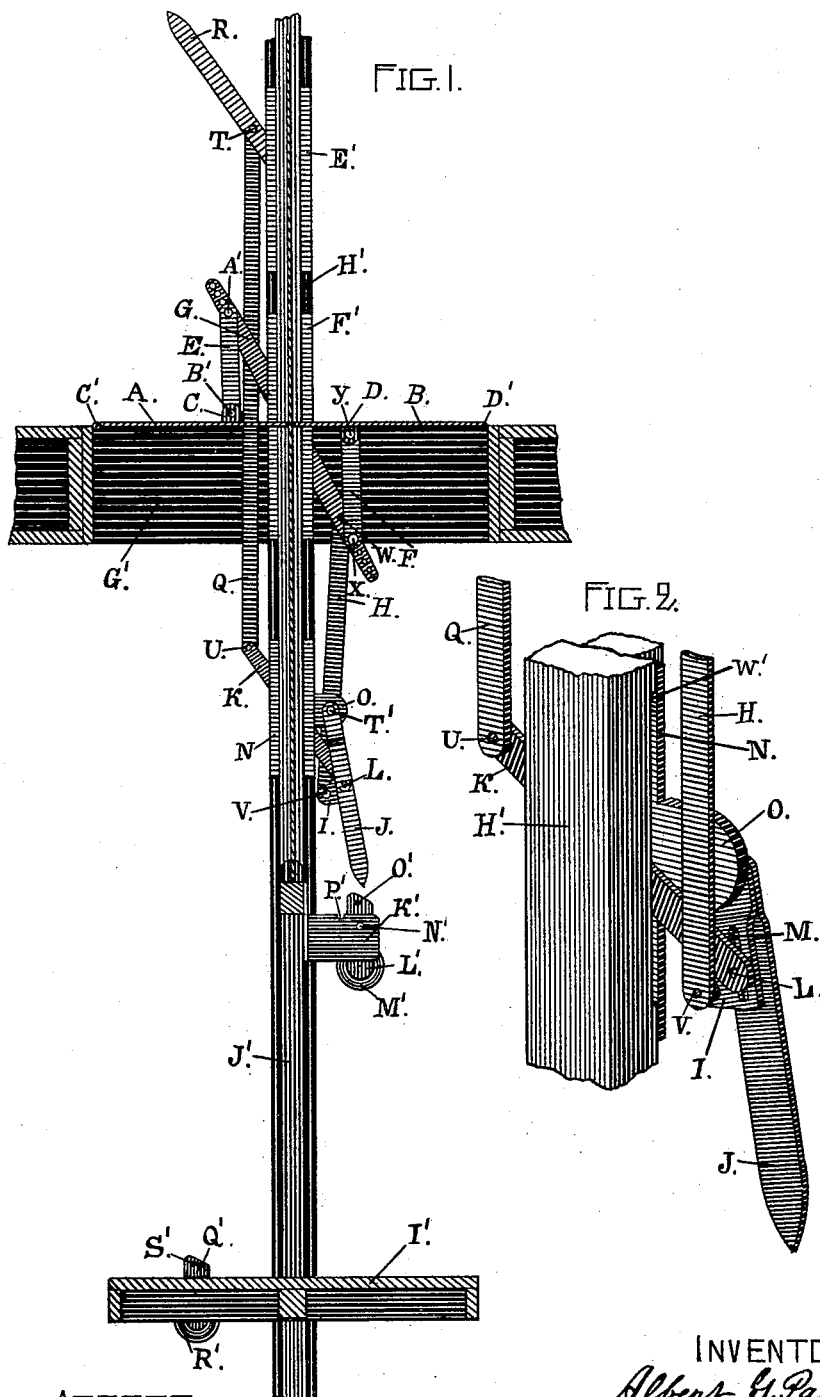


A. G. PAGE.

FIRE SHUTTER FOR ELEVATOR SHAFTS.

No. 386,490.

Patented July 24, 1888.



