

No. 719,692.

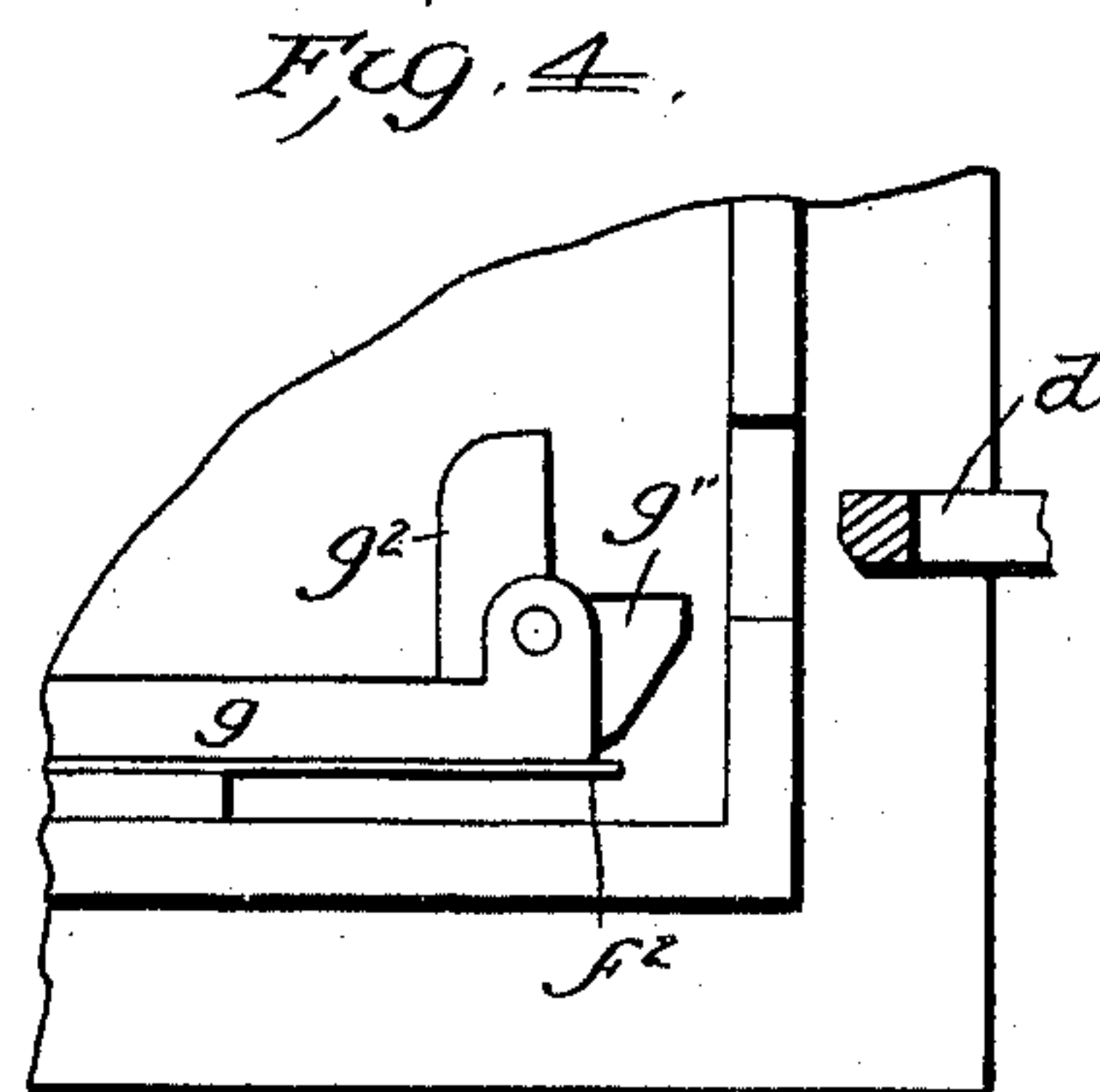
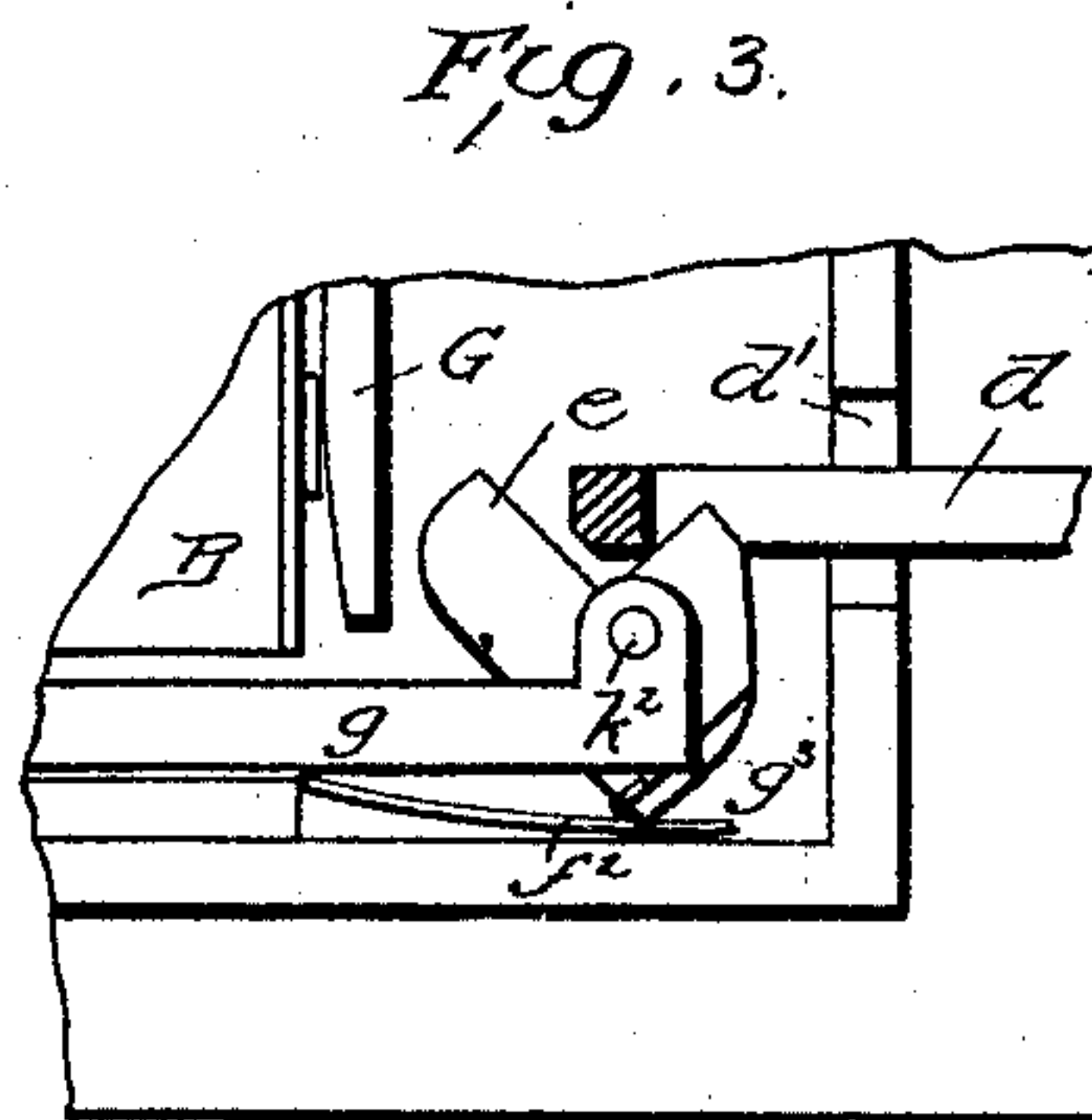
