(No Model.)

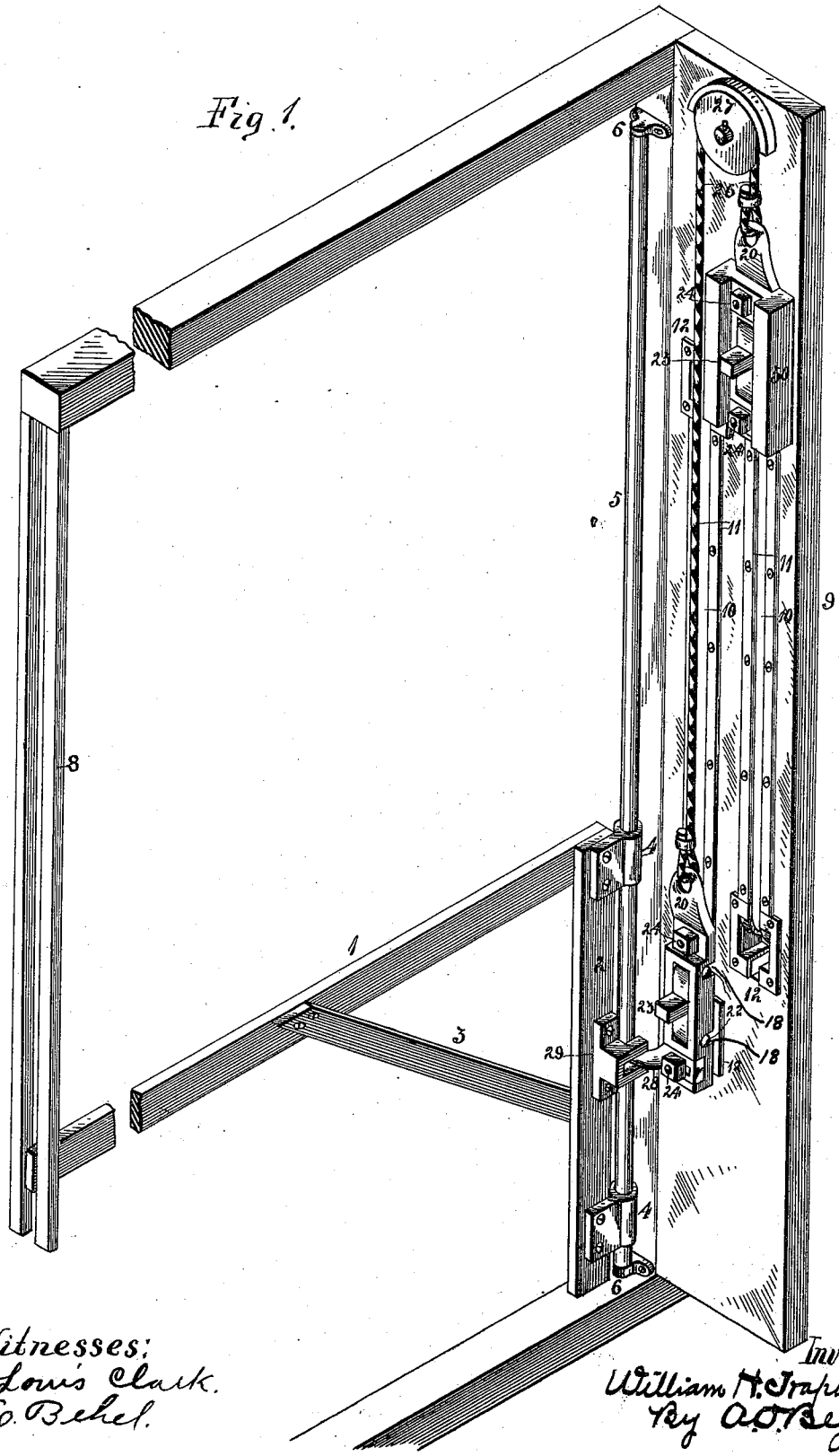
4 Sheets—Sheet 1.

W. H. TRAPHAGEN.

GATE FOR ELEVATORS.

No. 504,407. Patented Sept. 5, 1893.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

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Fig. 2.