ATTEST,  
*George Gowing.*  
*L. E. Redstone.*

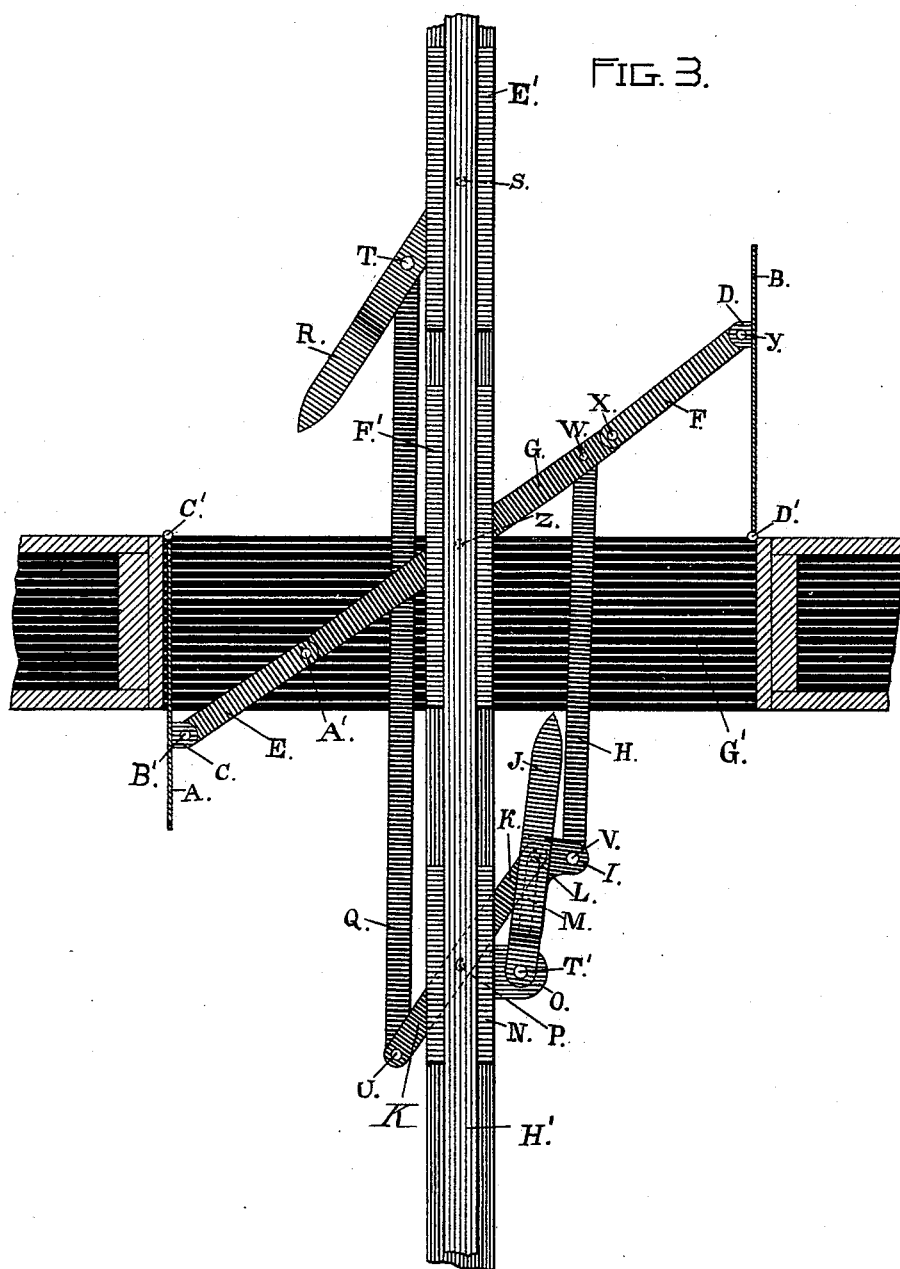
INVENTOR,  
*Albert G. Page.*  
*By John H. Redstone.*  
*Atty in Fact.*

