, cams located outside of and in position substantially corresponding to the said normal position of the travelers, and arms on the car, having hinged spring-pressed members, provided with lugs having abrupt shoulders for engaging the travelers on the vertical movements of the

car, said arms also being provided with shoes having curved faces, for riding upon said cams, to release such engagement at determinate positions of the car.

3. In gate-operating mechanism for elevators, the combination of a column having triplicate guides, forming duplicate parallel ways, said guides having vertical grooves on their adjacent faces, and the outermost ones thereof formed at suitable places with corresponding notches leading to said grooves, a car, a gravity-gate, reversely-movable travelers normally located in the upper and lower parts, respectively, of the ways, said travelers having pins moving in said grooves, adapted to be passed through said notches, a movable flexible connection between the travelers, leading also to the gate, cams located on the outermost guides, in position substantially corresponding to said normal position of the travelers, and arms on the car, having spring-pressed members, constructed to engage the travelers on the vertical movements of the car, said arms having means thereon which are operated by said cams, to release such engagement at determinate positions of the car.

4. In gate-operating mechanism for elevators, the combination of a column having triplicate guides, forming duplicate parallel ways, said guides having vertical grooves on their adjacent faces, and the outermost ones thereof formed at suitable places with corresponding notches leading to said grooves, a car, a gravity-gate, reversely-movable travelers normally located in the upper and lower parts, respectively, of the ways, said travelers having pins moving in said grooves and adapted to be passed through said notches, a movable flexible connection between the travelers, leading also to the gate, cams located outside of and in position substantially corresponding to the said normal position of the travelers, and arms on the car, having hinged spring-pressed members, provided with lugs having abrupt shoulders for engaging the travelers on the vertical movements of the car, said arms also being provided with shoes having curved faces for riding upon said cams, to release such engagement at determinate positions of the car.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY JOHN GUTH.

Witnesses:

JOHN F. MANN,

HENRY BISCHMANN.