(No Model.) 2 Sheets—Sheet 1.

J. G. WILSON & W. A. HOLBROOK.

SELF CLOSING HATCHWAY.

No. 303,409. Patented Aug. 12, 1884.

Fig. 1.

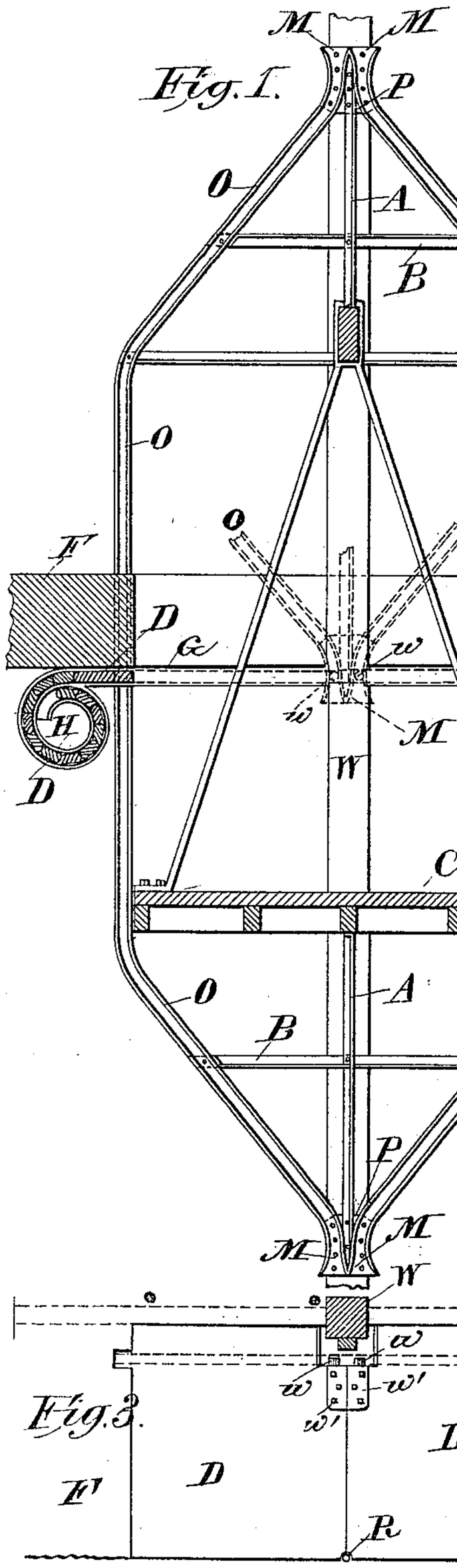


Fig. 2.

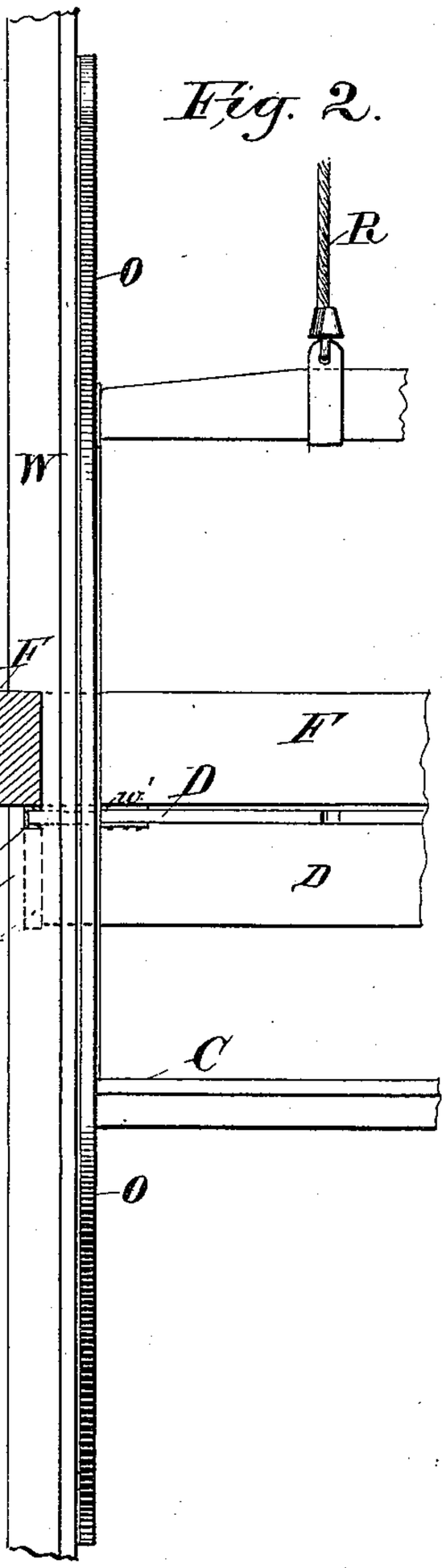
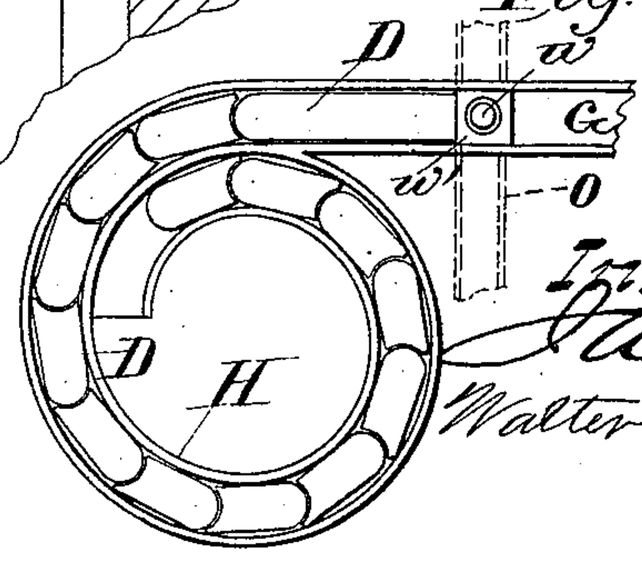


