

(No Model.)

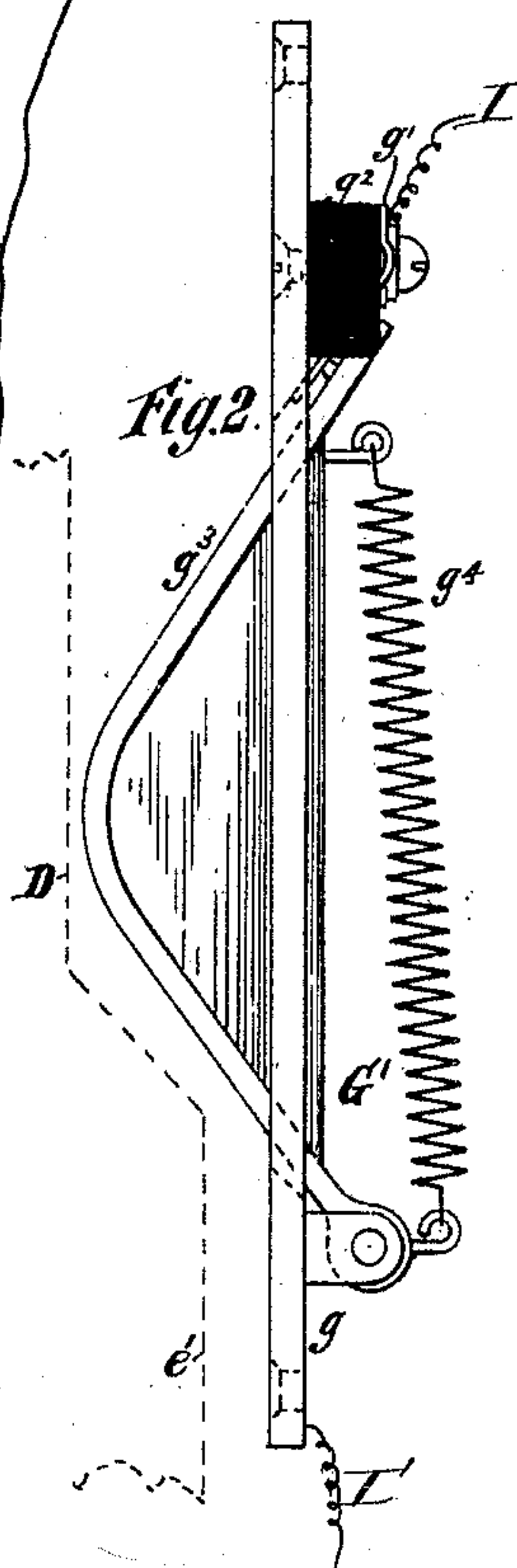