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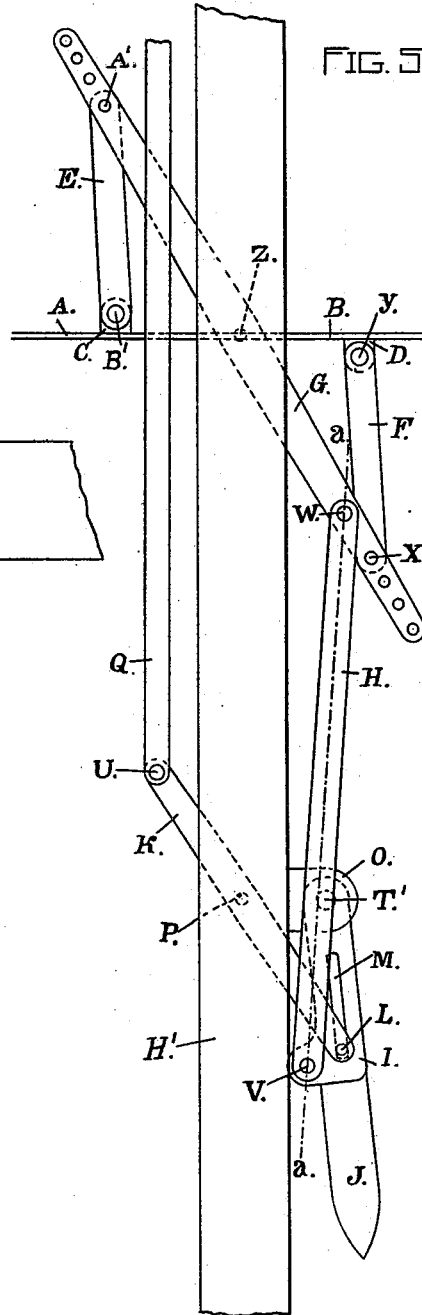
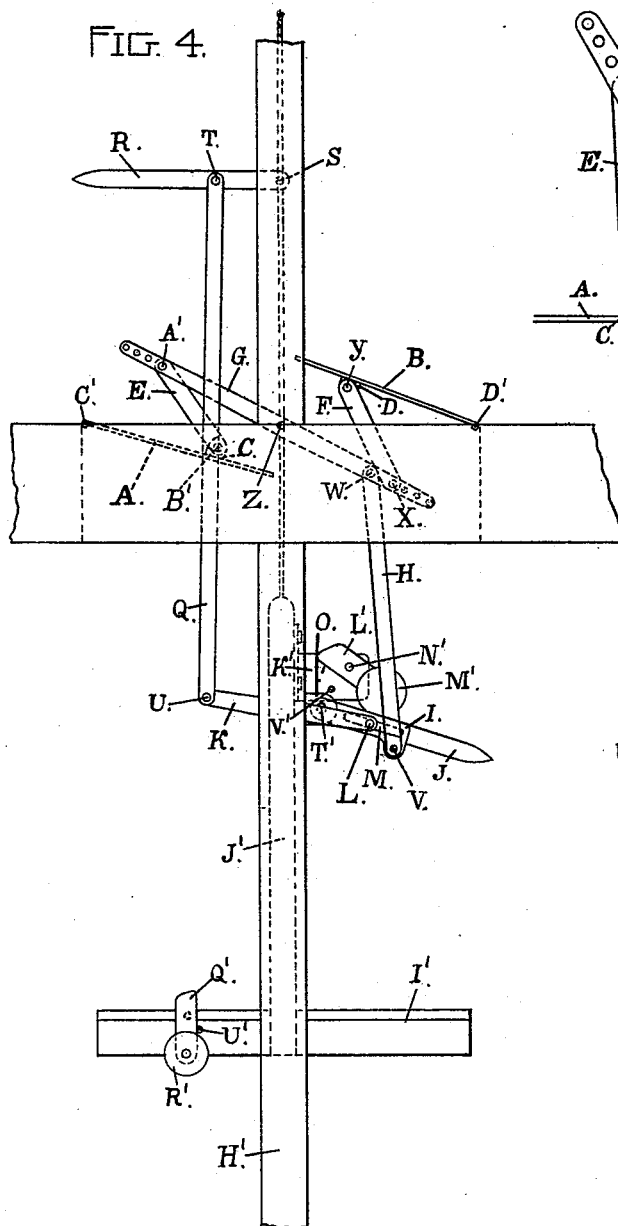
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ATTEST,  
*George Gowing,*  
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INVENTOR,  
*Albert G. Page,*  
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*Atty. in Fact,*

# UNITED STATES PATENT OFFICE.

ALBERT G. PAGE, OF SAN FRANCISCO, CALIFORNIA.

## FIRE-SHUTTER FOR ELEVATOR-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 386,490, dated July 24, 1888.

Application filed September 20, 1887. Serial No. 250,193. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT G. PAGE, a citizen of the United States, residing in the city and county of San Francisco, in the State of California, have invented a new and useful Improvement in Fire-Shutters for Elevator-Shafts, of which the following is a specification.

My invention relates to improvements in fire-shutters for elevator-shafts, which will be understood by reference to the accompanying drawings and the letters referring thereto.

Figure 1 is a sectional elevation cut vertically through the center and showing the shutters closed. Fig. 2 is a broken perspective view showing the operating and locking device. Fig. 3 is an enlarged broken sectional side elevation showing the shutters open. Fig. 4 is a broken side elevation showing the shutters partially open; and Fig. 5, a broken side elevation showing the connections of the levers and the doors in a horizontal position, as when closed.

The following is the construction of my improved safety fire-trap for elevator-shafts.

