

J. F. FINAN.
AUTOMATIC ELEVATOR GATE.
APPLICATION FILED NOV. 8, 1910.

989,957.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

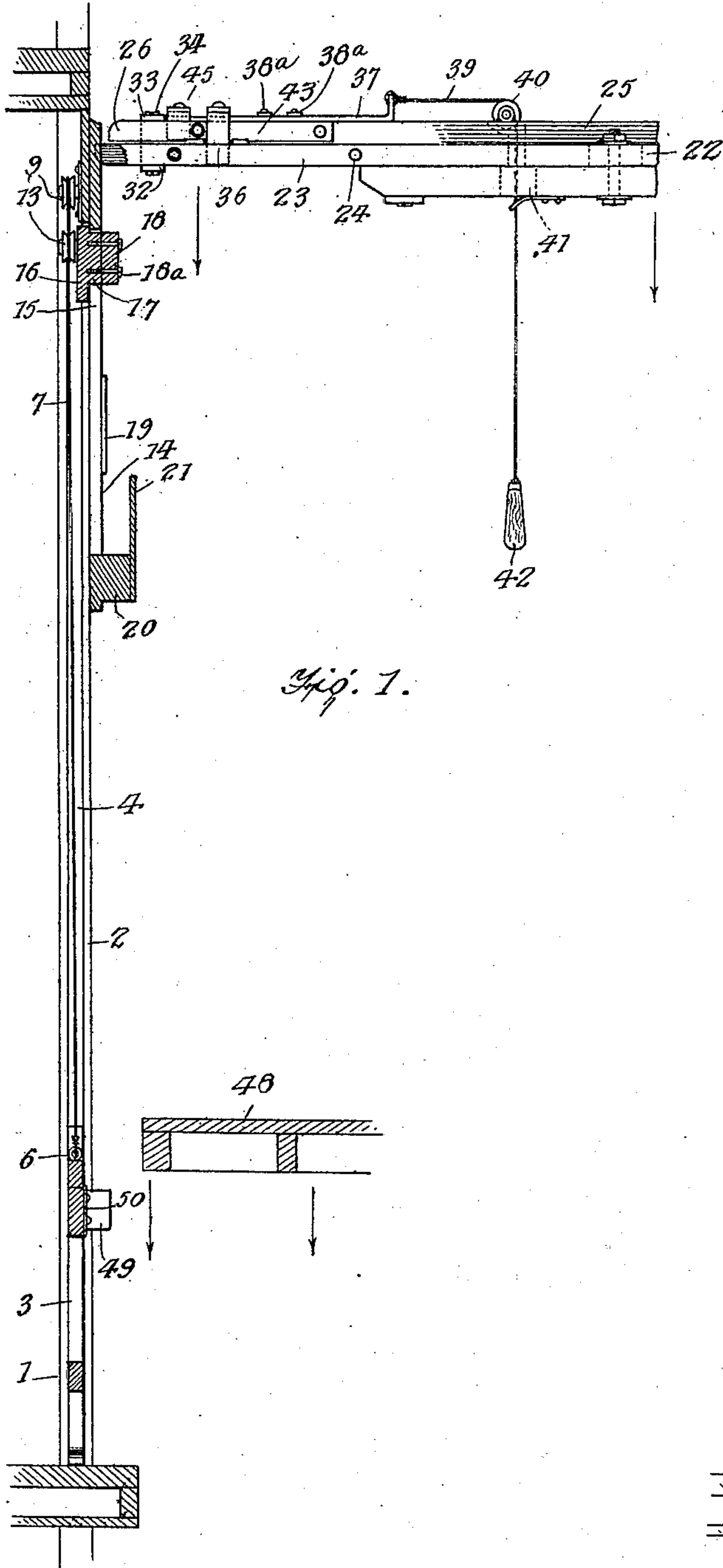


Fig. 1.