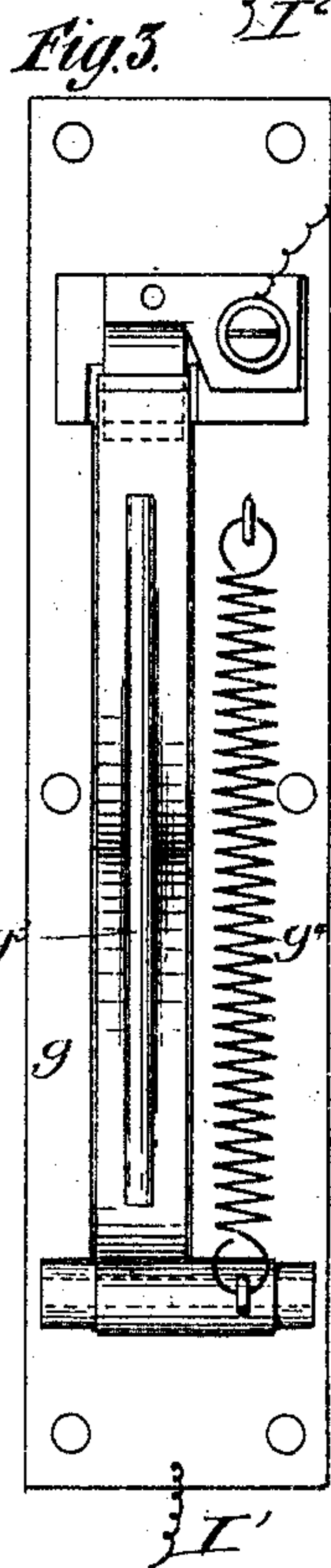
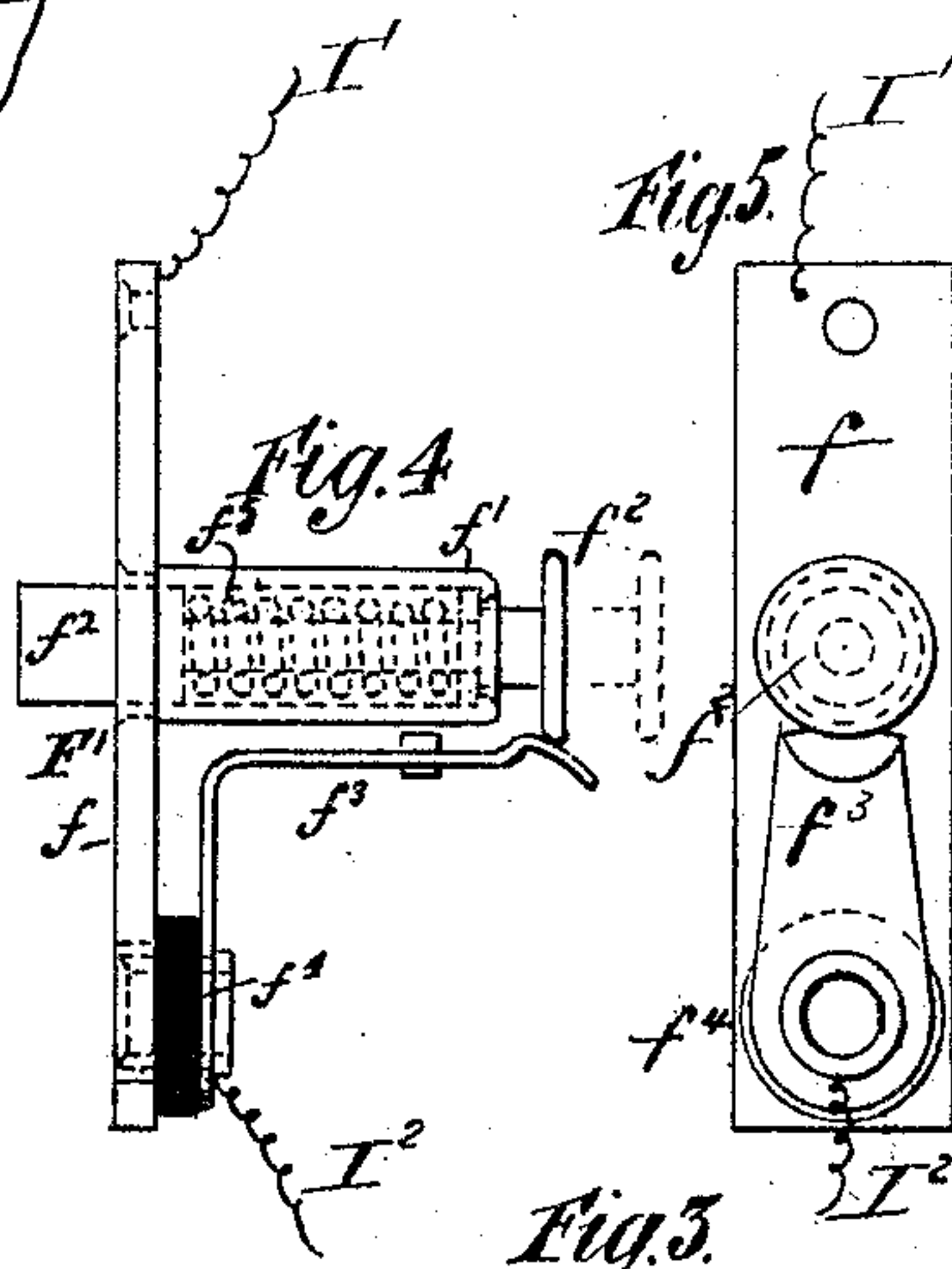
