(No Model.)

A. T. BROWN.

ELEVATOR SAFETY GATE.

No. 510,770. Patented Dec. 12, 1893.

FIG. 1.

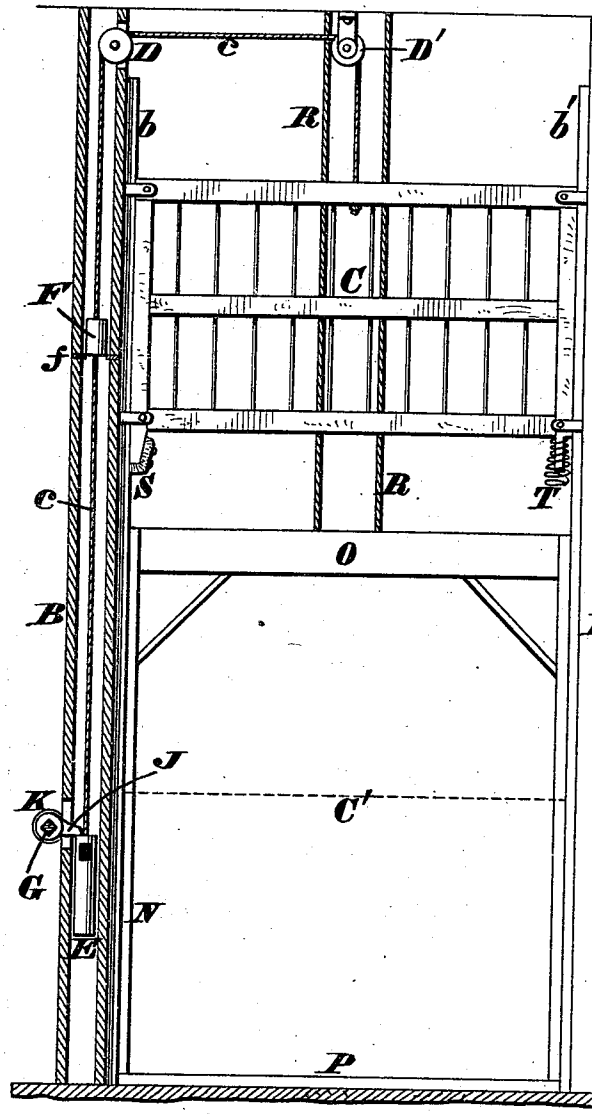


FIG. 2.

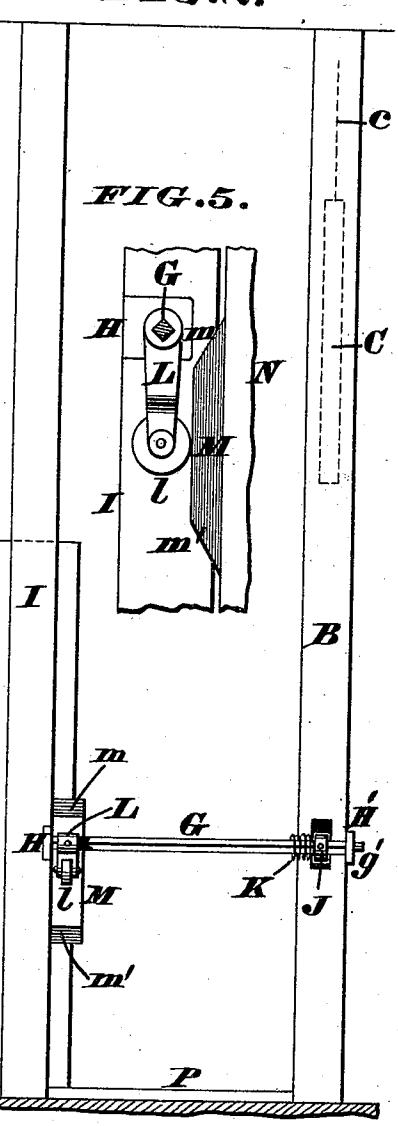


FIG. 5.

FIG. 3.

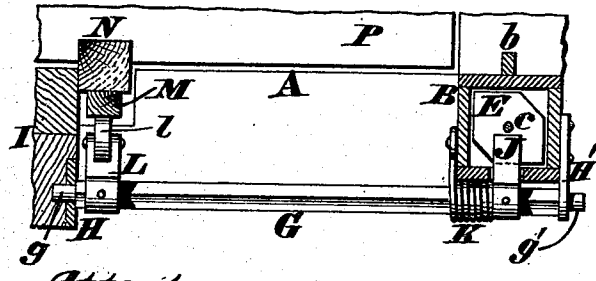


FIG. 6.

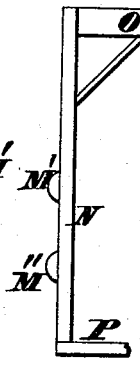
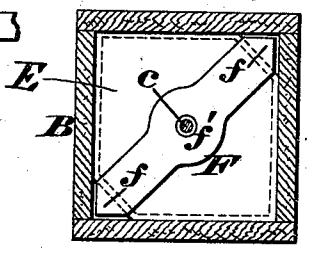


FIG. 4.



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ELEVATOR SAFETY-GATE.

SPECIFICATION forming part of Letters Patent No. 510,770, dated December 12, 1893.

Application filed August 28, 1893. Serial No. 484,213. (No model.)

To all whom it may concern:

Be it known that I, ALFRED T. BROWN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Elevator Safety-Gates; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form part of this specification.