Fig. 3.

Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

J. G. WILSON & W. A. HOLBROOK.

SELF CLOSING HATCHWAY.

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Fig. 5.

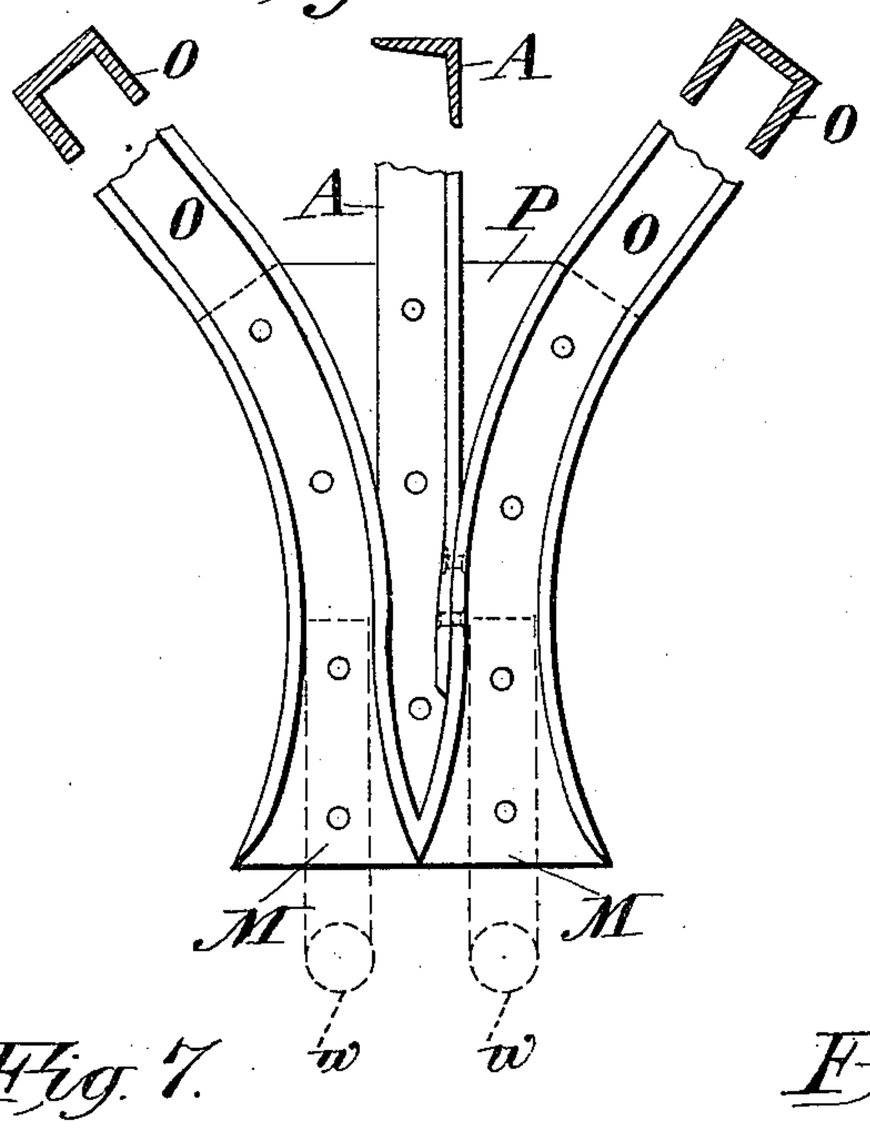


Fig. 6.