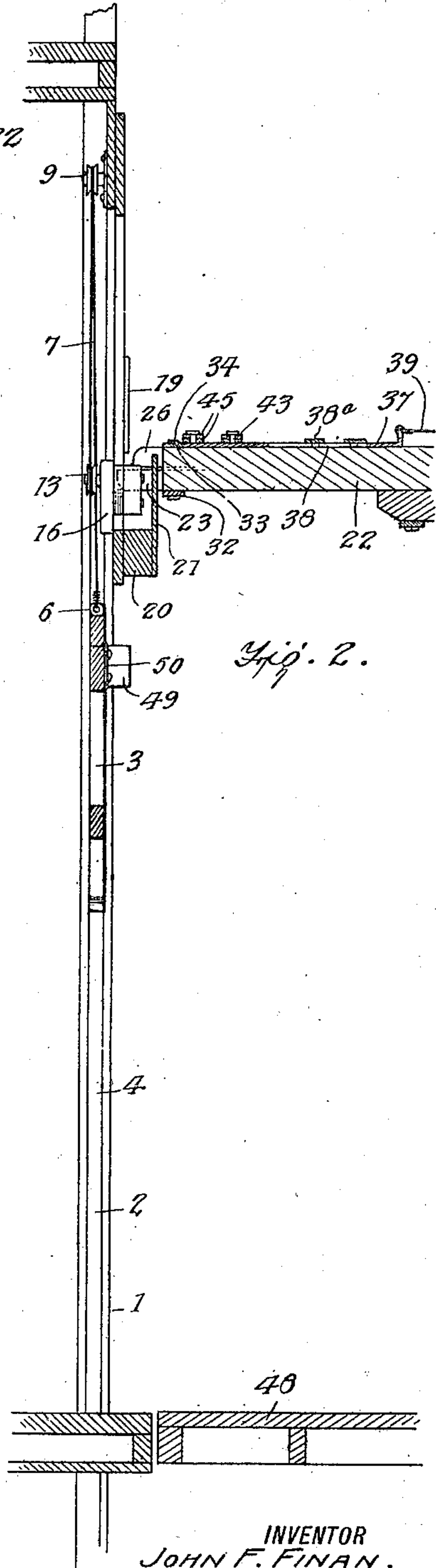


Fig. 2.