This invention relates to those elevators whose hatchways are guarded with vertically-sliding safety-gates, and my improvement comprises a specific combination of devices which insures a prompt and automatic lowering of such barriers as soon as an ascending or descending platform or cab leaves a floor, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a sectionized front view of an elevator embodying my improvement, the platform of the same being on a level with a floor, and the gate raised. Fig. 2 is a side elevation of the structure. Fig. 3 is an enlarged horizontal-section of a portion of the same, taken in the plane of the rock-shaft G. Fig. 4 is a similar section of the post B, taken in the plane of the pick-up weight F. Fig. 5 shows the rock-shaft roller in contact with the block that operates it. Fig. 6 is a modification of the invention.

A, in Fig. 3 represents a hatchway in a floor, and B, B′, in Fig. 1, show posts at the front corners of said opening, the sides of said posts being provided with tracks *b*, *b′*, that confine a sliding gate C to a vertical path, the gate being attached to one end of a rope or chain or other suitable suspender *c*. This suspender, after being passed over a pair of sheaves D, D′, is carried down within the hollow post B, and has a counterbalance E, attached to its lower end, the balance being, preferably, tubular, so as to be readily charged with shot until it almost equals the weight of the gate. Furthermore, this counterbalance is usually square in transverse section, but has two of its opposite corners removed at an angle, as seen in Fig. 3, for the purpose of clearing a pair of stops *f*, *f*, shown in Fig. 4, in which illustration the position of said balance is indicated by dotted lines. These stops are secured in the proper corners of post B, and serve as bearings upon which a take-up weight F normally rests, said weight being of the shape seen in Fig. 4, and having a perforation *f′*, through which the suspender *c*, passes freely.

G is a rock-shaft, located at either side of the hatchway, and at any suitable distance above the floor, the opposite ends of said shaft terminating with journals *g*, *g′*, fitted in plates H, H′, attached, respectively, to the stanchion I, and post B. Secured near the front end of this shaft is a detent J, which is maintained in a normal position by a coiled spring K, one end of which latter is attached to said shaft, while the other end of said spring is fastened to the hollow post B. Rigidly attached near the opposite end of this shaft is a hanger L, whose free end carries a small roller *l*, that is operated, at the proper moment, by a block or bar M that terminates with inclined planes *m*, *m′*. This projecting member M is secured to one of the side stiles or guides N that connect a beam O, with a cab or platform P, capable of being raised and lowered with one or more cables R.

S is a pad or cushion at the base of gate C, to prevent concussions when it strikes the floor, although the same result can be accomplished with a coiled spring T.

My elevator is operated in the following manner: Assuming that the platform P has reached the level of a floor, the roller *l* then bears against the block M, at or near the mid length of the latter, as more clearly seen in Fig. 5, the result of which contact is to turn the rock shaft G within its bearings H, H′, and thereby impart additional tension to the coiled spring K. Gate C is now raised by hand, and as said gate ascends, the counterbalance E descends, strikes against the detent J, and thus turns the shaft G, in such a manner as to momentarily force the roller *l*, away from the block M. But the very instant the counterbalance passes down below said detent, the latter immediately flies back, owing to the tension of spring K, and engages over the upper end of said device E, as seen in Fig. 1. Consequently, this counterbalance is now so locked as to maintain the gate at the desired elevation, and the device E cannot be

released until the roller *l* is permitted to swing in toward the stile N, but such a vibration of the roller is impossible while the platform remains at the level of the floor. But if the platform ascends, it can travel only a limited distance before the block M reaches a position that enables the roller *l*, to run along the lower incline *m'*, and thus gradually swing toward the stile N, the result being to rock the shaft G, and thus turn up the free end of detent J. Evidently, there is nothing now to prevent the immediate ascent of counterbalance E within the hollow guide B, and the simultaneous descent of gate C, but before the latter has acquired a high velocity, said counterbalance picks up the secondary weight F, which increased resistance materially checks the falling gate, whose contact with the floor may be deadened by either of the devices S or T. When the platform descends below the level of the floor, the roller *l* swings in on the upper incline *m* of the block M, and thus releases the counterbalance E, in the manner above described. From this description it is apparent that the gate can be locked in an elevated position only when the platform is about at the level of a floor, and that the gate is automatically released and allowed to run down as soon as the platform travels a limited distance in either direction.

In the modification, seen in Fig. 6, the block M *m m'* is omitted and its duty is performed by a pair of projections M', M'', secured to the stile N, and at any suitable distance from each other, the roller *l* being about half way between said projections when the platform is on the level with a floor, and just clearing said stile. Therefore, if the platform descends, the upper projection M' will swing said roller away from the stile and so rock the shaft G as to turn down the free end of detent J, thereby releasing the weight E by a movement the exact reverse of the action previously described. But if the platform ascends, the lower projection M'', then forces the roller back from the stile and causes the release. It will be noticed that this construction necessitates a slight depression of the weight while the free end of the detent is swinging down, and on this account, the pair of projections may be objectionable with a certain class of elevators. Finally, the dotted line C', in Fig. 1, shows the position of the top rail of the gate when it is lowered to serve as a barrier or guard at the hatchway.

I claim as my invention—

In an elevator, the vertically-sliding safety-gate C, attached to a suspender *c*, carrying a counterbalance E, and the rock-shaft G, provided with a detent J, spring K and hanger L, which latter has a roller *l* journaled in it, in combination with a traveling cab or platform having means that act against said roller in the manner described and for the purpose stated.

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

ALFRED T. BROWN.

Witnesses:
JAMES H. LAYMAN,
ARTHUR MOORE.