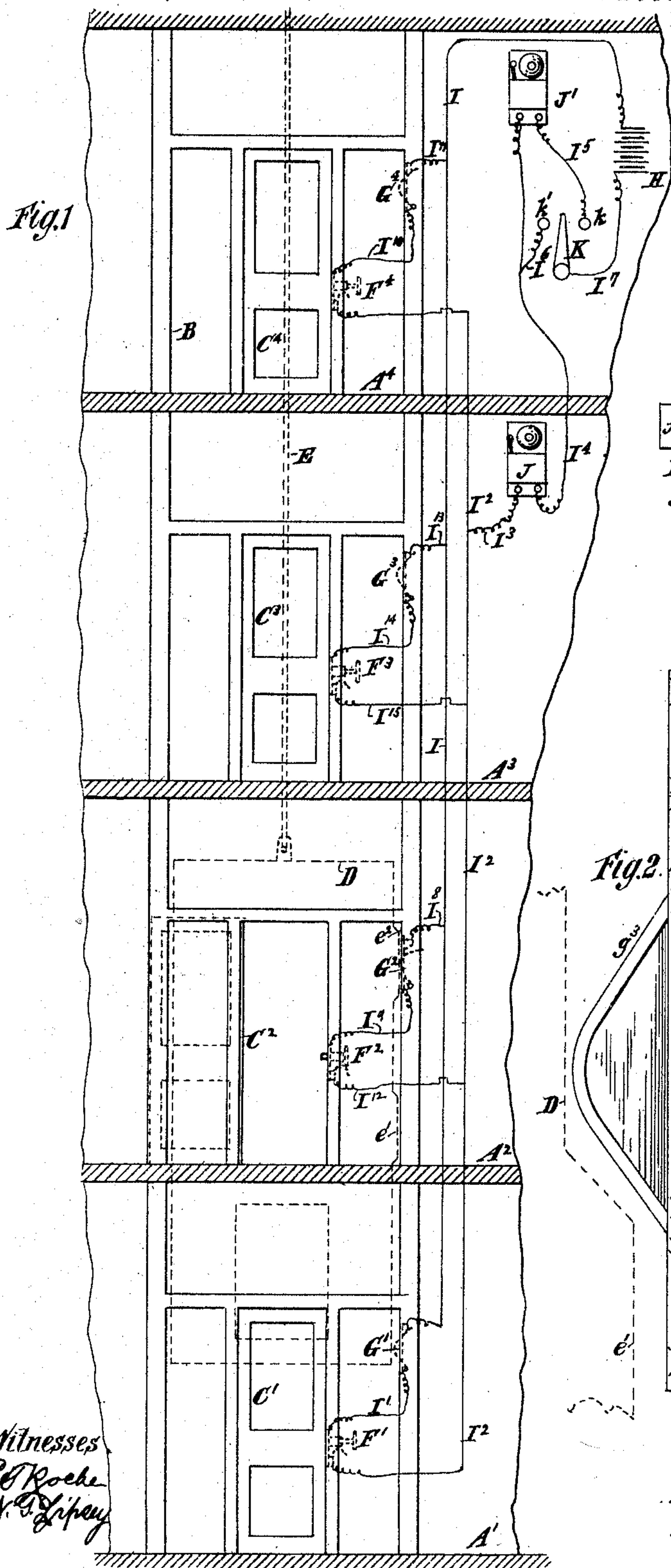
2 Sheets—Sheet 1.

