

No. 730,865.

PATENTED JUNE 16, 1903.

P. BENDING.
SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED SEPT. 29, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

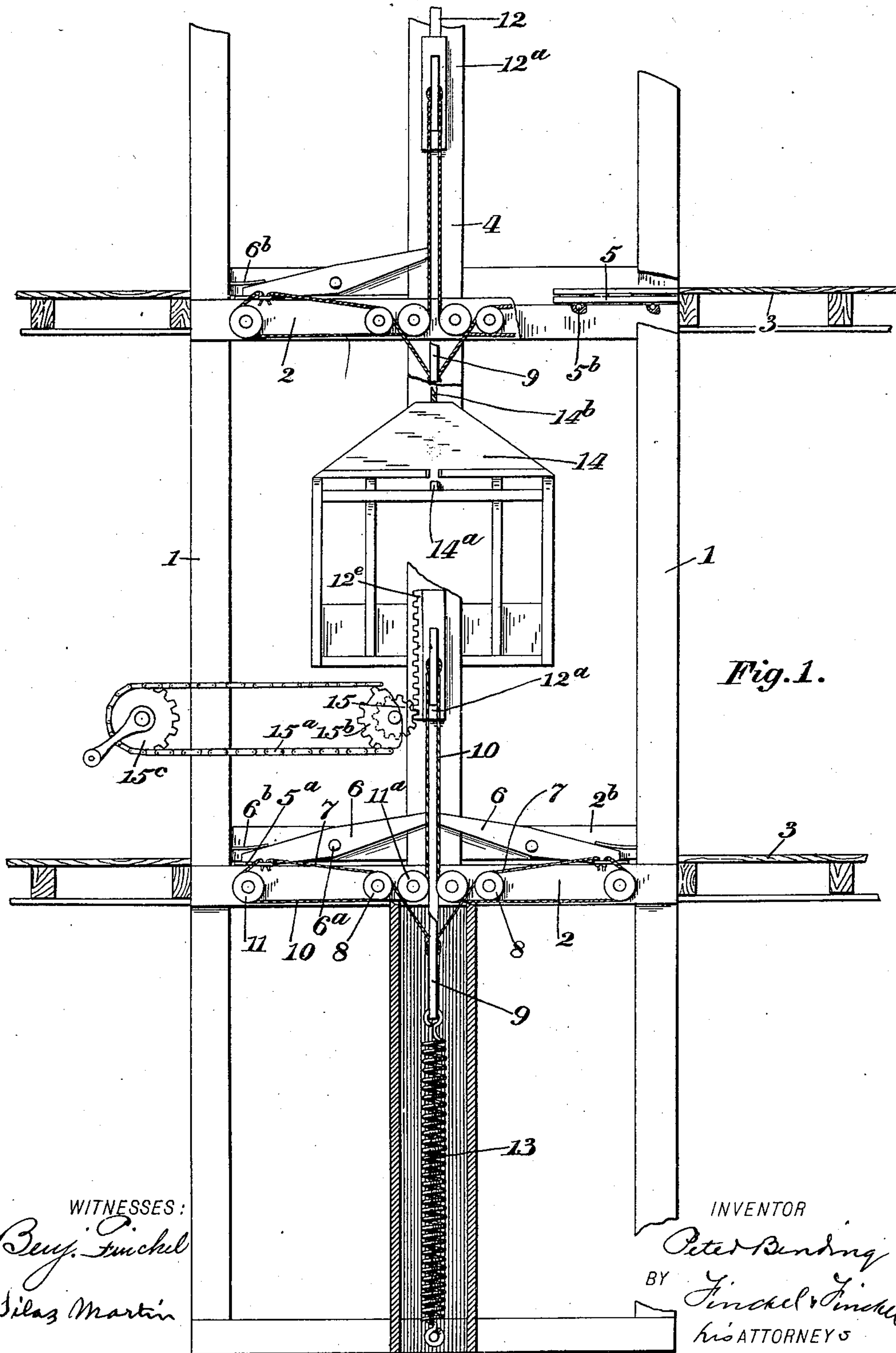


Fig. 1.