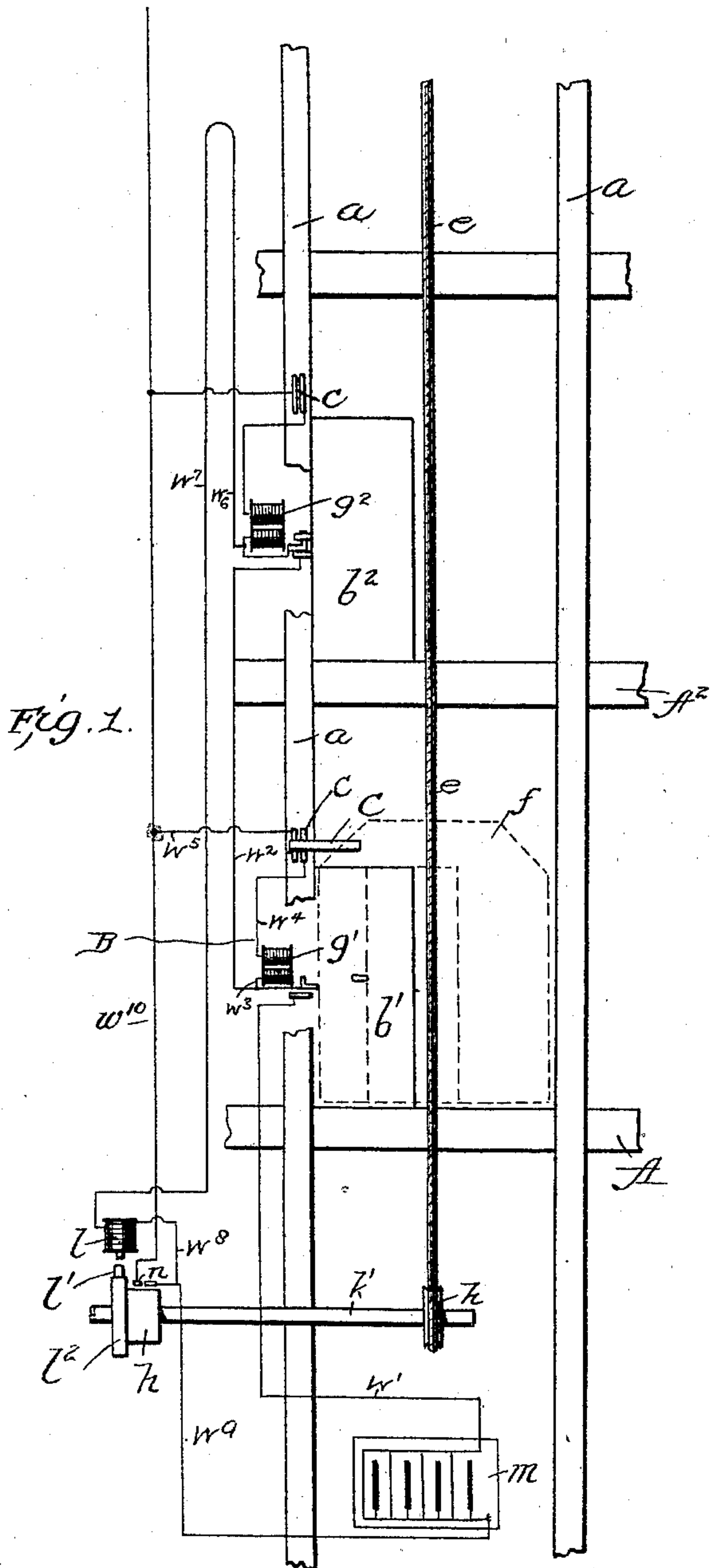
PATENTED FEB. 3, 1903.