I construct the shutters of a strong durable material, generally of metal. I hinge the one to open upward and the other to open downward, and connect the operating parts so as to have the weight of one door balance the weight of the other in every position in opening and shutting the same. I employ such elevator-cages as are now in use and the same means as are now in use for raising and lowering the same.

My device can be applied to any of the elevators now in use. I generally construct all the operating parts of metal, principally of wrought-iron.

A and B represent the shutters. C and D represent the attaching projections or studs, to which the levers E and F are attached for the purpose of connecting with the shutters. G represents the lever which connects the levers E and F by means of the hinges or joints A' and X. The connecting-bar H is hinged to the double-armed tripping-lever I and J at V. The short arm I has the slot M, to allow the motion of the lever K, which is fulcrumed at P. The lever K connects with the connecting-bar Q at U. The connecting-bar Q connects with the upper tripping-lever, R, at T. The lever R is pivoted at S.

The deflecting guide-pulley M' is attached to the pivoted bar L' by the pivot N', which connects with the stud K' for the purpose of connecting with the cage-standard J'. The two-armed lever I J is hinged at T' upon the stud O, which attaches to the main guide-rails. The pivots P, S, and Z are attached to the main rails H'. The plates E', F', and N are designed to form solid attachments for the operating parts employed in opening and closing the shutters.

O' represents a stop-pin to prevent the pivot-bar L' from removing beyond the required point.

The pivot-bar Q' and guide-wheel R', attached to the floor of the cage I', are of the same construction and operate in the same manner as the guide-pulley M' and pivoted bar L', as will be shown.

The following is the operation of my improved elevator fire-trap. The cage or elevator-car I' being at the position shown in Fig. 1 and moving upward and the shutters above closed, as the guide-pulley M' strikes the lever J, swinging the same upon the fulcrum T', it carries the lower end of the lever J out and up to the position shown in Fig. 3. As the lever I J is swung upward, it carries the connecting-bar H upward and the bar Q downward. The slot M allows the pivot L, attached to the lever K, to slide while it rocks on the fulcrum P. The lever R is drawn down to the position shown in Fig. 3 at the same time that the shutters A and B are closed by means of the connecting-bar H, connecting-levers E and F, and the lever G, which is fulcrumed at Z and connects the two shutters by means of the connecting-levers E and F and the studs C and D. It will be seen that as the cage passes up, the levers J and R being in the positions shown in Fig. 3 and the shutters A and B being fully opened, the levers E and F and the lever G are in line, bracing the same. As the cage passes on up, the guide-wheel R' (shown in Figs. 1 and 4) strikes the lever R, carries the same up, reversing all the connected parts by drawing up the connecting-bar Q, thereby operating the lever K and throwing the lever I J down, drawing the connecting-bar down and closing the door B at the same time that the door A is closed by the connecting-bar Q. The operating parts then stand in the position

shown in Fig. 1, where all the parts are firmly locked by being past the center, as is more plainly seen in Fig. 5. As the cage descends, the wheel R' strikes the lever R, thereby operating the connecting-bar Q, the lever K, the lever I J, the connecting-lever H, the lever G, and the levers E and F, and opening the shutters A and B to the position shown in Fig. 3, and as it passes on down the guide-pulley M' strikes the lever I J, carrying the same down and operating the lever K, the connecting-bar Q, and lever R, the connecting-bar H, the lever G, the levers E and F, thereby closing the shutters A and B after the cage I'. Thus it will be seen that as soon as the cage has passed up or down the doors close automatically and are firmly locked in position. The shutters A and B are fitted closely, filling all the area of the elevator openings through the floor, thereby preventing a current of air from passing up in case of a fire, and when the cage is either at the top or bottom of the elevator-passage the safety-shutters A and B are closed and a perfectly secure floor is formed at every story of the building, thus preventing all danger of accident, such as dropping things down or persons falling down the elevator-shaft.

I do not confine myself to the exact form of construction shown or the exact proportion of the parts, as they may be varied without changing the principle of the invention; but,

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

In fire-shutters for elevators, in combination with an elevator-cage having the deflecting guide-pulley M', attached to the top of the cage, and the deflecting guide-wheel R', attached to the bottom or floor of the same, the double lever having the tripping-arm J and the short arm I, with slot M, the connecting-bar H, the lever G, the connecting-levers E and F, the lever K, the connecting-bar Q, and tripping-lever R, for the purpose of balancing and operating the shutters A and B, constructed, connected, and operated substantially as and for the purposes set forth.

ALBERT G. PAGE.

Witnesses:

J. H. REDSTONE,  
L. E. REDSTONE.