C. E. CHINNOCK.

ELECTRIC ALARM.

No. 355,384.

Patented Jan. 4, 1887.



Witnesses
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Inventor
Charles E. Chinnock,
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(No Model.)

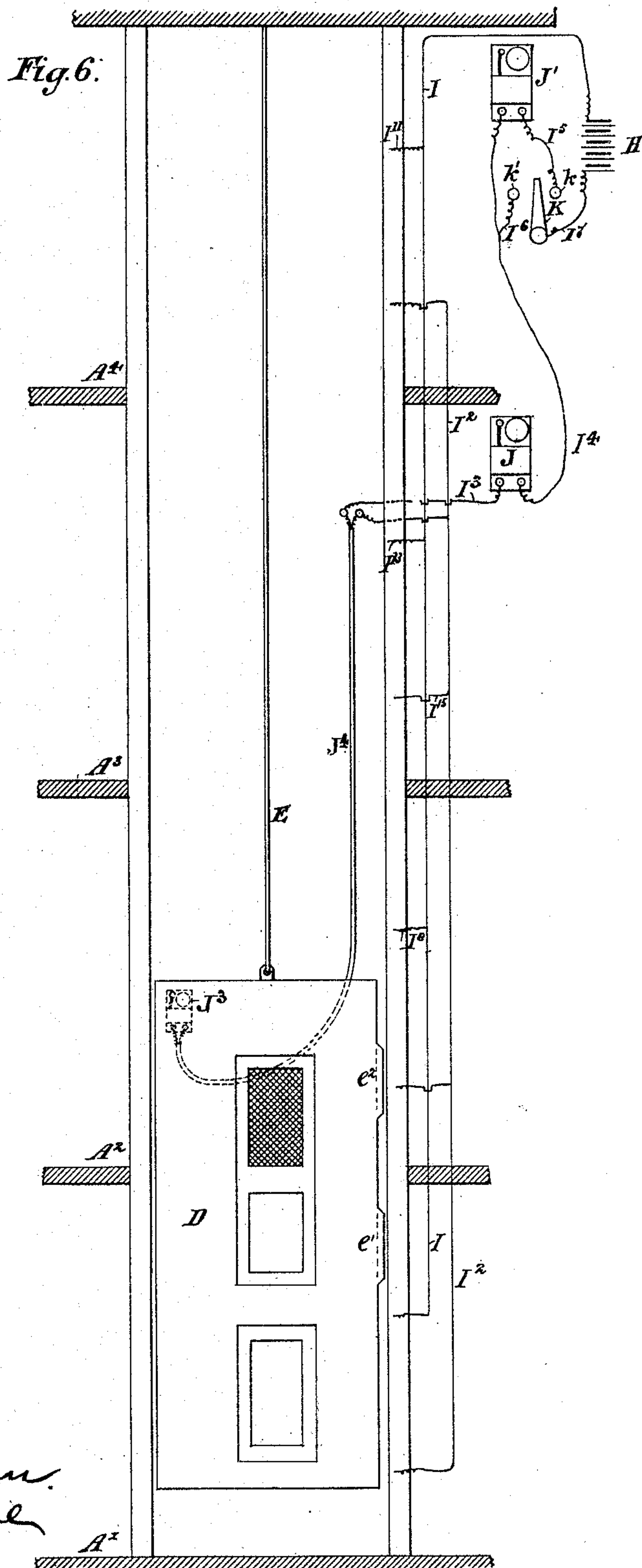
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Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES E. CHINNOCK, OF BROOKLYN, NEW YORK.

ELECTRIC ALARM.

SPECIFICATION forming part of Letters Patent No. 355,384, dated January 4, 1887.

Application filed January 31, 1885. Renewed September 22, 1886. Serial No. 214,263. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. CHINNOCK, of Brooklyn, in Kings county, and the State of New York, have invented a certain new and useful Improvement in Tell-Tale Apparatus for Elevators and Railways Generally, of which the following is a specification.

Many accidents occur in elevators by reason of the omission of the attendants to properly close the doors controlling access from the several floors of the buildings furnished with the elevators to the hoistways; and accidents also frequently happen through the failure of the attendants to stop the elevators in the right positions with relation to the floors of the buildings. Similar accidents are liable to happen on railways through the failure to stop trains in the right relation to the stations, or to remove or release at the proper times the means whereby communication between railway-cars and the stations is effected.

It is the object of my present improvement to produce an apparatus whereby danger from accidents of the kind referred to will be obviated, or at least materially lessened.

I will describe an apparatus embodying my improvement, and then point out the various features of the improvement in the claim.

The accompanying drawings illustrate a building, a hoistway, an elevator working in such hoistway, and a tell-tale apparatus embodying my improvement.