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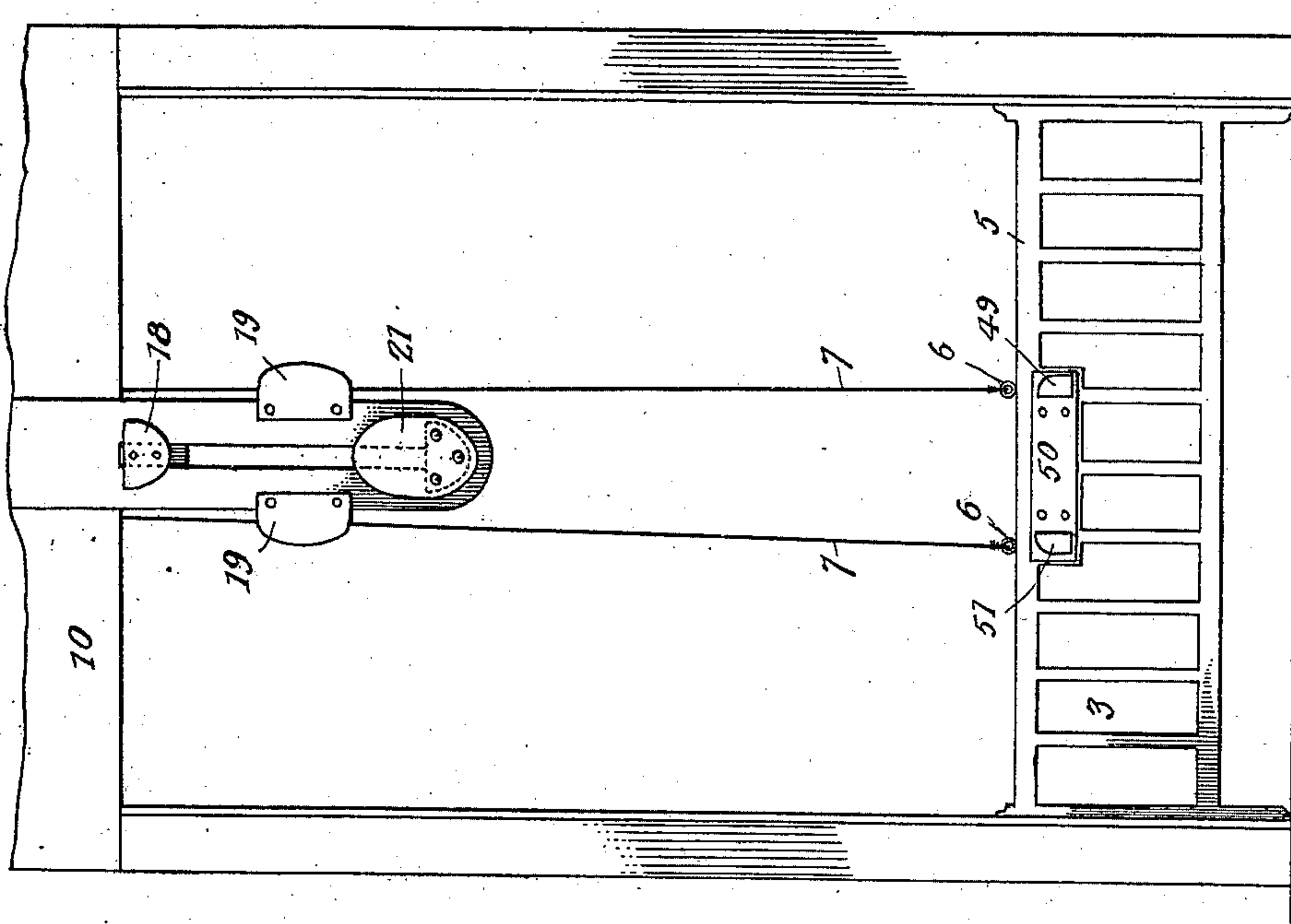
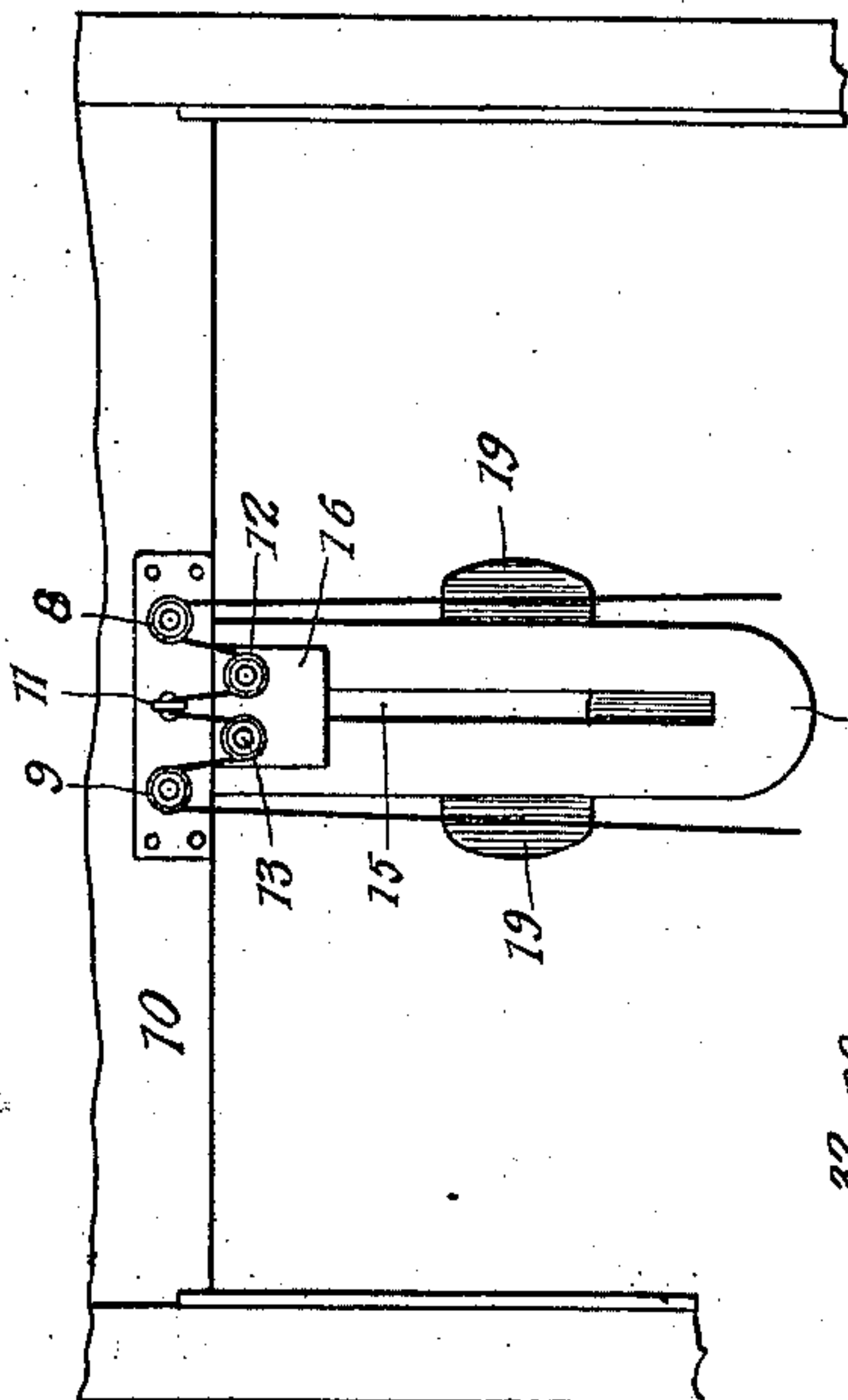