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his ATTORNEYS

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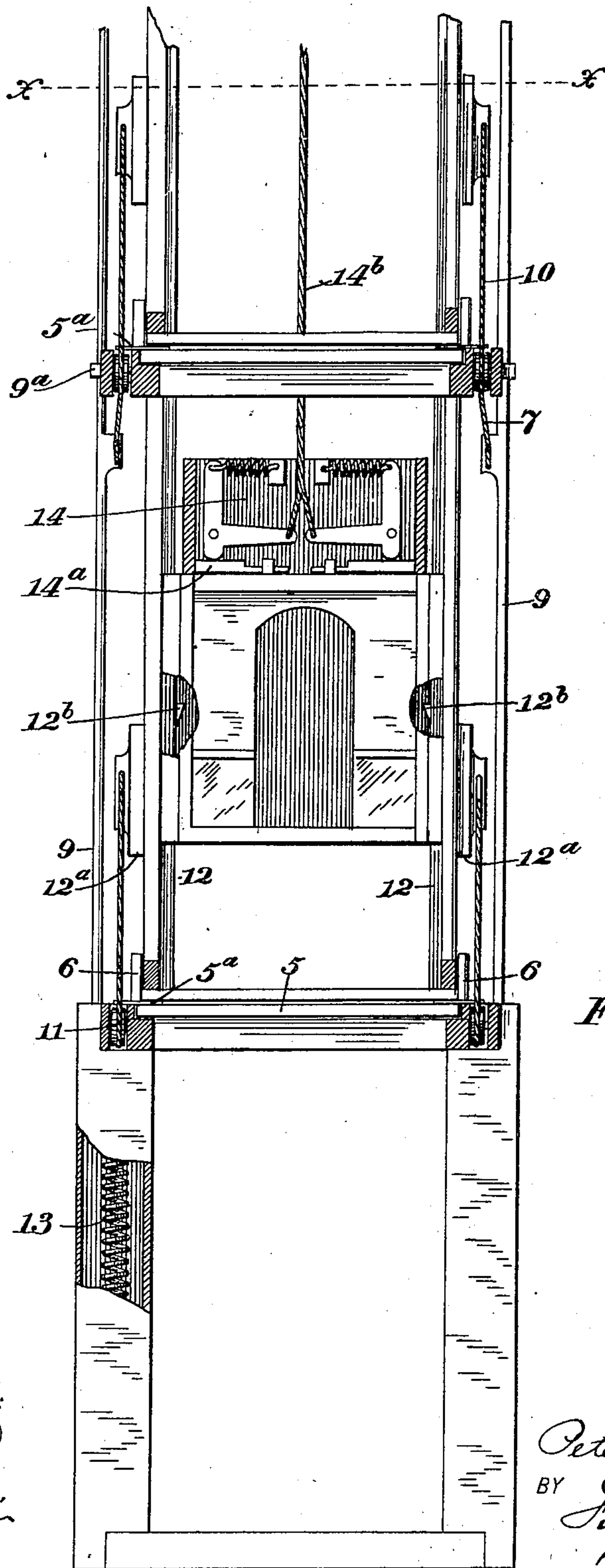


Fig. 2.

