(No Model.)

F. C. CANNON.

ELEVATOR STOP.

No. 374,396. Patented Dec. 6, 1887.

Fig. 1

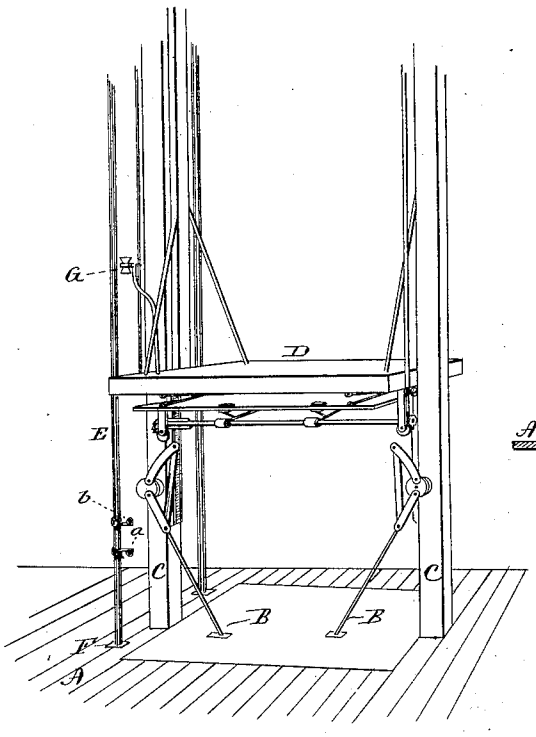


Fig. 6

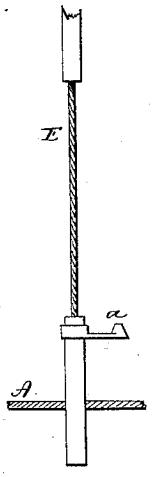


Fig. 3

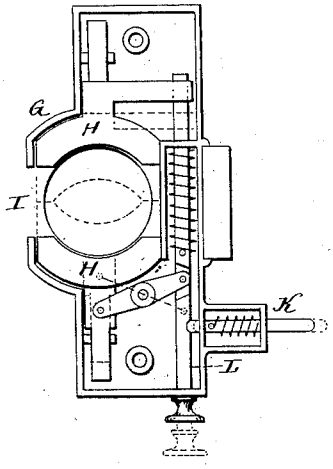


Fig. 7

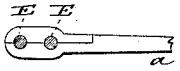


Fig. 8

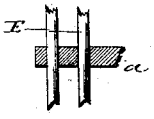


Fig. 2

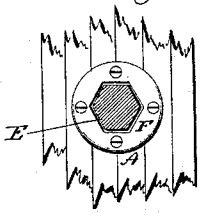


Fig. 4

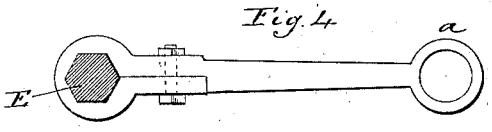


Fig. 5

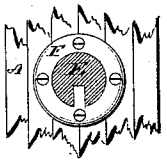
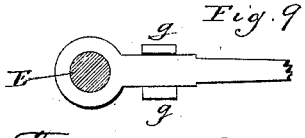


Fig. 9



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UNITED STATES PATENT OFFICE.

FRED C. CANNON, OF NEW HAVEN, CONNECTICUT.

ELEVATOR-STOP.

SPECIFICATION forming part of Letters Patent No. 374,396, dated December 6, 1887.

Application filed May 4, 1887. Serial No. 237,089. (No model.)

To all whom it may concern:

Be it known that I, FRED C. CANNON, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Elevator-Stops; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of so much of an elevator as necessary to illustrate the invention; Fig. 2, a transverse section through the lifting-rod, showing the collar combined therewith; Fig. 3, a sectional top view of the check mechanism; Fig. 4, a transverse section through the lifting-rod, looking down upon one of the stops; Figs. 5, 6, 7, 8, and 9, modifications in the lifting-rod.

This invention relates to an improvement in that class of elevators which are adapted to work through hatchways in floors, the hatchways usually being provided with swinging doors, which open and close under the movement of the elevator-platform. In this class of elevators the shifting cable is necessarily arranged outside the hatchway, and therefore cannot extend through the platform or carriage, as in passenger-elevators.

It is a common device to provide a platform with a check and a cable with stops to engage the check, so that under the movement of the platform up or down, when the said check comes into contact with the stop on the cable, a movement will be imparted to the cable corresponding to that of the platform, and thus produce a stop, the cable acting on the shifting mechanism, and so that the mechanism will cease at such stopping-point; but under the usual arrangement of the check and stops with the cable outside the check has been inside the area of the platform, while the cable was outside. It has therefore been necessary that there should be an operator on the platform to draw the cable so far inward as to bring the stop into engagement with the check.

The object of my invention is to provide an automatic stopping device—one which may be used without the necessary presence of a person on the platform to stop the platform at certain points, or one which will not require the attention of the person to bring the platform to a stop.

In Fig. 1 I represent so much of an elevator as necessary to the full understanding of the invention.

A represents a floor through which is a hatchway closed by doors B B. At each side of the hatchway is the usual vertical guide, C, and between these guides the platform D is arranged to be moved up or down, as the case may be. The lifting mechanism, or the mechanism for opening or closing the hatchway, is not necessary to be described, as it is not material to this invention.

Outside the hatchway, and consequently outside the platform, I arrange a vertical rod, E—as iron or steel—in place of the usual flexible cable. This rod E, I make of other than cylindrical shape—say, hexagonal in transverse section, as seen in Fig. 2—and in the floor I introduce a collar, F, having an opening through it corresponding in shape to the shape of the rod, so that the rod may work freely up and down, and, because of the corresponding shape of the collar, be prevented from rotation.