Fig. 3.



WITNESSES:

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Fig. 4.

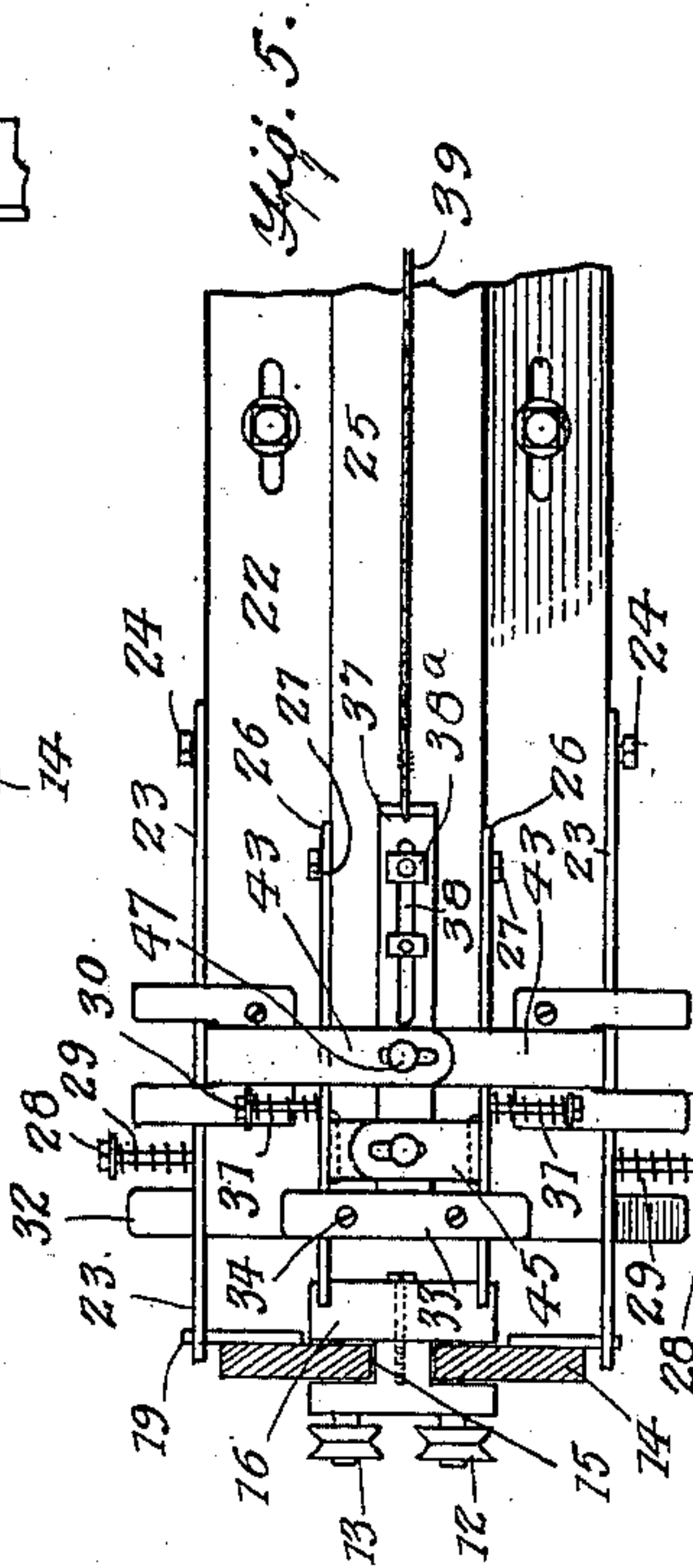


Fig. 5.