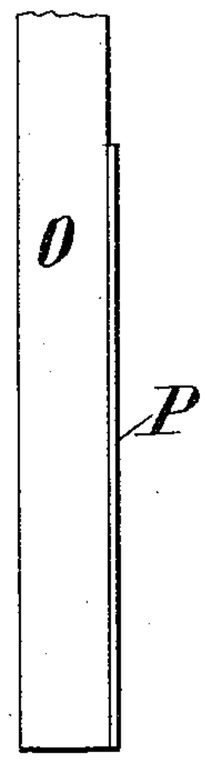
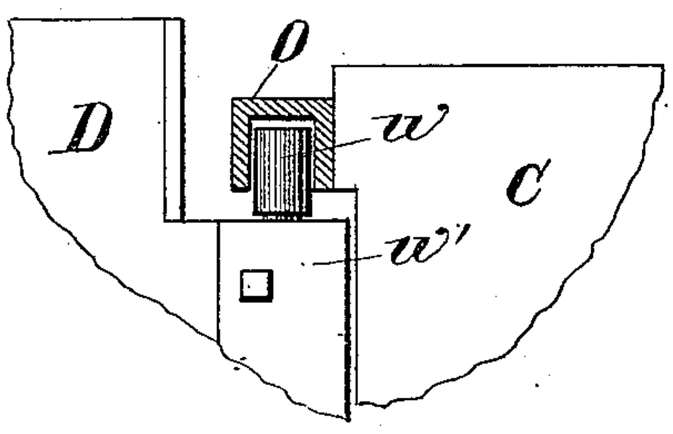


Fig. 7.

Fig. 9.



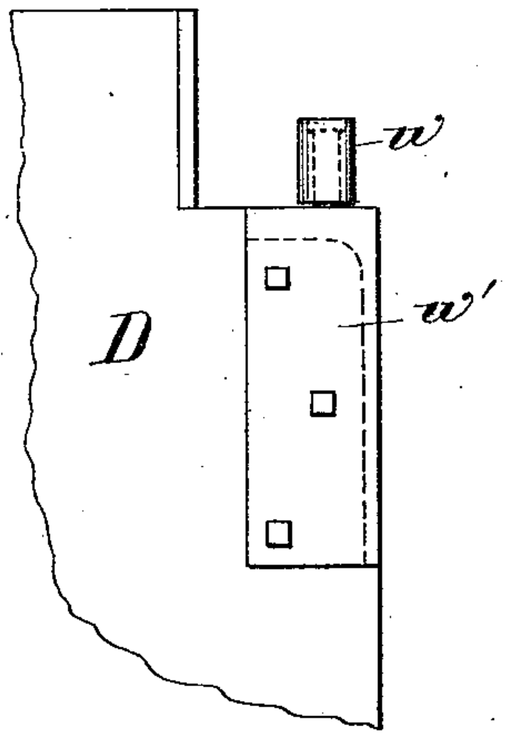
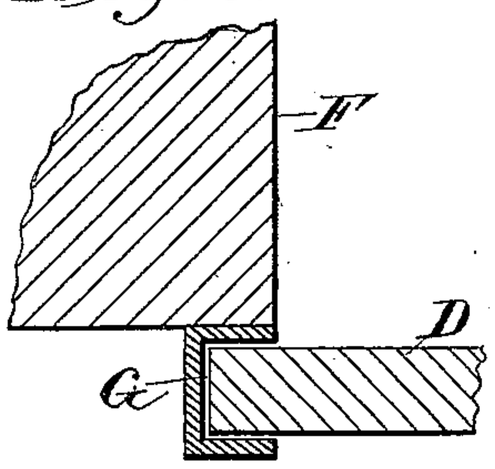
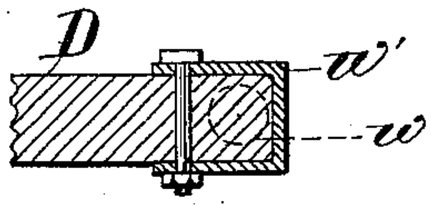


Fig. 8.