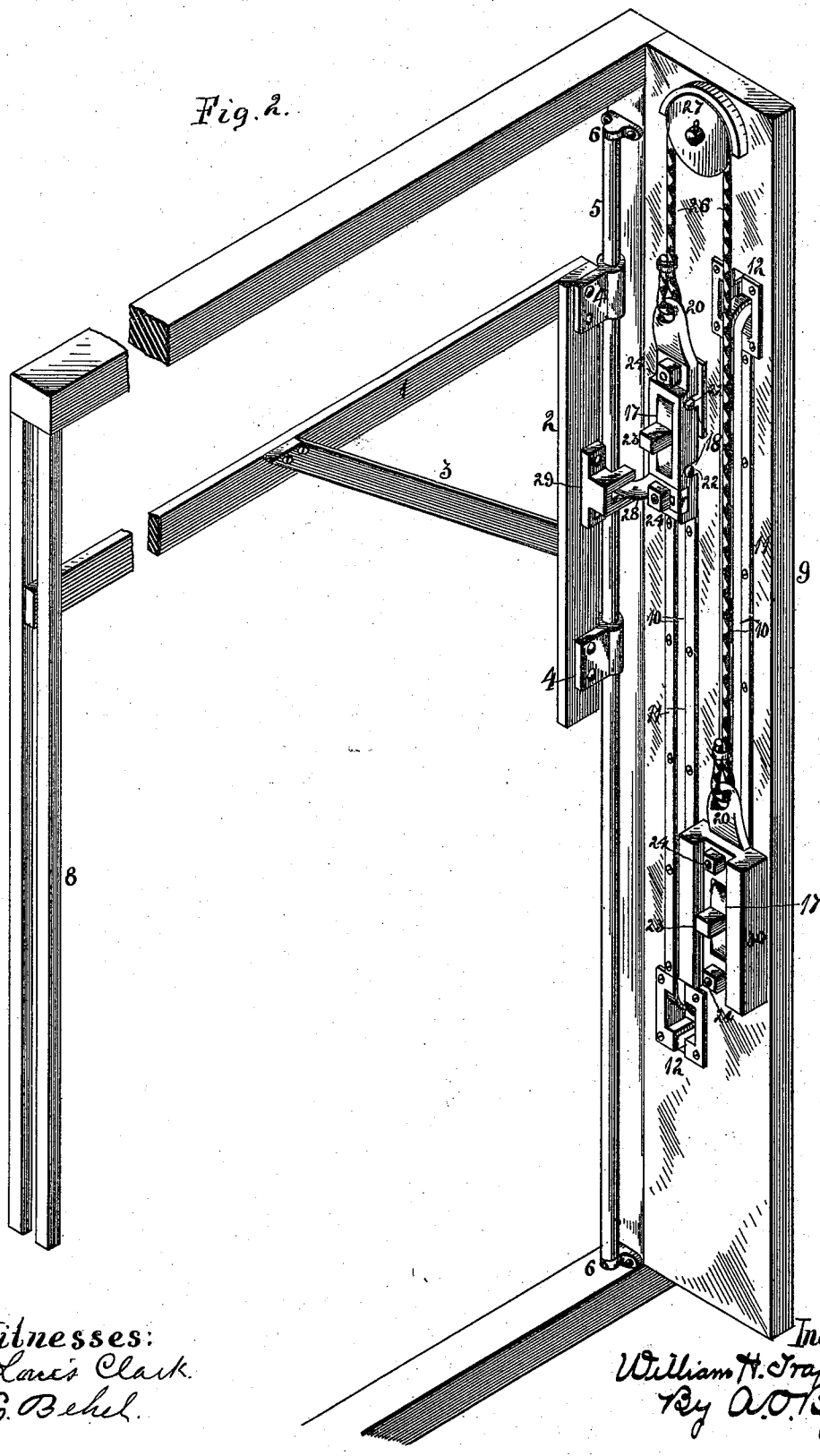

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Fig. 4

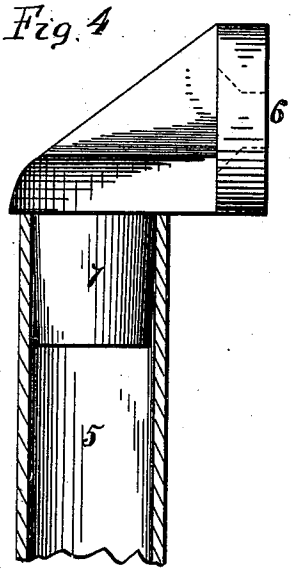


Fig. 3.

