

J. B. WARING & J. W. WILSON.
Automatic Hatchway Protectors.

No. 133,345.

Patented Nov. 26, 1872.

Fig. 1.

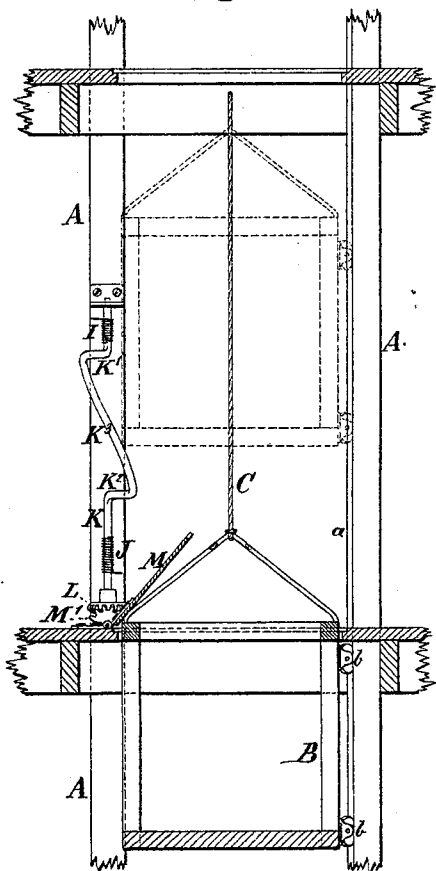


Fig. 2.

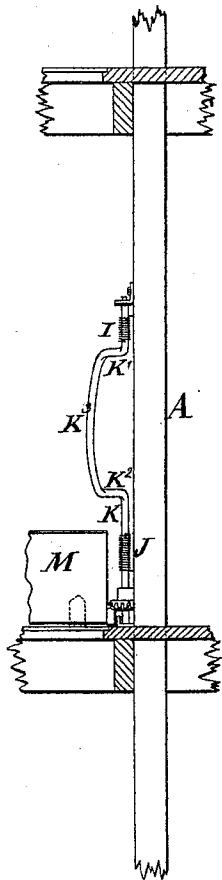
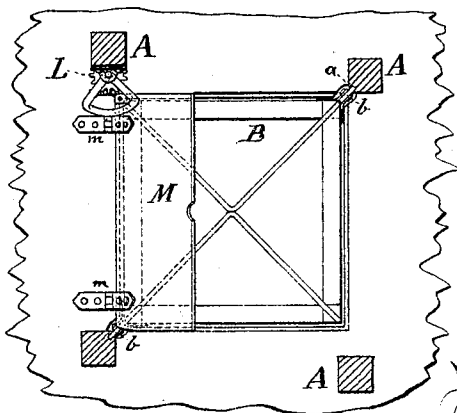


Fig. 3.



Witnesses:

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Inventors:

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UNITED STATES PATENT OFFICE.

JOHN B. WARING AND JOHN W. WILSON, OF NEW YORK, N. Y.

IMPROVEMENT IN AUTOMATIC HATCHWAY-PROTECTORS.

Specification forming part of Letters Patent No. 133,345, dated November 26, 1872.

To all whom it may concern:

Be it known that we, JOHN B. WARING and JOHN W. WILSON, both of New York city and State, have invented certain Improvements relating to Automatic Hatchways, of which the following is a specification:

The invention is intended for use in buildings in connection with elevators operated by steam or other power. As the elevator is raised and lowered the hatchways in the several floors are automatically opened and closed. The hatches turn on hinges, and are operated automatically by the approach of the elevator-car either from below or above.

The following is a description of what we consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a vertical section through the car and framing, with an elevation of the mechanism for operating the hatches. The strong lines show the car just rising to complete the elevation of the hatch, while dotted lines show the car at a higher elevation. Fig. 2 is a vertical section at right angles to the last, and Fig. 3 is a horizontal section.

Similar letters of reference indicate like parts in all the figures.

A A, &c., are stout uprights, two of which are grooved to guide the car, as represented. B is the car, and *b b* are the guiding-wheels, traveling in the grooves *a* in the uprights A. C is the hoisting-rope or wire cable, which it will be understood is operated by any ordinary or suitable means to hoist and lower the car.