On the platform D, I arrange a check, G. This check is a common construction of elevator-check, and consists of a vertical socket having within it transversely-sliding plates H H, which draw apart, leaving the socket open vertically, but when brought together substantially close the opening through the socket, as indicated in broken lines, Fig. 3. On the side of the socket next the rod is an opening, I, through the socket.

On the rod E stops *a b* are secured. These stops are on the end of arms clamped to the rod E, as seen in Fig. 4, so as to become substantially a part of the rod, or may be made as an integral part of it. The stops stand in the path of the check G, as seen in Fig. 1, and so that if the check be open it will pass up or down over the stops without engagement therewith, the opening I through the side of the check permitting this movement of the check; but if the check be closed then, when the check comes in contact with either stop, it will impart a vertical movement to the rod corresponding to that of the platform, and this movement of the rod will cause the shift-

ing mechanism to stop. The sliding plates for closing the socket are adapted to be held in the open position—say, as by a bolt, K, (see Fig. 3,) adapted to engage a slide, L, by which the plates are operated. When the check is thus open, the platform is free to run and escape the stops; but when the check is closed, then wherever the stop is arranged on the rod the check will engage it, and the platform will be brought to a stand at that point. These stops are generally arranged so as to bring the platform to a stand flush with the respective floors, ascending or descending.

The non-cylindrical shape of the rod E insures the stops being held directly in the path of the check, which would not be the case were the stops fixed to an ordinary cable. The twisting or unavoidable vibration of the cable would prevent proper action of the stops with the check.

In Fig. 1 I represent two stops on the rod near the floor. As the platform ascends, the lower stop, *a*, will first engage with the check, and bring the platform to a stop at the floor. Descending, the other stop, *b*, acting upon the check, will produce the same result. After the platform has been thus stopped by the check, when a continued movement is desired, the check is opened to permit it to escape the stops.

If in running it be desired that the check shall escape several stops, it will be left open until it approaches the stopping-point, and then closed, and will act upon the next stop to bring the platform to rest at that point.

Instead of making the rod of polygonal form, as shown, it may be made grooved vertically, as seen in Fig. 5, with a projection on the collar entering the groove, which will prevent the rotation of the rod and insure the holding of the stops in the path of the check. This non-cylindrical shape may extend only through the floors sufficiently far to serve as the guide for the up-and-down movement. Then between such non-cylindrical portions it may be of any desirable shape.

The rod may be made in sections, as represented in Fig. 6, the sections through the respective floors and collars being non-cylindrical and extending sufficiently far up to support the stops, and the several sections connected by a cable; but there is no economy in making the rod other than of a continuous non-cylindrical shape throughout.

As a substitute for a non-cylindrical rod, two cylindrical rods may be employed, as indicated in Figs. 7 and 8, the stop embracing the two rods, as shown, and the two rods working through guides, so as to maintain them in their same parallel relation to each other. This arrangement is practically a non-cylindrical rod—that is, a flat rod in width equal to the two rods and the space between them.

Instead of making the rod non-cylindrical, the rod may be cylindrical, as seen in Fig. 9, and the arm extending from the guide adapted to work between vertical guides *g g*, which arrangement will insure the maintenance of the stop in the path of the check. In case the stop be vertically guided, as in Fig. 9, the shifting-rod may be in the form of a cable, the guide for the stop serving as a guide to maintain the shifting-rod in its proper position with relation to the stop, and the stop to the check. By the term "shifting-rod," therefore, I wish to be understood as including any equivalent therefor as a means for moving the stops, it only being essential to the invention that there shall be a guide combined with the rod and stop which shall support the stop always in the path of the ascending or descending check. I, however, prefer the non-cylindrical shape of the rod as being simplest and cheapest.

The check mechanism which I have illustrated is one common and well known; but for it may be substituted any known device adapted to engage the stops on the shifting-rod and impart vertical movement thereto.

Usually the platform is of so much less dimensions than the hatchway-opening as to permit the check to overhang the platform so far as to engage the stops; but it will be understood that if the stops project within the path of the platform there must be an opening cut through the side of the platform to permit the platform to escape the stops.

While I have described the guide as arranged in the floor, it will be understood that it may be arranged at any desirable point.

It will be understood from the foregoing that I make no claim upon the check mechanism, as such is not my invention, but, on the contrary, is fully disclosed in United States Patent No. 331,672. In that patent the shifting device is a rope, which necessarily runs through the check mechanism, and is not arranged outside the check mechanism, whereby it becomes necessary to make that check mechanism of peculiar construction, fully described in the specification of this application, and to which the claims are limited.

It will be understood from the foregoing that I do not claim as of my invention the arrangement of the shifting-rope outside the platform, with a check on the platform with which said rope may be brought into engagement, the essential feature of my invention being the shifting-bar which carries the stop arranged outside the elevator, combined with guides to so support the shifting-rod as to prevent its rotation.

I claim—

1. In combination with the platform of an elevator, a vertical shifting-rod outside said platform, a check fixed to said platform and movable therewith, one or more stops fixed to and projecting from said shifting-rod, and guides for the said shifting-rod to prevent its rotation, substantially as described, and whereby said stops are held always in the path of the check.

2. In combination with the platform of an

elevator, a vertical shifting-rod outside said platform, said rod being other than of cylindrical shape in transverse section, stationary guide-collars through which said non-cylindrical rod works, a check fixed to said platform and movable therewith, and one or more stops fixed to and projecting from said shifting-rod into the path of the said check, substantially as described.

FRED C. CANNON.

Witnesses:
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FRED C. EARLE.