Figure 1 is a vertical section of the building, taken close to the hoistway. Fig. 2 is a side view of an electric-circuit closer and opener, whereby the tell-tale apparatus will be made to indicate the stopping of the elevator in improper position. Fig. 3 is a face view of this circuit closer and opener. Fig. 4 is a side view of one of a number of circuit closers and openers whereby the tell-tale apparatus will be made to indicate the failure of the elevator-attendant to properly close the doors in the passage-ways leading to the hoistway at the several floors of the building. Fig. 5 is a face view of the circuit opener and closer which is shown in Fig. 4, and Fig. 6 is a view illustrating a certain modification of my improvement.

Similar letters of reference designate corresponding parts in all the figures.

A' A² A³ A⁴ designate several floors in a

building. B designates a hoistway for an elevator formed therein. C' C² C³ C⁴ designate sliding doors controlling access to the hoistway from the several floors. D designates the elevator or elevator-car, which, as here shown, is designed to have two compartments and two projections, e' e², on one side. The elevator may be raised and lowered through the agency of a rope or cable, E. All these parts may be of ordinary construction, except as hereinafter mentioned. Any desirable fasteners may be employed for securing the doors when they are closed.

The stiles of the doorways, which are opposite the edges of the doors, which are the forward edges during the closing of the doors, are provided with circuit closers and openers F' F² F³ F⁴. Each of these circuit closers and openers consists of a metal plate, f, provided with a transversely-extending socket, f', and fitted with a metal bolt, f², which may be moved through the plate and socket into and out of contact with a metallic finger, f³, that is secured to a block of insulating material, f⁴, mounted on the back of the plate. The socket f', the inner end of the bolt f², the finger f³, and block f⁴ extend into a cavity formed for their accommodation, and the plate is fastened in place in a suitable recess by screws or otherwise. The bolt f² is forced inward when the door with which it operates is closed, so that a head at its inner end will be removed from contact with the finger f³. When the door is opened, a spring, f⁵, which surrounds the bolt, between a shoulder with which the bolt is provided and a flange at the inner end of the socket in which the bolt works, forces the bolt outward and causes its head to make contact with the finger again.

G' G² G³ G⁴ designate circuit closers and openers, which are controlled by the elevator and arranged in the hoistway at considerable distances above the floors of the building. Each consists of a metal plate, g, which is secured to the hoistway by screws or otherwise, a metallic finger, g', affixed to a block of insulating material, g², mounted on the back of the plate and extending into a cavity behind the plate, and a metal lever, g³, hinged at one end to the plate, working through a slot in the plate and adapted to be moved into contact

with the finger g' by means of a spring, g^4 , which is connected to it and to the plate, and adapted to be moved out of contact with the plate by the elevator when the latter impinges 5 against it. Normally, the lever g^3 protrudes through the plate g into the hoistway, and then it is in contact with the finger g' ; but whenever either of two projections, $e' e^2$, with which the elevator is provided, impinges 10 against said lever it is swung inward, so as to break contact with the finger g' .

I will now describe an electric circuit which is connected with the circuit closers and openers that I have described.

15 H designates an electric battery. From one pole of the battery a wire, I, extends to the metallic finger g' of the circuit closer and opener G' . From the metal plate g of this circuit closer and opener G' a wire, I' , extends 20 to the metal plate f' of the circuit closer and opener F' . A wire, I^2 , extends from the metallic finger f^3 of the circuit closer and opener F' to the metallic finger f^3 of the circuit closer and opener F^4 . A wire, I^3 , extends from the plate f' 25 of this circuit closer and opener F^4 to the plate g of the circuit closer and opener G^4 . From the metallic finger g' of this circuit closer and opener G^4 a wire, I^4 , extends to the wire I. From the wire I^2 a wire, I^5 , extends to the 30 magnet-coil of the electro-magnetic bell J. A wire, I^6 , extends from the magnet-coil of the electro-magnetic bell J to the magnet-coil of an electro-magnetic bell, J' . From the magnet-coil of the electro-magnetic bell J' a wire, I^7 , 35 extends to a metal contact-piece, k , of a metal switch, K. A branch wire, I^8 , extends from the wire I^4 to a metal contact-piece, k' , of the switch K. From the switch K a wire, I^9 , extends to the battery H. By shifting the switch 40 onto the contact-piece k the electro-magnetic bell J' will be cut out of circuit; but by shifting the switch onto the contact-piece k' the electro-magnetic bell J' , as well as the electro-magnetic bell J, is in circuit. From the wire 45 I a wire, I^8 , extends to the metallic finger g' of the circuit closer and opener G^2 . A wire, I^9 , connects the plate g of this circuit closer and opener G^2 with the plate f' of the circuit closer and opener F^2 . The metallic finger of the circuit closer and opener F^2 is connected by a 50 wire, I^{12} , to the wire I^2 . A wire, I^{13} , extends from the wire I to the metallic finger g' of the circuit closer and opener G^3 . The metal plate g of this circuit closer and opener is connected 55 by a wire, I^{14} , with the metal plate f' of the circuit closer and opener F^3 . From the metallic finger f^3 of this circuit closer and opener F^3 a wire, I^{15} , extends to the wire I^2 .