E. H. PRICE.
SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED JUNE 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



attest:
Commissioner
James M. Fisher

Inventor,
Edward H. Price,
by *F. L. Middleton*
att'y

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2 SHEETS—SHEET 2.

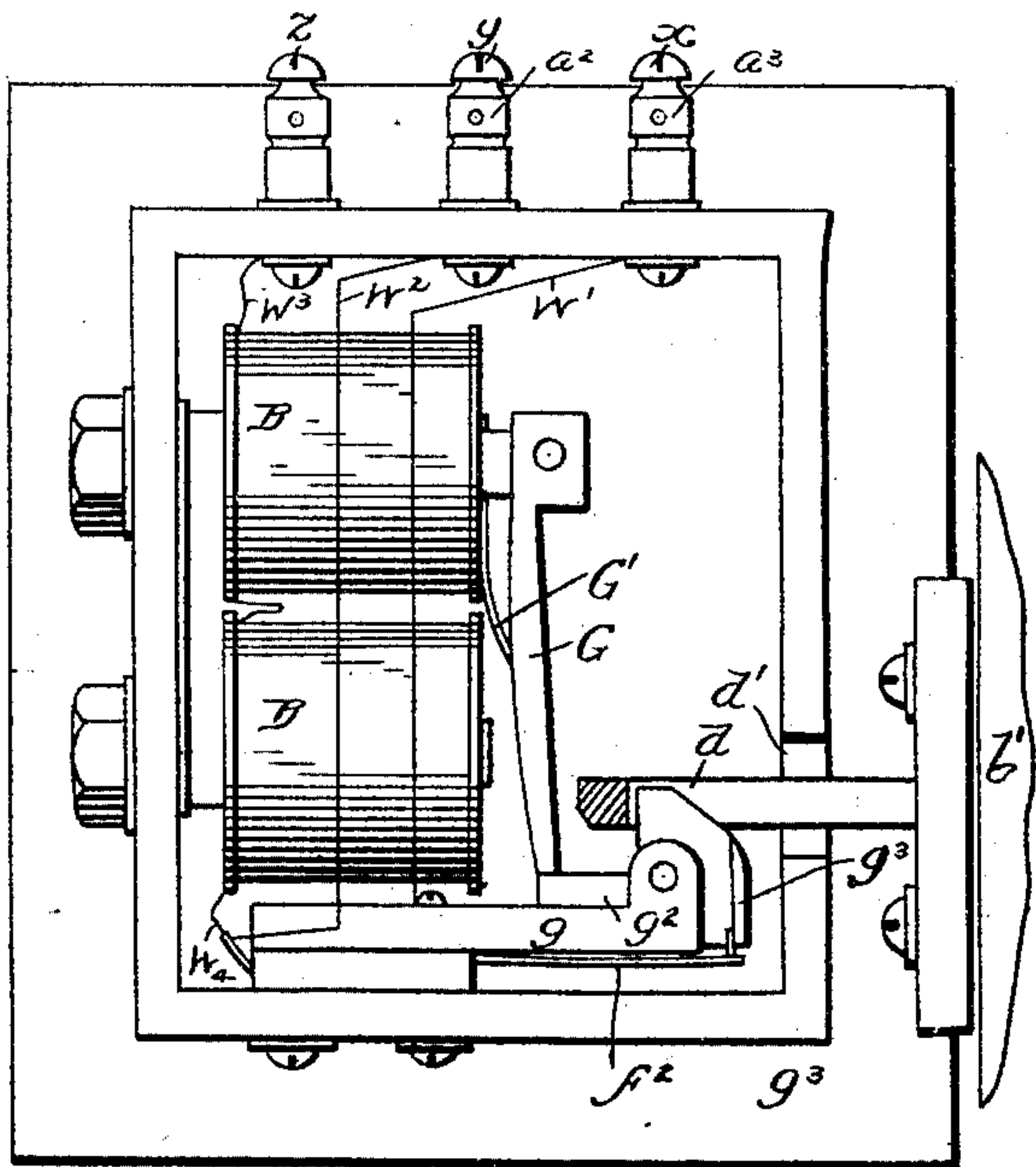
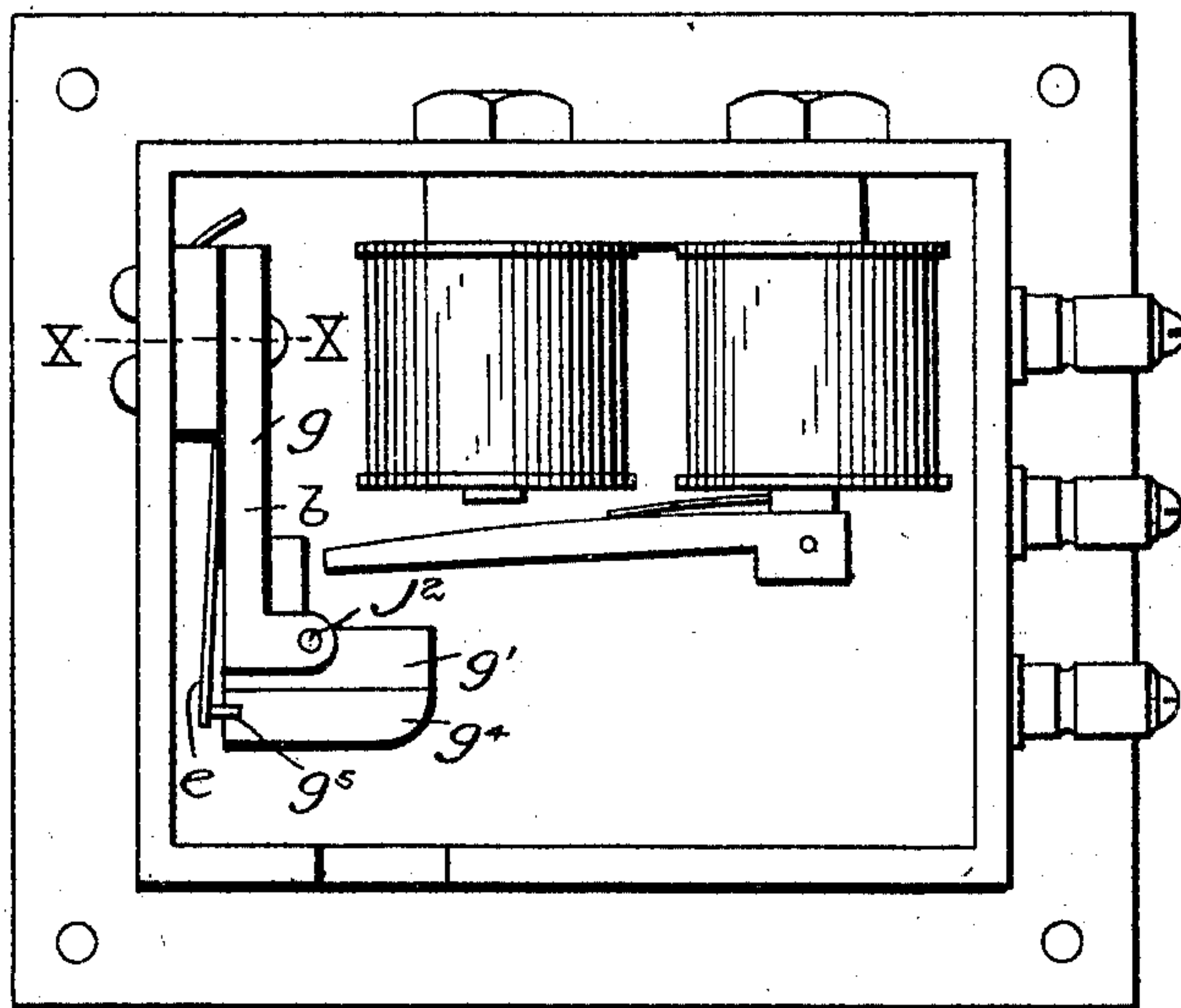