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UNITED STATES PATENT OFFICE.

JAMES G. WILSON, OF NEW YORK, N. Y., AND WALTER A. HOLBROOK, OF MILWAUKEE, WISCONSIN; SAID WILSON ASSIGNOR OF HIS RIGHT TO FRANCIS FORBES, OF NEW YORK, N. Y.

SELF-CLOSING HATCHWAY.

SPECIFICATION forming part of Letters Patent No. 303,409, dated August 12, 1884.

Application filed May 28, 1884. (No model.)

To all whom it may concern:

Be it known that we, JAMES G. WILSON, a subject of the Queen of Great Britain and Ireland, residing at New York, in the State of New York, and WALTER A. HOLBROOK, a citizen of the United States, residing at Milwaukee, in the State of Wisconsin, have jointly invented a new and useful Improvement in Self-Closing Hatchways, of which the following is a specification.

The present invention consists in certain novel features of construction and combinations of parts embodied in an improved "self-closing hatchway," the primary objects of the invention being to provide for the employment or use, in self-closing hatchways, of "rolling" shutters or doors adapted to be coiled, when opened, within a very small space, and thus to provide, without complication, for locating self-closing hatchways in corners of buildings, or with walls or beams which cannot be penetrated on one or all sides, as well as to reduce the cutting necessary to accommodate self-closing devices in hatchways already in use.

Two sheets of drawings accompany this specification as part thereof.

Figure 1 of these drawings is a sectional side view or vertical section of a self-closing hatchway illustrating this invention, the doors being represented in full lines as open and in dotted lines as closed. Fig. 2 is a half front view of the same as drawn in full lines in Fig. 1. Fig. 3 is a half-plan showing the doors closed. Fig. 4 is a detail edge view, on a larger scale, of one of the doors coiled as shown in Fig. 1; and Figs. 5 to 9, inclusive, Sheet 2, are additional detail views on a still larger scale, Fig. 5 being an inside view, with appended cross-sections, the former corresponding with a portion of Fig. 1; Fig. 6, an edge view of the parts shown in Fig. 5, or, in other words, a portion of Fig. 2 enlarged; Fig. 7, a horizontal section in the plane of the car-platform when the latter is level with the doors in passing through; Fig. 8, a vertical section through one of the door-guides; and Fig. 9, another plan. with an appended vertical section, showing more particularly one of the wheels on the doors, with the appurtenances thereof.

Like letters of reference indicate corresponding parts in the several figures.

F represents a floor through which a hatchway is extended; W, the vertical ways of the latter; C, its cage or "car," and R a lifting-cable or hoisting-rope, as illustrative means for propelling the car. Of these only the floor, as regards the opening therein and the ceiling around the latter, with the adjacent wall or walls, if any, require to be specially constructed, and these only as regards details of adaptation, which skilled architects are accustomed to supply.

G G represent four ways or guides, of channel-iron, secured to the ceilings at the sides of the floor-opening in parallel pairs, and terminating at their outer ends in helical coils H, one of which is clearly shown in Fig. 4; and D D represent rolling shutters or doors, of wood or metal, fitted to said guides G G, so as to slide freely therein, and coil themselves within said helical portions of the guides when forced into the latter, as shown in Figs. 1 and 4. These doors may be of any approved construction, and, if made of wood, may be "fire-proofed" in known ways. Coiled by helical extensions of their guides, as aforesaid, the doors remain closed, as shown in Fig. 3 and in dotted lines in Fig. 1, without fastenings, and at the same time, owing to their flexibility, causing them to rest solidly on those portions of their guides beneath them at all points, they are not liable to become accidentally opened. Said provision for coiling the doors is consequently preferred; but in modifications of our invention the doors may be coiled by means of spring-rollers, and fastened, when closed, by suitable catches in known ways.

The "joint" edges, as they may be termed, of the respective doors are notched to accommodate the ways W W and the hoisting-rod R between them when the doors are closed, as represented in Fig. 3, and are, moreover, provided with pairs of castings *w' w'*, which support laterally-projecting rollers or wheels *w w* within the way-notches and close to the respective vertical ways, as clearly seen in Fig. 3, and embrace and are strongly bolted to the door edges, as shown in detail in Fig. 9.