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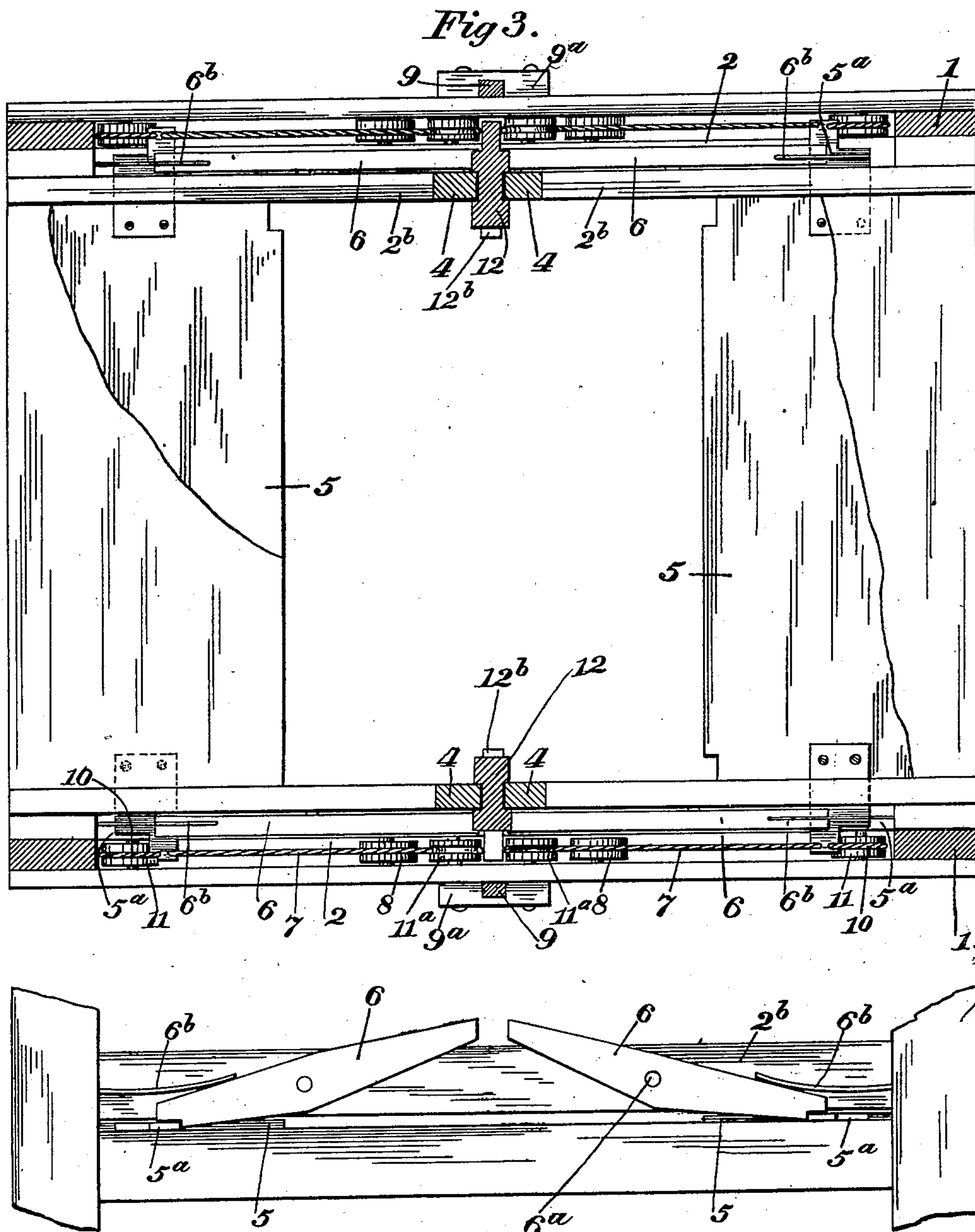
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4 SHEETS—SHEET 3.



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Fig. 4.

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4 SHEETS—SHEET 4.