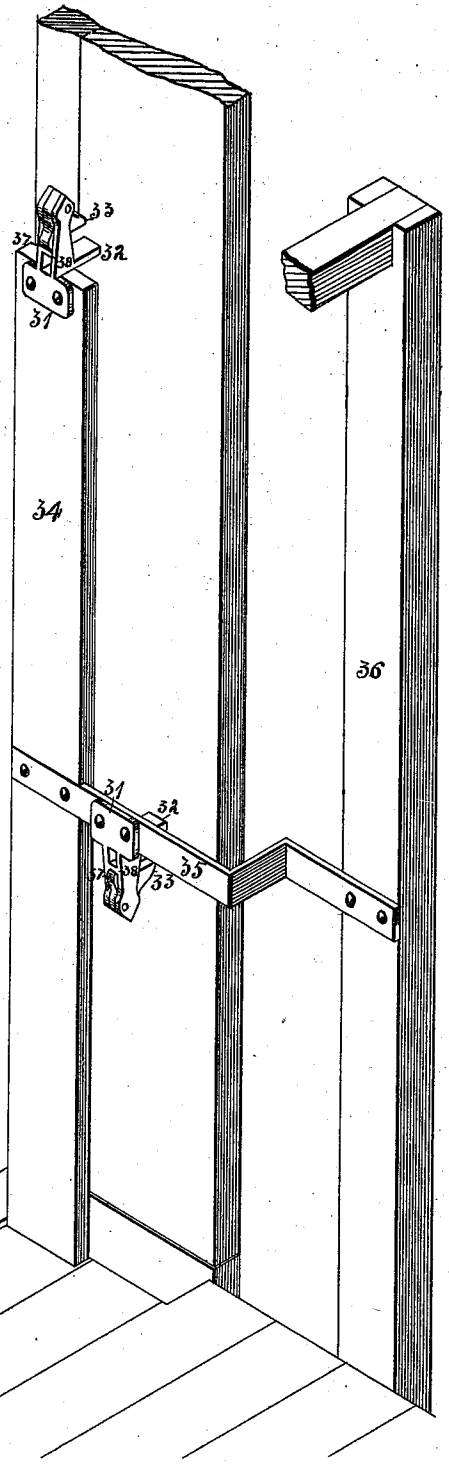
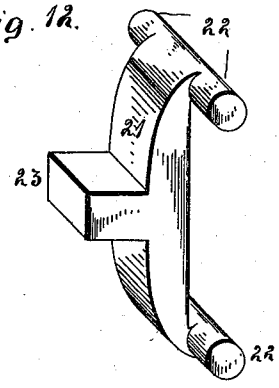


Fig. 12.



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(No Model.) 4 Sheets—Sheet 4.

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Fig. 8.

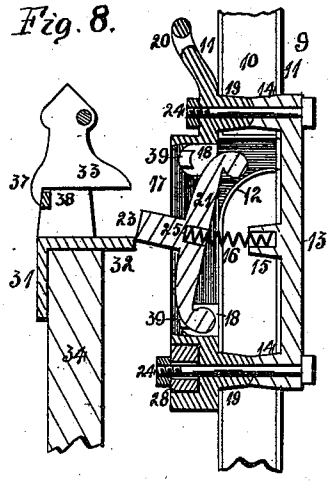


Fig. 5.

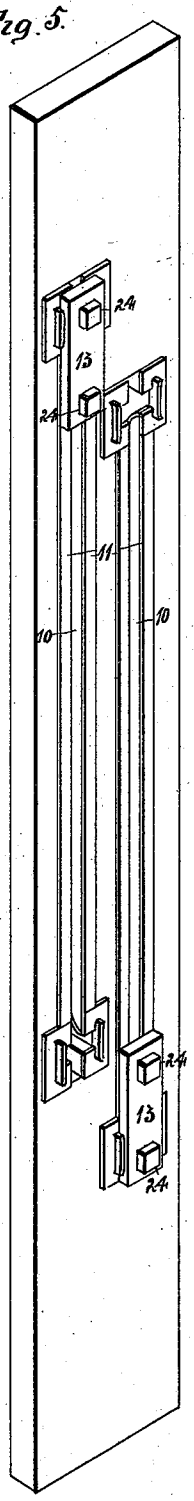


Fig. 11.