O O represent the opening and closing devices which coact with said wheels W W on the doors D. These consist of bars of channel-

iron, carried in two pairs by the car C at its respective sides, close to the ways W W, a pair for each door, with the grooves in the respective pairs facing each other, said bars being swaged at their ends, so as to provide each with funnel-mouths M, Figs. 1 and 5, at both extremities, and each bar bent intermediately, so that their mouths M, when located at mid-width of the car, so as to engage with and disengage themselves from the wheels *w* in the closed condition of the doors, as represented by dotted lines in Figs. 1 and 5, are connected by easy curves and inclines with straight portions parallel with each other at the front and back of the car. The channel-bars O, at each side of the car C, are solidly united with each other at both extremities by flat backing-plates P, Figs. 5 and 6, with the aid of rivets countersunk in the mouths M. They are furthermore united with each other and with the platform and elevated cross-beam of the car by vertical and horizontal braces A B, of angle-iron, as clearly shown in Fig. 1.

The number, proportions, and arrangement of the braces A B will vary with the requirements of different hatchways; and although we have shown only a double-door arrangement, which we prefer, a single door may be applied and operated in the same manner, as will be apparent to those skilled in the art. One pair of the helical coiling-extensions H of the door-guides G is shown in Fig. 1 within a shallow recess, X, in a wall close behind the hatchway. It is generally most convenient to locate a hatchway in a corner of a building, which raises the difficulty thus provided for. Ordinary sliding doors, which have heretofore been used in self-closing hatchways, could not be accommodated under such circumstances, save in front. A beam or beams may obstruct the way in front to an equal extent.

Our invention provides for conveniently furnishing the hatchway with uniform and simple self-closing doors under all circumstances where ordinary sliding doors could not be used, as well as under less trying circumstances. Doors may be coiled in boxes formed in thickness of floors, where coils may be deemed unsightly, the top of the doors being made nearly flush with the top of the floor.

The operation of our hatchway as it is represented by the drawings is in brief as follows: Suppose the car C to be passing downward through the opened doors D D, as represented in Fig. 1. The doors are held open by the straight vertical portions of the channel-bars O coacting with the wheels *w* of the the doors, and the doors themselves are coiled within the helical coiling-extensions H of their guides G. When the upper inclines of said channel-bars reach the door-wheels, the coaction of the inclines and wheels causes the doors to be drawn together, until finally the wheels enter and emerge from the upper mouths M, leaving the doors closed, as seen through the floor-opening in Fig. 3. In returning upward the same funnel-mouths, M, providing for any play of the car, catch the wheels *w* within their wide openings, and as the car ascends, the wheels being deflected outward by said upper inclines of the channel-bars, the doors are opened, and in turn are again held wide open by the straight vertical portions of said channel-bars, and are in this condition when the platform of the car is level with the floor, as represented in Fig. 7. Finally, if the ascent of the car be continued, the doors are again drawn together, this time by the lower inclines of the channel-bars, and are left closed by the lower mouths M, as may be represented by the dotted lines in Fig. 1. In this way the operation proceeds uniformly and in a perfectly automatic manner without the aid of weights or springs.

Having thus described our said improvement in self-closing hatchways, we claim as our joint invention and desire to patent under this specification—

1. A self-closing hatchway provided with rolling shutters or doors and means, substantially as herein specified, for coiling the same within contracted space when the hatchway is opened.

2. The combination, in a self-closing hatchway, substantially as herein specified, of a rolling shutter or door, a pair of horizontal channel-iron guides, and helical extension of said guides, within which the shutter or door is adapted to coil itself up within contracted space, in the manner set forth, when the hatchway is opened.

3. The combination, in a self-closing hatchway, substantially as herein specified, of a rolling shutter or door provided with a pair of laterally-projecting wheels at its joint edge, and a pair of channel-bars carried by the cage or car, having funnel-mouths at their extremities to catch said wheels, inclined portions to coact with said wheels in opening and closing said door, and intermediate straight portions to hold the door open.

4. The combination, in a self-closing hatchway, substantially as herein specified, of a pair of rolling shutters or doors opening toward the front and back, respectively, and provided with laterally-projecting wheels at their joint edges, and two pairs of channel-bars carried by the cage or car and adapted to coact with said wheels to operate the doors simultaneously, to pass the car through in either direction, and to close the doors behind it, without the aid of weights or springs, in the manner set forth.

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