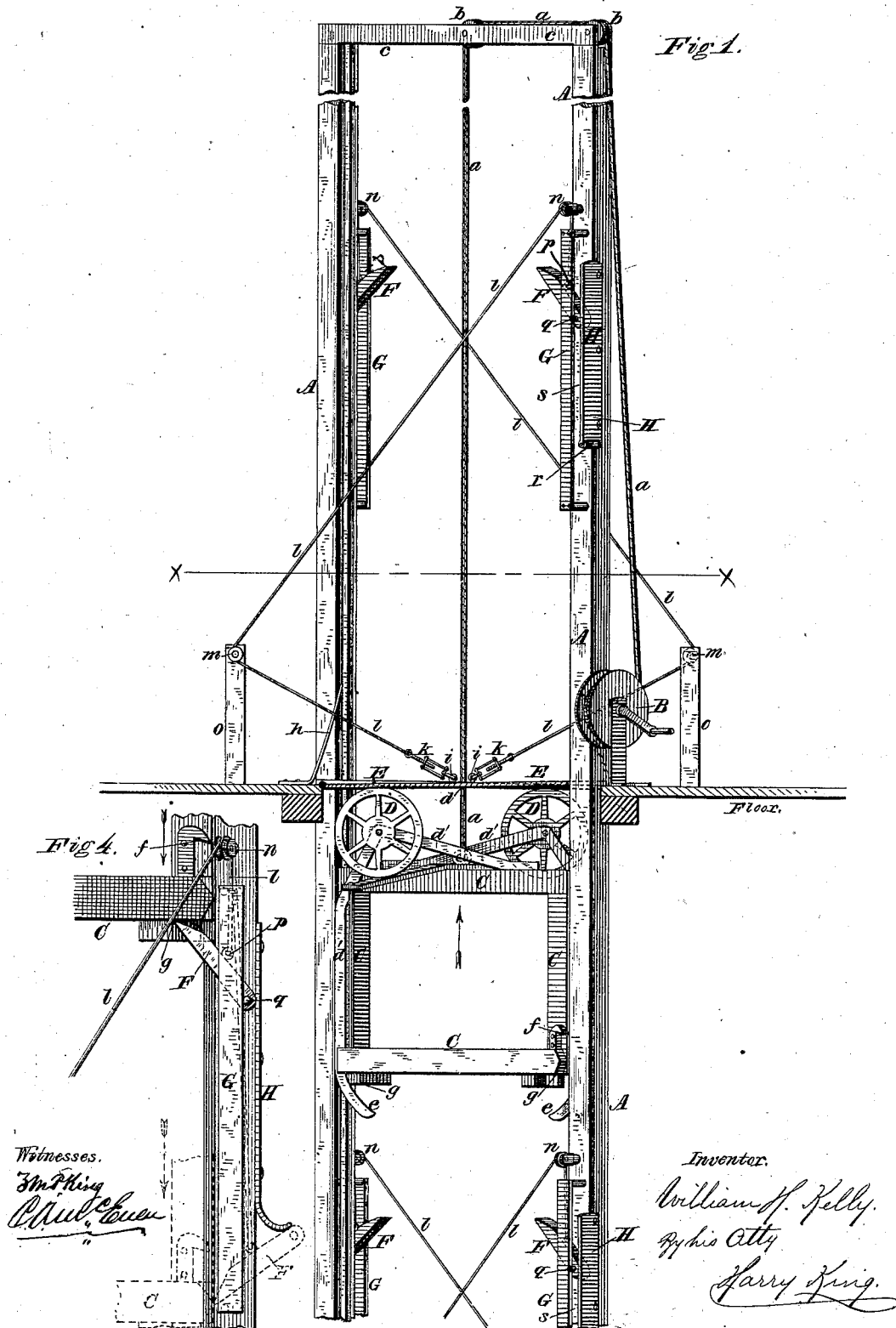


W. H. KELLY.
Hatchway.

No. 219,100.

Patented Sept. 2, 1879.