The elevator-car B may traverse through as many floors as may be desired, and all or only a portion may be provided with hatchways operated in the manner here shown. We have represented but one floor as provided with our improved means of operating the hatches.

M is a leaf or section of the hatch, turning on stout hinges *m*. It will be understood that there may be an opposite leaf operated in a precisely similar manner, or any other, if preferred. When the hatchway is small the single leaf M may be made large enough to extend quite across and protect the entire hatch. M' is a beveled segment fixed firmly on one edge of the leaf M, and meshes into another segment, L, which is fixed on a peculiarly-bent

rod, K, mounted in fixed bearings, and serving both as a shaft and as a means of receiving motion from the descent of the car B. We will designate certain portions of the part K, as K¹ K², &c. The portion K¹ is bent at right angles to the general direction of the part K, considered as a shaft. The part K² is similarly bent at right angles, but it stands in a plane differing about ninety degrees from that of the bend K¹. Between the parts K¹ and K² is a helically-bent portion, K³. The entire part K K¹ K² K³ may be formed in one stout piece of wrought or cast iron. Near the upper bearing of the piece K K¹, &c., is mounted a stout coiled spring, I, exerting a force tending to close the leaf M of the hatch. At another point is mounted another spring, which may be of about the same strength or force, marked J, the tendency of which is to raise or to open the leaf M. The joint effect of the two springs I and J is to tend to hold the leaf M at an inclination of about forty-five degrees. The weight of the leaf will, however, overcome this tendency when it is permitted to, and will hold the leaf in the closed position.

The action of the cage or car B in rising is of the ordinary character. It strikes the under face of the leaf M either directly or through the intervention of a lever or spring, and causes it to rise to its full open position. In doing so it turns the piece K, and as the cage or car B rises through the hatchway it commences to rub against the lower end of the bent portion K³, and holds the hatch in its open position. After completely passing the leaf M the further elevation of the car B allows the leaf to gradually sink to its closed position, the shaft K and its adjuncts turning slowly as it is allowed by the rise of the car.

When the car in its descent presents its rubbing corner against the upper end of the curved portion K³, it acts forcibly to turn the shaft K, and thus, by means of the gearing L and M', to raise the leaf M. As the car is lowered it acts successively against the lower points on the helically-curved portion K³, and when it has arrived opposite the horizontal bend K² the shaft K has been turned a quarter revolution, and the leaf M is wide open so as to allow the car to freely descend. So soon as the car has passed down the leaf M closes again.

The functions of the springs I and J are im-

portant. When the leaf M is fully closed the action of the springs tends to aid the mechanism in lifting it or in commencing to lift it. When the leaf M is fully opened the action of the springs—and especially of the spring I—tends to close it. As soon as the car rises or sinks sufficiently to commence to liberate the leaf M the spring I inclines the said leaf to close, and as soon as it has been fairly thrust out of its perpendicular position gravity commences to operate to continue the closing in the obvious manner.

When the weight of the leaf M is very great it may be advisable to partially balance it by extending a heavy-loaded arm past the line of its axis in the opposite direction, cutting, of course, a corresponding notch in the floor to allow it to traverse through it.

There may be one or more rollers or analogous anti-friction devices on the car to lessen the friction between itself and the part K³, as also between itself and the under face of the leaf M.

We claim as our invention—

1. The piece K K¹ K² K³, in combination with the leaf M and car B, as and for the purpose herein set forth.

2. In combination with the above, the partially-balanced spring J, tending to aid in lifting the leaf M, as specified.

3. The spring I, in combination with the piece K K¹, leaf M, and car B, arranged as shown, and serving to commence the closing motion of the hatch, as herein specified.

4. The entire combination of the car B and its guiding and operating means, the leaf M turning on hinges *m*, with beveled gear segments M' L, and the peculiarly-bent piece K K¹ K² K³ with the springs I and J, all arranged for joint operation, as herein specified.

In testimony whereof we have hereunto set our hands this 19th day of July, 1872, in the presence of two subscribing witnesses.

J. B. WARING.

JOHN W. WILSON.

Witnesses:

ARNOLD HÖRMANN,
CHAS. ROETTIG.