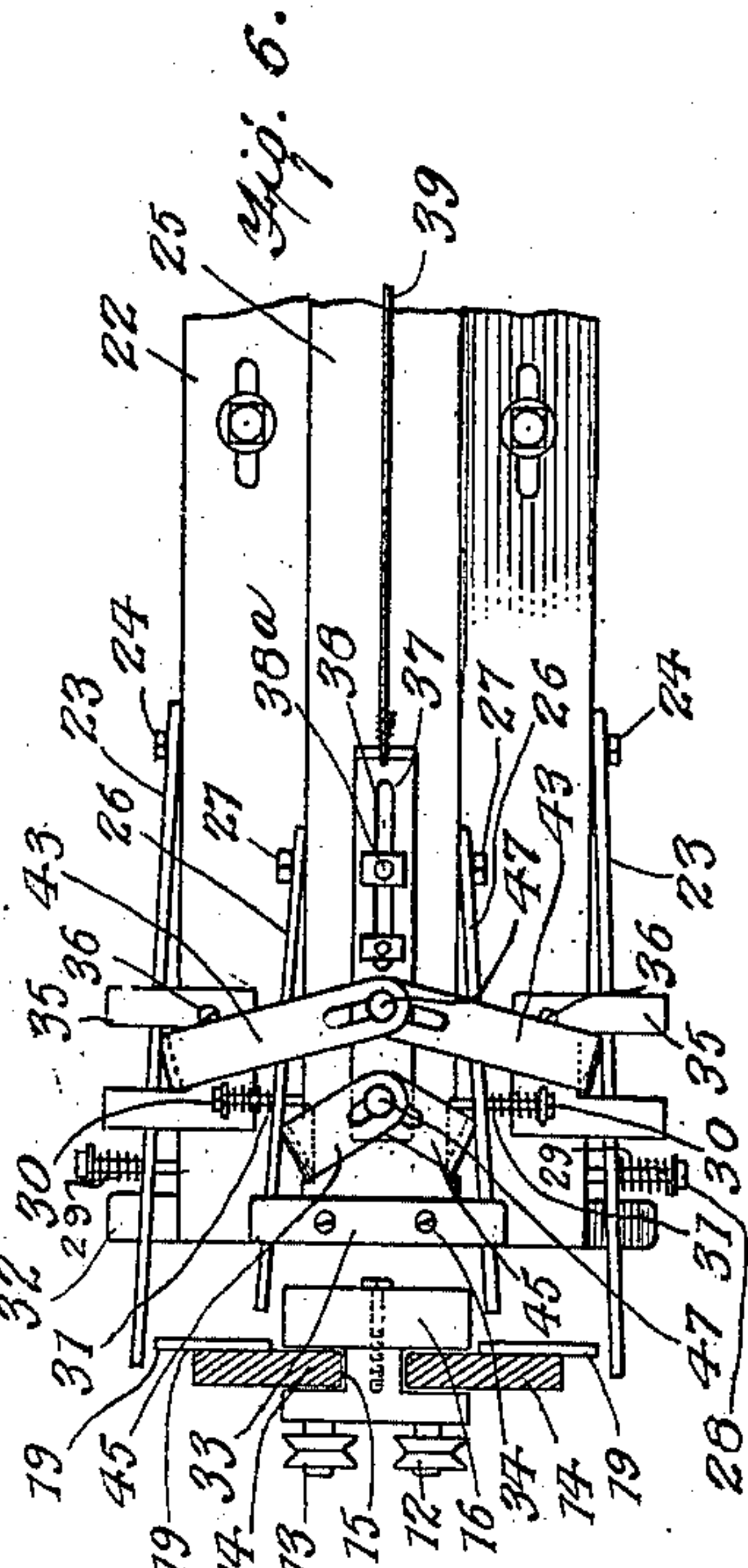


Fig. 6.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC ELEVATOR-GATE.

989,957.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed November 8, 1910. Serial No. 591,390.

To all whom it may concern:

Be it known that I, JOHN F. FINAN, a citizen of the United States, and a resident of Cumberland, in the county of Allegany and State of Maryland, have invented certain new and useful Improvements in Automatic Elevator-Gates, of which the following is a specification.

My invention is an improvement in automatic elevator gates, and consists in certain novel constructions and combinations of parts, hereinafter described and claimed.

The object of the invention is to provide a mechanism of the character specified, comprising a gate which will be lifted by the cage as it approaches the gate, will hold the gate open while at the floor, and which will release the gate as the floor is passed, and wherein the gate at any floor may be passed without opening the same, if desired.

Referring to the drawings forming a part hereof Figure 1 is a vertical section of a portion of an elevator well provided with the improvement in place and the gate closed. Fig. 2 is a similar view with the gate open. Fig. 3 is a side view of a portion of the well with the gate closed. Fig. 4 is a front view of the upper portion of Fig. 3 from within the well. Fig. 5 is a plan view of the spring fingers in one position, and Fig. 6 is a similar view of the fingers in another position.

The present embodiment of the invention is shown applied to a well, the wall 1 of which is provided with the usual door openings at each floor 2. The gate 3, shown more especially in Fig. 3, is of any desired or usual construction, and the ends of the gate move in grooves 4 in the sides of the door opening.

Near its center and on each side thereof, the upper rail 5 of the gate is provided with two screw eyes 6, and a cable 7 has its ends secured to the eyes. The central portion of the cable passes upwardly over two grooved pulleys 8 and 9 journaled on a fixed portion 10 of the well.

An eye 11 is secured to the fixed portion 10, between the pulleys 8 and 9, and in line with the center thereof, and a bracket 14 depends from the said fixed portion between the pulleys 8 and 9.

The bracket is provided with a longitudinal slot 15, and a plate 16 is provided with a lug 17 extending through the slot; a second plate 18 is secured to the lug on the

opposite side of the bracket by nails or screws 18^a, the said plates 16 and 18 forming a carriage slidable in the slot.

A pair of pulleys 12 and 13 is journaled on the carriage, and the central portion of the cable, after passing over the pulleys 8 and 9, passes downwardly under the pulleys 12 and 13, and upwardly through the eye 11. It will be evident that when the carriage is moved downwardly in the slot, the gate 3 will be lifted, and the length of the slot is such that a movement of the carriage from one end of the slot to the other will lift or lower the gate the proper distance.

The bracket 14 is provided with a laterally extending cam plate 19 on each side thereof for a purpose to be presently described, and near its lower end the bracket is provided with a lateral lug 20 extending into the well, and a plate 21 is secured to the end of the lug, the said plate extending upwardly substantially parallel with the bracket 14.

The central beam 22 of the supporting frame of the cage is provided with a finger 23 on each side edge at the end adjacent to the gate, and each finger is secured at its inner end to the beam by a bolt 24. A reinforcing beam 25 is arranged longitudinally of the beam 22 at its center, and a similar finger 26 is arranged on each side of the beam and secured in place by bolts 27.

The free ends of the fingers 23 extend into position for engagement by the cam plates 19 before mentioned to press the said ends laterally as shown in Fig. 6. Near its free end each finger 23 is provided with an opening through which extends a bolt 28 connected to the beam, and a coil spring 29 encircles the bolt between the head thereof and the finger. Similar bolts 30 pass through openings in the fingers 26 and engage the beam 25, and coil springs 31 encircle the bolts between the heads and the fingers, and act to hold the said fingers in contact with the side edges of the beam. A strap 32 is arranged transversely of the beam 22 below the same at the end adjacent to the bracket 14, and a second strap 33 is arranged in similar manner on the upper face of the beam 25, and bolts 34 connect the straps.