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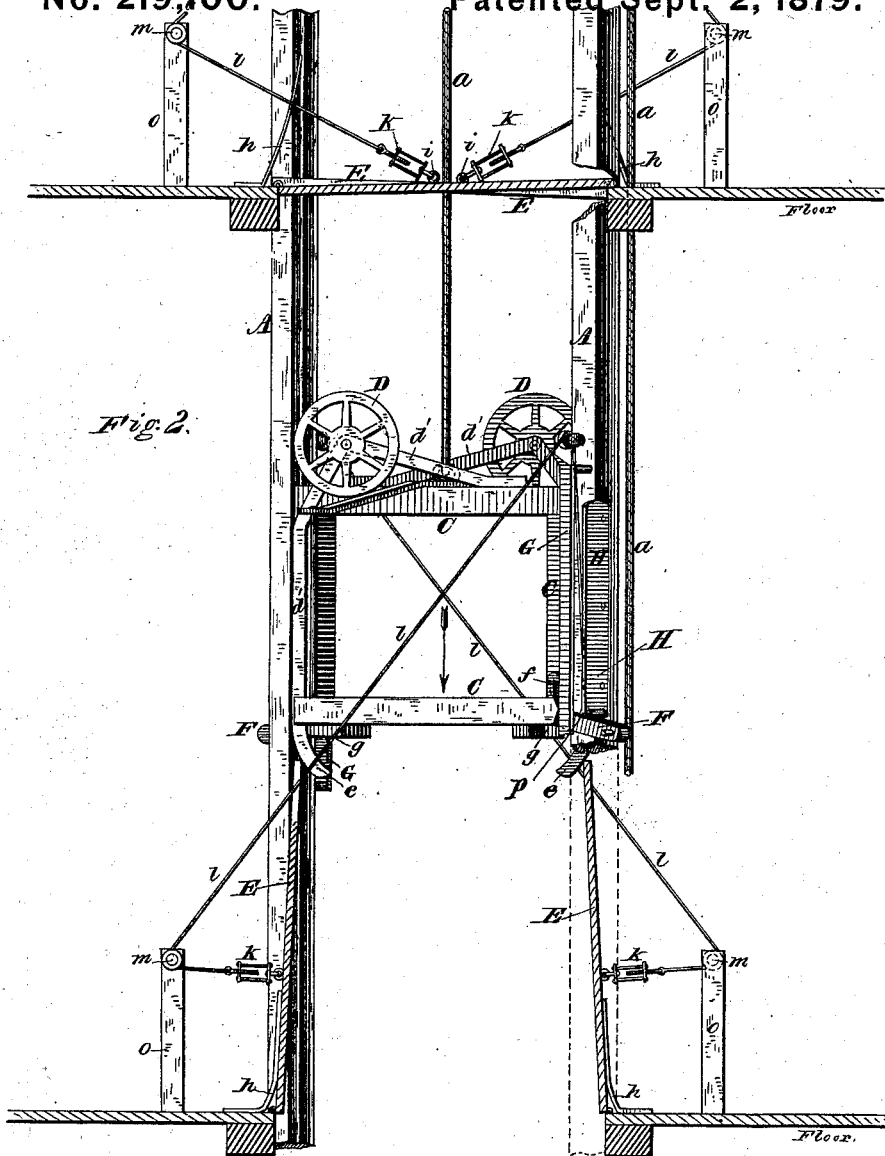
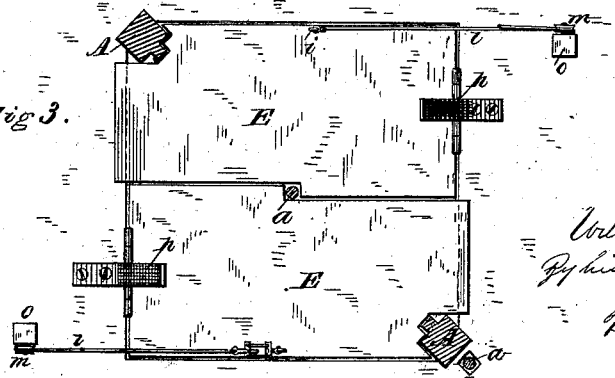


Fig. 3.