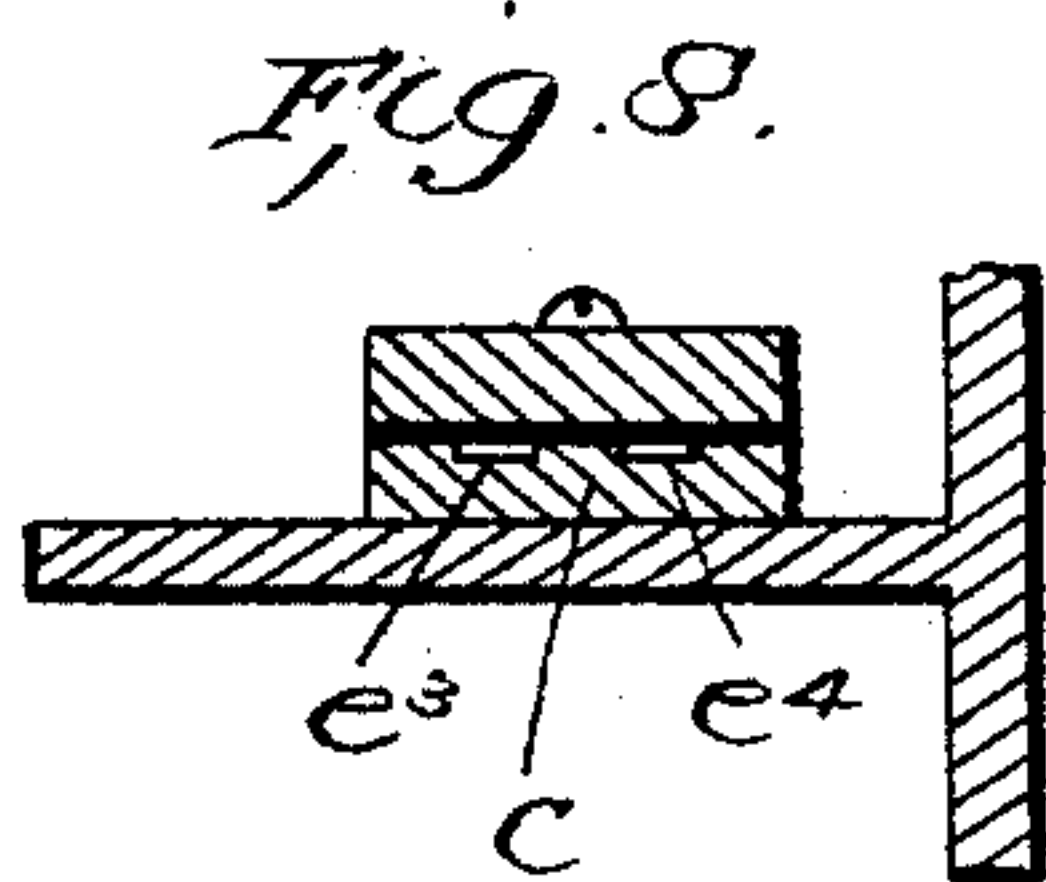
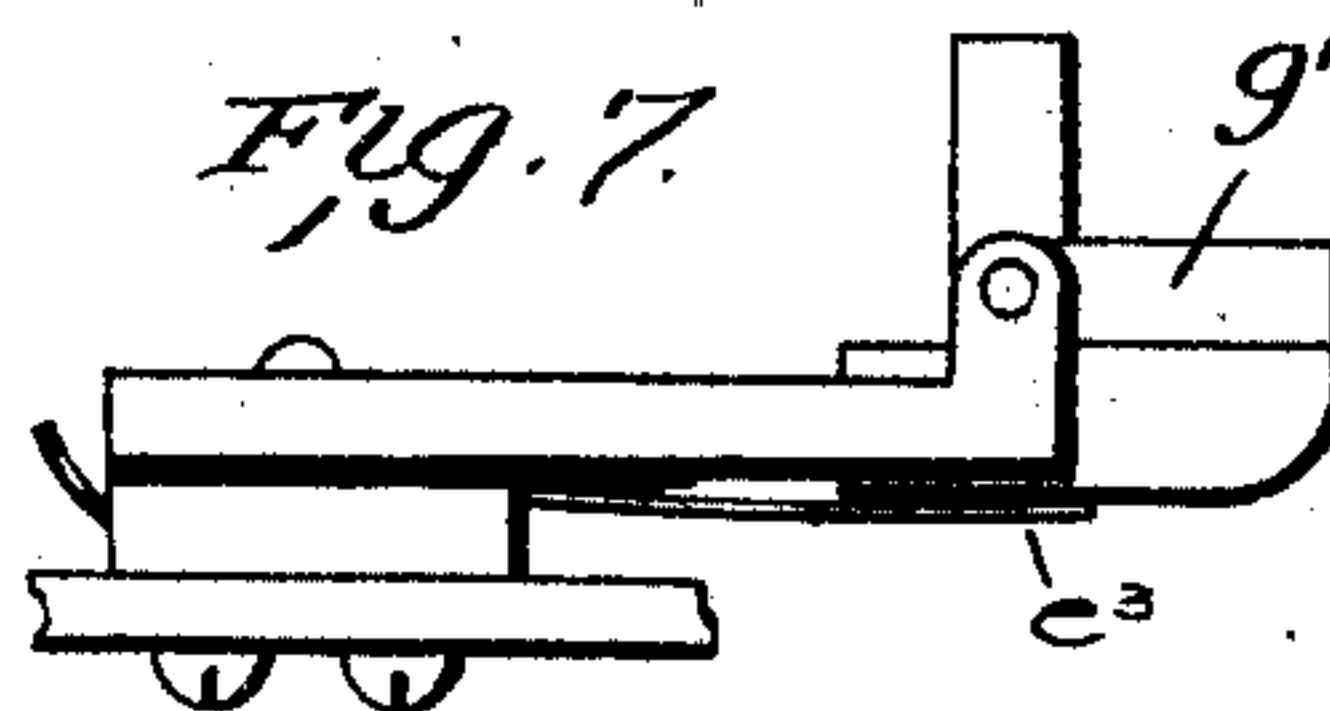
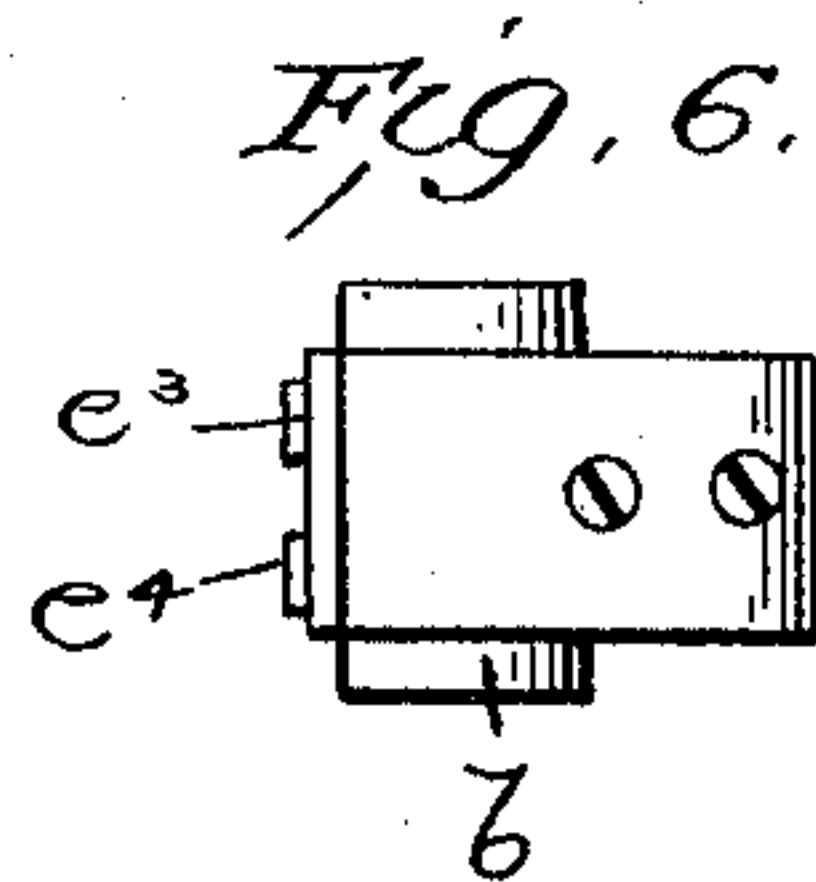