It will be seen from the foregoing description 60 that the metallic fingers g' of all the circuit closers and openers $G' G^2 G^3 G^4$ are connected with the wire I, that the metallic fingers f^3 of all the circuit closers and openers $F' F^2 F^3 F^4$ are connected to the wire I^2 ; that the

metal plate g of each circuit closer and 65 opener $G' G^2 G^3 G^4$ is connected to the metal plate f' of the adjacent circuit closer and opener F', F^2, F^3 , or F^4 ; that the wires I I^2 are in communication with the poles of the battery H, and that the last-named wire I^2 is in circuit 70 with an electro-magnetic bell.

The electric circuits now being understood, I will explain the operation of the apparatus which I have described.

If the elevator is not stopped in such rela- 75 tion to a floor that one of its projections $e' e^2$ will be in contact with the lever g^3 of the circuit closer and opener G', G^2, G^3 , or G^4 which belongs to that floor, then on the opening of the door C', C^2, C^3 , or C^4 of the floor the bolt f^2 80 of the circuit closer and opener F', F^2, F^3 , or F^4 , which operates with such door, makes contact with the metallic finger f^3 , whereupon the circuit will be closed and an alarm will be sounded by one or both of the electro-magnetic 85 bells. If the elevator is, under any circumstances, moved past the floor, and the door has not been properly closed, an alarm will be sounded in the same manner as just described. If, however, the elevator is stopped in proper 90 position, no alarm can be sounded through the action of any of the circuit closers and openers F', F^2, F^3 , or F^4 . It is also true that if each door has been properly closed no alarm can be sounded through the action of any of the 95 circuit closers and openers G', G^2, G^3 , or G^4 .

Two projections, $e' e^2$, are employed on the elevator, because the elevator has two com- 100 partments. These projections are made of considerable length, in order that the attendant of the elevator shall not be required to stop the elevator with unnecessary accuracy.

A normally-closed instead of a normally-open electric circuit may be used. A shunting of the electric current, instead of an open- 105 ing or closing of a circuit, may be resorted to, if desirable.

The electro-magnetic bells are, as here shown, arranged to give an alarm to some special person in the building—as, for instance, 110 the janitor. An electro-magnetic bell can also be arranged to sound an alarm in the elevator, if suitable electrical connections between the wire I^2 and the elevator are provided. I have shown such an arrangement in Fig. 6, in which 115 a loop in the wire I^3 is in electrical connection with an alarm, J^3 , in the elevator. Said loop is preferably inclosed in a flexible tube or hose, J^4 , and is of such length that it may follow the elevator to the full extent of its upward and 120 downward movements.

The elevator and hoistway are, in effect, a vertical railway, and the various floors are stations of this railway.

Obviously the same apparatus can be ap- 125 plied to ordinary passenger and freight horizontal railways.

Instead of having each door itself operate

the corresponding circuit closer and opener F', F², F³, or F⁴, a hasp, lock, or fastening may do this. It would in effect be the same thing.

What I claim as my invention, and desire
5 to secure by Letters Patent, is—

The combination, with a car, a number of stations where the car is designed to stop, and a door at each station, of an alarm apparatus, an electric circuit, circuit-changers operated

by the car, and circuit-changers operated by the doors, substantially as described, whereby a failure to properly close a door or to stop the car in proper relation to the station will be indicated.

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Witnesses:

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E. T. ROCHE.