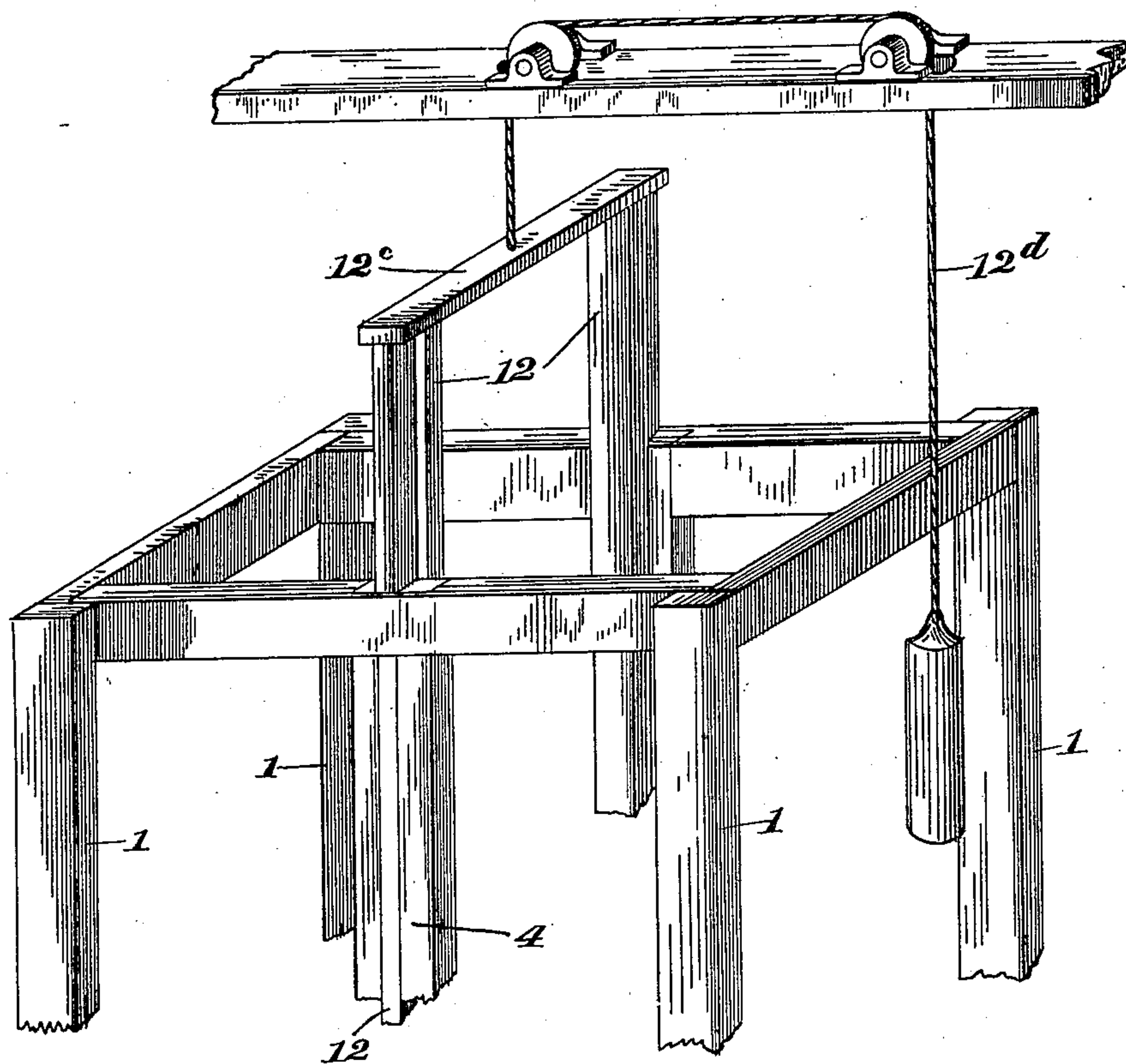


Fig. 5.

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UNITED STATES PATENT OFFICE.

PETER BENDING, OF COLUMBUS, OHIO.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 730,865, dated June 16, 1903.

Application filed September 29, 1902. Serial No. 125,324. (No model.)

To all whom it may concern:

Be it known that I, PETER BENDING, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Safety Devices for Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is twofold—first, to provide improved means for checking the descent of the car of an elevator should the lifting-cable break, and, second, to provide means for closing the shaft or well in case of fire in the building.

The invention includes a door or doors arranged to be projected across the opening of the well or shaft to afford an obstruction to the descent of the car or the ascent of flames, the door or doors being held normally in open position, so as not to interfere with the movement of the car in ordinary circumstances, but operative by means on the car to be closed upon the breaking of the car's lifting-cable or operative independently of the car in case of fire, all as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a view in elevation looking toward one side of the shaft, parts being in section and parts being broken out. Fig. 2 is a similar view looking toward the front or entrance side of the car. Fig. 3 is a horizontal plan and section on line *x x*, Fig. 2, the car omitted and parts being broken out. Fig. 4 is a detail view showing the door-releasing triggers or latches. Fig. 5 is an oblique projection, showing a mode of counterbalancing the trigger-operating slides.

In the views, 1 designates the vertical corner-pieces, and 2 the main cross-pieces, of the frame of the well, while the character 3 designates the several floors of the building. At the middle of the sides of the well are also vertical pieces 4, in which the trigger-operating slides work.