Fig. 2.



Attest:
Comptroller.
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Edward H. Price,
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UNITED STATES PATENT OFFICE.

EDWARD HOSKYN PRICE, OF SIOUX CITY, IOWA.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 719,692, dated February 3, 1903.

Application filed June 23, 1902. Serial No. 112,941. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HOSKYN PRICE, a citizen of the United States, residing at Sioux City, Woodbury county, Iowa, have invented certain new and useful Improvements in Safety Devices for Elevators, of which the following is a specification.

My invention relates to improvements in safety devices for elevators, and is designed as an improvement upon the device which forms the subject of an application filed by me in the United States Patent Office on the 16th day of April, 1902, Serial No. 103,133.

The invention relates more especially to the door-lock controller, but also includes the arrangement of the circuits; and the object of the invention is to simplify the construction with a view to increasing the efficiency and durability.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view of an elevator-well and circuits. Fig. 2 is a view of the lock and controlling-magnet, the casing of the lock being removed. Fig. 3 is a detail view with the holding-dog in the position it assumes when the door is partly open. Fig. 4 is a similar view with the door fully open. Fig. 5 is a view similar to Fig. 2, but showing a modified form. Fig. 6 is a detail end view of the holding-dog. Fig. 7 is a detail side view of the same with the dog in position it assumes when the door is open. Fig. 8 is a sectional view on line *xx* of Fig. 5.

In the drawings similar reference-letters denote corresponding parts throughout the several views.

Referring first to Fig. 1, *a* designates an elevator-well, and *A'* several floors of the building, two being shown for convenience. The dotted line *f* indicates the elevator-cage, and *b'* the door thereof. *e* is the shipper-rope passing from a pulley *k* on the shipper-shaft *k'*. This shipper-shaft is designed to be locked against movement when the cage is brought to rest opposite any floor by a gravity-dog *l'* engaging a notch in a disk *l''*, carried on the shipper-shaft, whereby the latter is held against movement, and the arrangement is such that the shipper-shaft is only released by closing of a circuit through magnet *l*, which is effected by the shutting of a

door. As this arrangement of locking-dog and magnet is fully set forth in the application above referred to and forms no part of the present invention a more detailed illustration and description thereof are deemed unnecessary.