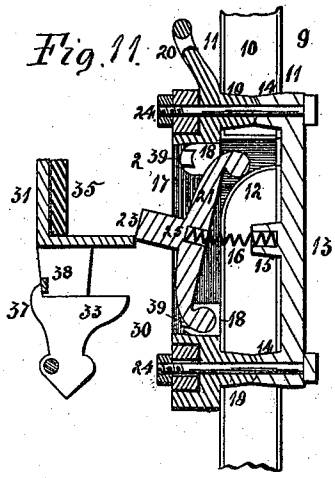


Fig. 7

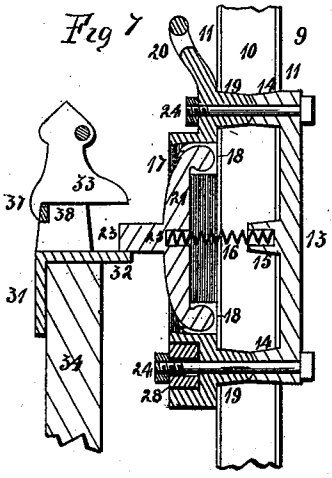


Fig. 10.

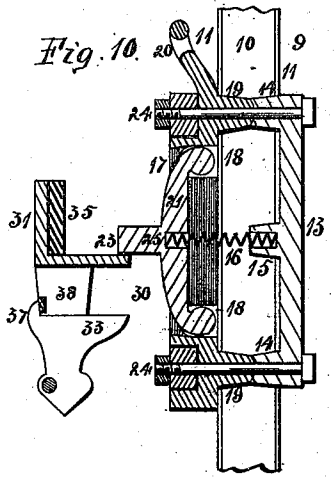


Fig. 6.

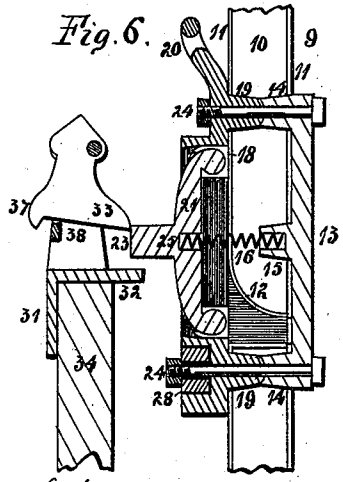
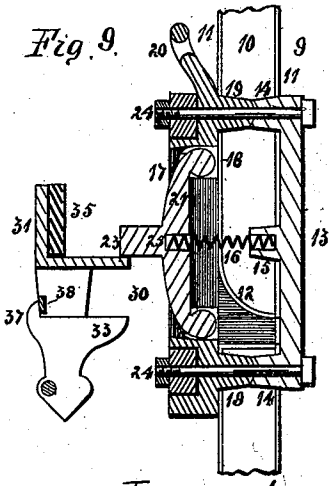


Fig. 9.



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UNITED STATES PATENT OFFICE.

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GATE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 504,407, dated September 5, 1893.

Application filed November 21, 1892. Serial No. 452,630. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. TRAPHAGEN, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Gates for Elevators, of which the following is a specification.

The object of this invention is to construct a gate to close the passageway leading into the elevator shaft, said gate capable of a vertical sliding movement and operated by a connection between the gate and the elevator car, said connection being formed during the raising and lowering movements of the gate.

In the accompanying drawings—Figure 1 is an isometrical representation of my improvements, showing the gate in its closed position. Fig. 2 is a similar view in which the gate is elevated, or opened. Fig. 3 shows the mechanism for operating the gate, said mechanism having a connection with the elevator car. Fig. 4 is a vertical section of the upper end of the guideway for the gate. Fig. 5 is an isometrical representation of the rear side of the board to which the devices are connected. Figs. 6, 7 and 8 are vertical, central sections of the sliding head which has a connection with the gate showing the various positions of the parts during the raising movement of the gate. Figs. 9, 10 and 11 are vertical central sections of the sliding head to which is attached a counter balance for the gate, showing the various positions of the parts during the closing movements of the gate. Fig. 12 is an isometrical representation of the double ended dog which has a connection with the sliding heads.