The ends of the strap 32 extend beyond the beam 22, as do also the ends of the strap 33 beyond the beam 25, and the said ends act as guides for the spring fingers. The

straps 35 are secured to the upper face of the beam 22 by bolts 36, and extend above the spring fingers 23. A slide plate 37 is mounted on the upper face of the beam 25, the said slide being slotted at 38, and pins 38^a on the beam extend through the slots to guide and limit the motion of the slide. The pins are headed as shown in Figs. 5 and 6.

10 A cord 39 is connected at one end with the inner end of the slide, and extends inwardly over a pulley 40 journaled above an opening 41 in the beams 22 and 25, and a grip 42 is connected with the other end
15 of the cord, the cord passing through the opening 41. A pair of levers 43 is arranged on the beam 25, one on each side of the slide, and a second pair 45 is arranged in front of the levers 43, one on each side of the slide,
20 and the inner end of each lever is slotted and engaged by a pin 47 on the slide.

The members of each pair are engaged with a common pin, and the free ends of the levers 43 engage the fingers 23, while the
25 free ends of the levers 45 engage the fingers 26. It will be evident that when the slide is moved inwardly, the free ends of the fingers 23 and 26 will be moved away from the beams.

30 The plate 21 before mentioned is oval in shape as shown in Fig. 3, and the sides thereof act as cams to spread the fingers 26, and the cam plates 19 perform a like office for the fingers 23. The grip 42 may
35 be used to move the slide inwardly against the resistance of the fingers.

In operation, with the elevator descending when the floor 48 of the cage approaches a
40 floor 2, the fingers 26 will contact with the block 18 and will move the carriage downward with the cage. The carriage will draw the central portion of the cable downward, and the gate will be lifted and will be at its highest point when the cage floor is in
45 register with the floor of the building.

The gate is released from the fingers 26 just before the cage reaches the floor by means of the cam 21 engaging the said
50 fingers 26, the gate being delivered to the fingers 23 immediately before the elevator reaches the floor. This is brought about by the blocks 49 (on the upward movement of the gate) which pass between the fingers 23,
55 the said fingers closing under the blocks and receiving the weight of the gate. The gate is always supported by the fingers 23 when the cage is standing at the floor whether the cage has reached the said floor by ascending or descending.

60 When ascending, the gate is lifted by the fingers 23 which engage the blocks 49 spaced apart laterally from each other and secured to a plate 50 on the gate. The fingers are released after the cage passes the floor by
65 the engagement of the said fingers with the

cam plates 19. At the same time that the fingers are released, the slide weight 16 is at the bottom of the slot and the fingers 26 have just passed (on their upward course) over the cam 21 and engage the slide weight 70 16 permitting the gate to drop to the floor at the same speed as that of the cage.

The ends of the levers 43, 45 are bent downwardly alongside the respective beams as indicated in Fig. 1 between the adjacent 75 fingers and the side of the beam. When the slide 37 is moved, the down-turned portion of each lever is inclined with respect to the side of the beam so that the finger is moved outwardly. 80

Only one side of the well is shown, but it will be understood that both sides are alike. The operating mechanism for each side is independent of that for the other side, and any gate may be passed without lifting by pull- 85 ing down on the handle or grip 42 and moving the slide inwardly. When the slide is so moved, the fingers 23 and 26 are moved out of engaging position. 90