Witnesses.

Wm. H. Kelly
Atty.

Inventor.

William H. Kelly
By his Atty.
Harry King

UNITED STATES PATENT OFFICE.

WILLIAM H. KELLY, OF NEW YORK, N. Y.

IMPROVEMENT IN HATCHWAYS.

Specification forming part of Letters Patent No. **219,100**, dated September 2, 1879; application filed January 27, 1879.

To all whom it may concern:

Be it known that I, WILLIAM H. KELLY, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Hatch-Covers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to hatchways for elevators; and consists in certain new and useful improvements in mechanism for automatically opening and closing hatchway covers or doors as the elevator approaches, passes through, and recedes from each floor of a building or vessel containing a hatchway, either upon its ascent or descent.

In the accompanying drawings, Figure 1 represents a side elevation of my invention, with floor and hatchway in vertical section, showing the elevator as it is ascending through the hatchway. Fig. 2 represents a similar view, showing the elevator on its descent, with the doors or covers partly opened. Fig. 3 represents a horizontal section through line *x* of Fig. 1, showing the covers closed down upon the hatchway, and Fig. 4 represents an enlarged side elevation of the trip-dog mechanism.

A A are guide-posts, erected in the usual manner, located in transversely-opposite corners of the hatchway, provided on their face or faces with the usual guide tongues or grooves, and extending to any desired height.

A windlass or drum, *B*, operated in any well-known manner, is connected with and raises or lowers the elevator *C* by means of a rope or chain, *a*, which, secured at one end to the windlass, passes upward and over suitable pulleys *b b*, located upon the upper cross-head, ceiling, or floor, *c*, and then downward through small openings *d* between the hatch-covers to the elevator.

Upon the elevator I construct supplemental frames *d' d'*, which support large friction rolls or wheels *D D* on their upper ends, and are continued downward below the floor of the ele-

vator, forming cam-lugs *e e*, for purposes hereinafter to be more fully set forth. It is obvious that these cam-lugs can be constructed and secured to the elevator independently of the friction-wheel frame.

Upon that portion of the elevator-frame which operates with the guide-posts *A A* in guiding the elevator I provide shoulders *f*. A second set of shoulders, *g*, is formed upon the lower surface of the floor of the elevator, immediately below the shoulders *f*, said shoulders *f* and *g* operating with other mechanism, hereinafter to be described, for the purpose of securing the opening and closing of the hatch-covers at the proper time.

Each hatchway in each floor is provided with two covers, *E E*, hinged to the floor so as to open upward upon opposite sides of the hatchway, as shown in Fig. 2. Springs *h h* are provided, against which each cover presses when fully opened, and which aid in starting the covers downward when released. Weights, ropes, and pulleys can be substituted for these springs to accomplish the same result; but springs are preferably used.

Each cover is provided on its outer edge with a loop or eye, *i*. A turn-buckle, *k*, secured to one end of a cover-lifting rope or chain, *l*, is hooked in or otherwise secured to each of these eyes. These chains or ropes *l* are then passed obliquely upward over pulleys *m*, secured to uprights or wall *o*, and then over pulleys *n*, secured to the guide-posts *A A*, and are attached to vertically-sliding trip-dogs *F F*. The cover-lifting ropes are attached to their respective dogs at *p*, for the purpose of throwing the upper end of the dog outward, thus securing the engagement of the dog with the shoulders *f* or *g* on the elevator at the proper time. These dogs are placed transversely opposite to, and travel upward and downward independent of but in unison with, each other, in guides formed by guide-plates *G*, secured to the side of each of the posts *A*, and are more effectually retained in their proper position by means of pins or lugs *q*, which ride in a passage-way, *s*, formed by the rear or outward edge of the guide-plate *G* and a back stop-plate, *H*, as shown more particularly in Fig. 4. The lower end of this back stop-plate is provided with a friction-roller, *r*,

or is bent outward, as shown at Fig. 4, for the purpose of facilitating the release of the dog from the shoulder *g*.