My improvements consist in arranging a separate set of devices for each elevator shaft gate for each floor which requires a gate to prevent accidents by people stepping into the elevator shaft, and a connection being formed between the moving elevator car and the devices so that as the elevator car approaches the floor the gate for that floor is raised and will remain raised until the elevator car begins to leave the floor when the gate is closed and the connection between the elevator car and the devices is broken so that the elevator car can operate upon the next set of devices, either during the raising or lowering movements of the elevator car. The elevator shaft gate in this instance consists of a horizontal arm 1 which extends across the opening leading to the elevator shaft. At one end of this arm is connected a vertical bar 2, held in its relation with the horizontal arm 1 by a diagonal brace 3. To this vertical bar 2 are secured guides 4, which slide upon the guide bar 5, in this instance made from gas pipe and supported at its ends on brackets 6, secured to the woodwork of the building. These brackets have a stud 7 which enters the ends of the gas pipe as shown at Fig. 4. The free end of the horizontal bar 1 of the gate is guided between the vertical bars 8, which are secured to the woodwork of the building.

The devices for operating the gate are located upon a baseboard 9, said baseboard being provided with two vertical slots 10, having their ends enlarged. Metallic strips 11 are secured to both faces of the baseboard and form the surface upon which the sliding heads move. The enlarged ends of the slots are provided with a metallic lining 12, having the lower edge of the upper opening and the upper edge of the lower opening in semi circular form. The sliding heads have a connection with the baseboard and are composed of two sections. The rear section is provided with a base 13, having tubular studs 14, which enter the vertical slots 10 and a central recessed stud 15, within which is placed a spiral spring 16. The front section of the sliding head is of rectangular form, having a central opening 17 and four openings 18, and also has two tubular studs 19. The upper end of this front section is provided with a perforated lip 20. Within this front section is placed a double ended dog 21, which is provided with studs 22 and a central extension 23 and is so placed that the extension will pass over the central opening 17 and the studs 22 will lie in the openings 18. This front section is connected with the rear section by bolts 24 and to properly seat the parts the meeting faces of the tubular studs 14 are in concave form while the ends of the tubular studs 19 are in convex form, and the parts will be firmly held when bolted together. The free end of the spring 16 enters a recess 25 and holds the dog in a yielding manner in its engagement

with the front portion of the sliding head. A sliding head constructed as above described is placed in each of the vertical slots in the baseboard and they have a connection with each other by means of a rope or cable, 26, passing over a pulley 27 secured to the upper end of the baseboard in such a manner that as one of the sliding heads is raised the other will be lowered.

An arm 28 is secured to the sliding head nearest the sliding gate by entering a recess in the lower end of the sliding head. The free end of this arm is received between the forks of a bracket 29, secured to the vertical bar in the sliding gate in such a manner that a connection is formed between this sliding head and the gate and any movement imparted to the sliding head will also be imparted to the gate. A weight 30 is secured to the sliding head farthest from the gate and acts as a counter balance to the gate so that very little power is required to raise and lower the gate. When the parts are in the position shown at Fig. 1, if the sliding head which has a connection with the gate should be raised, the gate will also be raised and the other sliding head will be lowered when the parts will occupy the position shown at Fig. 2, and should the sliding head farthest from the gate be raised the gate and the sliding head having a connection therewith will descend when the parts will assume their original position shown at Fig. 1.

The means for raising the sliding heads have a connection with the elevator so as to move therewith, said means consisting of a bracket 31 having an arm 32 rigidly connected and extending in a horizontal direction. One end of the bracket is slotted and between its arms is pivoted a gravity dog 33. One of these brackets is connected to a beam 34 having a connection with and rising from the elevator car and the second bracket has a connection with a brace bar 35 which has a connection with the vertical beam 34, also with the beam 36 to which is attached a hoisting mechanism for the elevator car.

It will be noticed that the bracket attached to the upper end of the beam 34 has the gravity dog in its upper end, while the bracket attached to the brace bar has the gravity dog in its lower end. It will also be noticed that the pivots for the dogs are so arranged as to hold the dogs in a horizontal position so that the lip 37 of the dog will engage a cross bar 38, connecting the arms of the bracket. These brackets are located directly in front of the vertical slots in the base board, but some distance from the face thereof.