Locking mechanism is provided for each elevator-door, which can only be unlocked to permit the door to be opened after a circuit has been closed through a releasing mechanism by the arrival of the cage opposite one of the floors of the building and the shifting of the shipper-shaft into neutral position, so that the cage is stopped. I have illustrated one form of this locking mechanism in Figs. 2, 3, and 4. The door *b'* carries a staple *d*, which is suitably insulated therefrom and is designed to pass through an opening *d'* in the lock-casing. A rigid bar *g*, secured to the lock-casing and suitably insulated therefrom, carries a rocking dog *g'*, which has an angular tail *g''*, which when the door is shut rests in a horizontal position, with the nose of the dog entering the staple. The dog is held normally against rocking to release the door by an arm *G*, pressed outwardly by a spring *G'*, this arm forming the armature of a magnet or magnets *B*, so that when the magnets are energized the lower end of the arm *G* is swung out of the path of the tail *g''* of the locking-dog. The battery for the circuits is indicated at *m*, and from this battery a wire *w'* leads through binding-post *x* to the bar *g* and thence through *g'*, contact-spring *f''*, and wire *w''* through the lock of the next door in a similar manner and by wires *w''* through magnet *l* and by wires *w''* and *w''* back to the battery, the result being that while the door is closed this circuit is complete and the locking-dog *l'* held elevated by the magnet *l*, so that the shipper-shaft is free to be rotated to operate the elevator in either direction.

The circuit for releasing the locks starting at battery *m* passes by wire *w'* through the bar *g*, dog *g'*, contact-spring *f''*, wire *w''*, magnet *B*, thence by wire *w''*, binding-post *z* through the contact-plates *c*, which are connected by a circuit-closer *C*, carried by the car, and thence by wires *w''* and *w''* through a circuit-closer *n*, which is closed only when the shipper-shaft is in neutral position, and thence by wire *w''* back to the battery. It

will thus be seen that this lock-circuit is only closed when the car is in position opposite one of the doors, so that the contact-arms C bridges the contact-plates c , and also when the circuit is closed through the circuit-closer n by reason of the arm being in neutral position. It is desirable that this circuit, however, should be broken as soon as the door is open, for the reason that where elevators are not used very much a door is often left open for a long period of time, and there would be a consequent waste of battery-current, and it is to accomplish this that I have provided the special form of circuit-breaker shown in the drawings.

In the forms shown in Figs. 2, 3, and 4 the dog g' has an insulated portion g^3 , which when the door is open and the dog is in position shown in Fig. 4 comes in contact with the contact-spring f^2 , and thus breaks the circuit.

In the form shown in Figs. 5, 6, and 7 I provide the dog g' with an enlarged insulated portion and the metallic bridge g^5 , mounted on the dog, which makes electrical contact between two springs e^3 e^4 , through which the current passes instead of having the current pass through the bar g .

Having thus described my invention, what I claim is—

1. In a safety device for elevators, the combination with a part controlling the movement of the elevator, of locking means for holding said part against movement, an electromagnet for releasing said locking means, a door-lock for each elevator-door, a circuit-closer included in each lock, a main circuit extending from a suitable source of current through the circuit-closer of each lock and through said releasing-magnet, an electromagnet for controlling each lock, a branch circuit for each electromagnet, and a circuit-closer carried by the car whereby each branch circuit is closed only when the car is opposite the respective door, substantially as described.

2. In a safety device for elevators, the combination with a part controlling the movement of the elevator, of locking means for holding said part against movement, an electromagnet for releasing said locking means, a door-lock for each elevator-door, a circuit-closer included in each lock, a main circuit extending from a suitable source of current through the circuit-closer of each lock and through said releasing-magnet, a branch circuit for each electromagnet extending also through the corresponding circuit-closer, and a circuit-closer carried by the car for closing each branch circuit on the arrival of the car at the well-door, and means whereby the opening of the well-door operates the corresponding circuit-closer to break both main and branch circuits, substantially as described.

3. In a safety device for elevators, the combination with a part controlling the movement of the elevator, of electrically-controlled locking means for holding said part against movement, a locking-casing for each door having a rocking dog adapted to engage a staple on the door, an armature for holding said dog against movement, an electric magnet therefor, a main circuit extending from a suitable source of current through each lock-casing, and through the electrically-controlled locking means, a branch circuit for each electromagnet, a circuit-closer carried by the car whereby each branch circuit is closed only when the elevator-car is opposite a well-door, and means carried by each rocking dog for breaking both main and branch circuits when the door is open, substantially as described.

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

EDWARD HOSKYN PRICE.

Witnesses:

WM. D. TRELOAS,
J. L. KENNEDY.