There is shown to be supported at each floor and preferably at the front and rear sides of the well a door 5, sliding in a horizontal plane, the two on each floor when closed meeting at

the center. These doors are preferably constructed of sheet iron or steel and are normally concealed in pockets and preferably run upon antifriction-bearings 5^b. Each of the doors at its opposite sides is provided with projections 5^a, adapted to be engaged by the notched outer ends of triggers 6, pivoted at 6^a to supplementary cross-pieces 2^b and having their ends held down by springs 6^b. The triggers 6 on each side of the well have their inner ends located in close proximity to each other, so that both may be simultaneously struck and depressed to release the doors. Attached to the projections 5^a on the doors are cords or chains 7, running inward and over pulleys 8 to bars 9, sliding vertically in guides or bearings 9^a outside the well, and also attached to the projections 5^a are cords or chains 10, running first outward and then around and inward and under pulleys 11 and 11^a and thence upward to the latch-operating bar 12, to which they are attached, so that a pull downward on the bar 9 will tend to close the doors and a pull upward on the bar 12 will tend to open or reset them. The bars 9 have attached to their lower ends heavy weights or springs 13, adapted to pull that bar downward, and therefore close the doors when they are released by a depression of the triggers 6. The inner ends of the triggers are in line with and depressed by projections 12^a on the outer edges of the bars 12. The inner sides of the bars 12 are provided with dogs 12^b and the car 14 is provided with sliding bolts 14^a, adapted to be thrown outward when the lifting-cable 14^b breaks to strike projections 12^b, and therefore depress the bars 12, and through the action of the lugs 12^a also depress the latches or triggers 6 and release the doors. As the doors close promptly, they afford obstructions to the further descent of the car.

To prevent the bars 12 from unduly sliding down in their bearings after they have been raised to open the doors, their weight can be counterbalanced by means substantially as seen in Fig. 5. In the construction for this purpose shown the two bars 12 are united at their upper ends by a cross-piece 12^c and a weighted cord or chain 12^d, passed over suitable sheaves arranged above.

To close the doors in case of fire or at any

other time independently of the car, any suitable arrangement can be provided. I have shown one such arrangement in Fig. 1, where the bar 12 is provided with a rack-bar 12^c, engaged by a pinion 15, driven by a sprocket-chain 15^a, running over a sprocket-wheel 15^b on the shaft of the pinion and a sprocket-wheel 15^c, located outside the elevator-well and in position to be operated by an attendant on the floor of the building. A similar arrangement can be provided for each floor, so that the doors can be closed without requiring the attendant to go from one floor to another.

The proper operation of the sprocket-chain 15^a will depress the slide-bars 12, and consequently the projections 12^a thereon, and therefore the latches or triggers 6, and so render operative the springs 13 to pull the doors closed. The chain 15^a can also be operated in a direction reverse of that just referred to to raise the bars 12 and reset the doors.

The parts herein referred to are susceptible of modification without departing from the gist of the invention.

What I claim, and desire to secure by Letters Patent, is—

1. In an elevator, a horizontally-sliding door arranged to be projected across the opening of the shaft or well, a latch for holding the same normally in open position, in combination with means on the car to operate said latch upon the breaking of its lifting-cable.

2. In an elevator, a horizontally-sliding door arranged to be projected and means tending to project the same across the opening of the shaft or well, a latch for holding the same normally open, in combination with means on the car to operate said latch upon the breaking of its lifting-cable.

3. In an elevator well or shaft, a vertical series of horizontally-sliding doors, a sliding bar, cords connecting said bar with the several doors and a spring tending to pull said bar to close the doors, triggers for holding said doors in open position, a second sliding

bar, cords connecting said last-named bar and the several doors so that said doors can be moved to open position, projections on the outer side of the last-named bar for striking the aforesaid triggers and projections on the inner side of said last-named bar, in combination with a car provided with means for striking and depressing said last-named projections to operate said triggers to release and close the doors upon the breaking of the car's lifting-cable, substantially as described.

4. In combination with an elevator shaft or well a horizontally-sliding door at each floor arranged to be projected across the opening of said well or shaft, means tending to project all said doors across said opening, latches or triggers for holding said doors in open position, means for releasing all said latches or triggers, and a car in said shaft with devices to operate the means for releasing the latches or triggers.

5. In combination with an elevator shaft or well, a horizontally-sliding door at each floor arranged to be projected across the opening of said well or shaft, means tending to project all said doors across said opening, latches or triggers for holding said doors in open position, means for releasing all said latches or triggers, a car in said shaft with devices to operate the means for releasing said latches or triggers and means for releasing said latches or triggers independently of said car.

6. The combination of the doors and spring-actuated latches for holding them in open position, the bar 9 for closing the doors, the bars 12 for opening them and a counterbalancing device for the bars 12, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

PETER BENDING.

Witnesses:

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MERRILL U. RICKETTS.