It is obvious that either of the series of shoulders *f* and *g* can be dispensed with, and but one series used. I prefer to use both. It is also obvious that the trip-dog mechanism can be secured to the side of the wall instead of the guide-posts A.

For the purpose of more fully describing the operation of my invention, we will assume the elevator to be below one of the floors, with the hatch-covers closed and the elevator ascending, as at Fig. 1. As the windlass is operated, the friction-wheels or fixed friction-surfaces mounted on top of the elevator press upward against the bottom of the hatch-covers and open them upward. As the covers swing up, the trip-dogs, which are attached to them by means of ropes, as before described, descend in their respective guides and remain in their lowermost position until the lower surface of the elevator-floor has ascended beyond the top of the now open covers, when the springs *h h* press the covers downward or inward, forcing the outer ends of the trip-dogs into the shoulders *f*, when the covers, instead of closing with a slam, are allowed to descend slowly as the elevator ascends, being followed by the dogs, which are still retained in the shoulders *f*.

It is observable that the cam-lugs *e e* operate in the ascent of the elevator to prevent the hatch-covers from starting too suddenly to close, and thus prevent noise and overstrain on the dogs, as well as in the descent, as will be hereinafter more fully explained.

Assuming the hatch-covers to be closed and the elevator to be descending, the outwardly-projecting free ends of the dogs engage in the shoulders *g* on the bottom of the elevator, and are carried down with the elevator in its descent, thus throwing up the hatch-covers.

The back plate, H, is so constructed as to allow the dog to trip from the shoulder *g*, as shown by dotted lines in Fig. 4, at the moment the hatch-covers are nearly open, thus releasing the said covers when they are pressed against the cam-lugs *e e*, below the bottom of the elevator. These cam-lugs, in the descent of the elevator, press or wedge open the covers to their full extent, thus allowing the elevator to pass on down through the hatchway, the covers closing in over the same, being impelled by their own weight after having been

started by the springs *h h*, the friction-wheels D D preventing them from closing too rapidly.

The friction-wheels D D may be dispensed with, in which case the covers can be lifted in the ascent of the elevator by means of cam-surfaces constructed upon the upper portion of supplemental frames *d' d'*.

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

1. In a hatchway for elevators provided with hinged covers, the combination of the elevator C and trip-dogs F, which engage in stationary shoulders on the elevator, and which travel in guideways provided at their lower extremity with an opening, by means of which the dog is released from its engagement with said shoulders in the manner and for the purpose substantially as set forth.

2. The trip-dogs F, guide-posts A, guide-plate G, back stop-plate, H, passage-ways *s*, guide-lugs *q*, and friction-roll *r*, all combined and operating substantially in the manner and for the purpose specified.

3. The trip-dog mechanism, as described, the rope or chain *l*, pulleys *m* and *n*, uprights *o*, turn-buckle *k*, hinged covers E, and springs *h*, all combined and operating in the manner substantially as set forth.

4. The elevator C, provided with friction-surfaces D, cam-lugs *e*, and shoulders *f* and *g*, in combination with windlass B and connecting-ropes and pulleys, corner guide-posts A, trip-dog mechanism with connecting-ropes and pulleys, covers E, and springs *h*, all operating in the manner and for the purposes substantially as set forth.

5. In combination with a hinged-cover hatchway, the elevator C, provided with stationary shoulders, the trip-dogs F, and their guideways, provided with an escape-opening at their lower extremity, and the cam-lugs *e*, which project below the elevator-floor, and which prevent the hinged covers from overstraining the trip-dog mechanism in the beginning of their descent, substantially in the manner set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM H. KELLY.

Witnesses:

EUGENE E. DEXTER,
WM. R. MACFARLANE.