Suppose the gate to be in its closed position as shown at Fig. 1 and the elevator car should be on the next floor below and it is desired to move the elevator car upward to this floor. The upward movement of the elevator car will bring the rigid arm 32 of the bracket secured to the upper end of the beam 34 in contact with the under side of the extension 23 of the double ended dog as shown at Fig. 6, the gravity dog 33 being moved upon its pivot to allow such arrangement. The continued upward movement of the elevator would cause the upper end of the double ended dog to lie in contact with the metallic face of the base board, while the lower end of the double ended dog would be held in its seat in the front section of the sliding head. Consequently the sliding head will be moved upward carrying the gate with it, until the floor of the elevator car is nearly flush with the floor of the building and at this point the upper end of the double ended dog would enter the enlarged upper end of the slot in the baseboard as shown at Fig. 8 which would allow the rigid arm of the bracket secured to the elevator to pass, and should the elevator stop at this floor, the gate would remain open as shown at Fig. 1. Should the elevator car continue in its upward movement the rigid arm of the bracket secured to the brace bar 35 would come in contact with the central extension 23 of the bracket of the sliding head farthest from the gate as shown at Fig. 9, and cause the sliding head to move upward which would cause the gate to descend and when the sliding head had reached the upper end of the slot the gate would be closed and the upper end of the double ended dog would move into the enlarged upper end of the slot, allowing the bracket to pass by as shown at Fig. 11. At Figs. 7 and 10 is shown the position of the double ended dog when the sliding heads are free from the enlarged ends of the slots in the baseboard. I thus have shown that the gate will be raised and lowered while the elevator car is passing each floor. Should the elevator be descending the reverse of the movements just described will be given the parts.

The object of the gravity dog 33 is: Should the elevator stop when the bracket secured to the upper end of the beam 34 had reached the position shown at Fig. 8 and it were desired to lower the elevator the central extension 23 would be placed between the gravity dog and the rigid arm 32 so that as the elevator were lowered the gravity dog would come in contact with the upper face of the extension 23, carrying the sliding head with it, consequently lowering the gate until the lower end of the double ended dog would enter the enlarged lower end of the slot in the face of the baseboard, permitting the bracket to pass by the sliding head. It will also be noticed that I have held the double ended dog in position in a yielding manner by the spiral spring 16, which is necessary to allow the lower end of the dog to enter the lower enlarged end and the upper end of the dog to enter the enlarged upper end of the vertical slot in the face of the baseboard in order that the connection between the elevator proper and the sliding gate may be disconnected when the gate has been either raised or lowered so that the elevator may move to a different floor, leaving the mechanism to operate the gate in proper position to be ap-

proached by the elevator when passing or stopping at a given floor. The rubber blocks 39 will hold the double ended dog against the metallic guide ways, preventing the rattling of the parts.

I claim as my invention—

1. The combination of an elevator gate, two sliding heads having a flexible connection, one of the heads having a connection with the gate, non-pivoted double ended dogs, each loosely seated in one of the heads, a spring bearing centrally against each dog, holding the dog in its normal position and brackets secured to the car, each of the brackets adapted to engage one of the dogs thereby moving the sliding heads.

2. The combination of an elevator gate, two sliding heads having a flexible connection, one of the heads having a connection with the gate, each head composed of two sections bolted together, double ended dogs each having a connection with one of the sections of each head, a spring for each dog holding it in its normal position and brackets secured to the car engaging the dogs, thereby moving the sliding heads.

3. The combination of an elevator gate, having a vertical sliding movement, a base board provided with two vertical slots having enlarged ends, a sliding head for each of the slots, a double ended dog for each sliding head and having a projection extending therefrom, brackets secured to the car engaging the projections and moving the sliding heads in their engagement with the base board.

4. The combination of an elevator gate, two sliding heads having a flexible connection, one of the heads having a connection with the gate, double ended dogs having engagements with the heads, a spring for each dog holding them in their normal positions and brackets secured to the car engaging the dogs, thereby moving the sliding heads, and movable dogs supported by the brackets.

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