I claim:— 90

1. The combination with the elevator well having door openings and the cage movable in the well, of a gate slidable vertically at each door opening, a pair of fixed pulleys above each gate, a guideway depending between the pulleys, a block slidable in the 95 guideway, a pair of pulleys on the block, a fixed eye between the first-named pulleys, a cable having its ends connected with the gate, the central portion of the cable passing upwardly and inwardly over the fixed pulleys, downwardly under the pulleys on the block, and upwardly through the eye, a pair of fingers on the cage for engaging the block to move it downwardly with the cage 105 to lift the gate, a second pair of fingers on the cage for engaging the gate to lift it when the cage moves upwardly, a slide on the cage, a connection between the slide and each pair of fingers for moving the mem- 110 bers of each pair laterally away from each other to release the block and the gate, a cord connected with the slide for moving the same, springs for returning the fingers to engaging position, and cam plates on the guideway for engaging and spreading the pairs of fingers when the cage passes the door opening to release the gate. 115

2. The combination with the elevator well having door openings and the cage movable 120 in the well, of a gate slidable vertically at each door opening, a pair of fixed pulleys above each gate, a guideway depending between the pulleys, a block slidable in the guideway, a connection between the block 125 and the gate for lifting the gate when the block is moved downwardly, a pair of fingers on the cage for engaging the block to move it downwardly with the cage to lift the gate, a second pair of fingers on the cage 130

for engaging the gate to lift it when the cage moves upwardly, a slide on the cage, a connection between the slide and each pair of fingers for moving the members of each pair laterally away from each other to release the block and the gate, a cord connected with the slide for moving the same, springs for returning the fingers to engaging position, and cam plates on the guideway for engaging and spreading the pairs of fingers when the cage passes the door opening to release the gate.

3. The combination with the well having door openings and the cage movable in the well, of a gate for closing each door opening, a vertically movable block above each gate, a connection between the block and the gate for lifting the gate when the block moves downwardly, a guideway for the block, a pair of fingers on the cage for engaging the block to move it downwardly with the cage to lift the gate, a second pair of fingers on the cage for engaging the gate to lift it when the cage moves upwardly, a slide on the cage, a connection between the slide and each pair of fingers for moving the members of each pair laterally away from each other to release the block and the gate, a cord connected with the slide for moving the same, springs for returning the fingers to engaging position, and cam plates on the guideway for engaging and spreading the pairs of fingers when the cage passes the door opening to release the gate.

4. The combination with the well having door openings and the cage movable in the well, of a gate for closing each door opening, a vertically movable block above each gate, a connection between the block and the gate for lifting the gate when the block moves downwardly, a guideway for the block, a pair of laterally movable fingers on the cage for engaging the block to move said block downwardly with the cage, a pair of laterally movable fingers for engaging the gate to move said gate upwardly with the cage, springs normally holding the fingers in engaging position, a slide on the cage, a connection between the slide and the fingers for constraining the pairs to move together, out of engaging position when the slide is moved inwardly, and cams for releasing the fingers when the cage passes the door opening in either direction.

5. The combination with the well having door openings and the cage movable in the well, of a gate for closing each door opening, a vertically movable block above each gate, a connection between the block and the gate for lifting the gate when the block moves downwardly, a guideway for the block, a pair of laterally movable fingers on the cage for engaging the block to move said block downwardly with the cage, a pair of laterally movable fingers for engaging the gate to move said gate upwardly with the cage, springs normally holding the fingers in engaging position, and a cam for each pair, said cam being arranged for engagement by the pair to release the pair when the cage passes beyond the door opening, and a common means for simultaneously moving both pairs out of engaging position.

6. The combination with the well having door openings and the cage movable in the well, of a gate for closing each door opening, a vertically movable block above each gate, a connection between the block and the gate for lifting the gate when the block moves downwardly, a guideway for the block, a pair of laterally movable fingers on the cage for engaging the block to move said block downwardly with the cage, a pair of laterally movable fingers for engaging the gate to move said gate upwardly with the cage, springs normally holding the fingers in engaging position, and a cam for each pair, said cam being arranged for engagement by the pair to release the other pair when the cage passes beyond the door opening.

7. The combination with the well having door openings and the cage movable in the well, of a gate for each opening, a vertically sliding block connected with each gate for lifting the gate when the block moves downwardly, a guide for the block, means on the cage for engaging the block to lift the gate when the cage moves downwardly, means on the cage for engaging and lifting the gate when the cage moves upwardly, a cam for operating each of the said means, and means for simultaneously moving both of the said engaging means out of engaging position.

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Witnesses:

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JAS. H. GOLDEN, Jr.