

J. STEINMAN & J. SCHOLL, Sr.
Self-Closing Hatchway.

No. 218,836.

Patented Aug. 26, 1879.

Fig. 1.

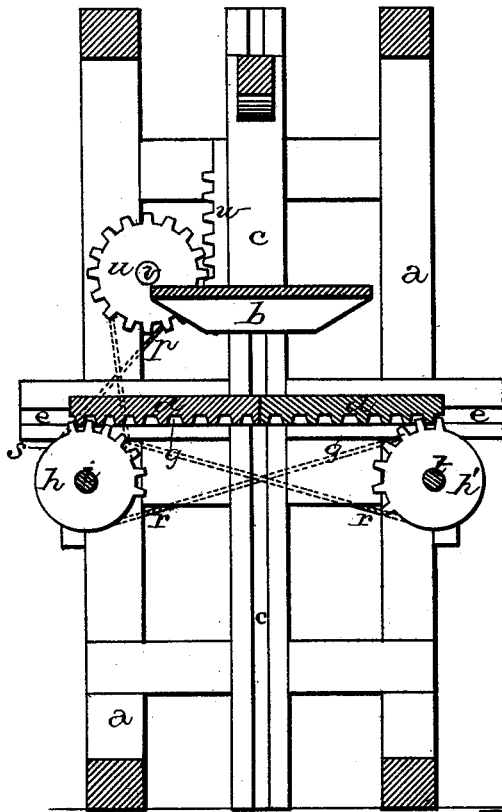


Fig. 2.

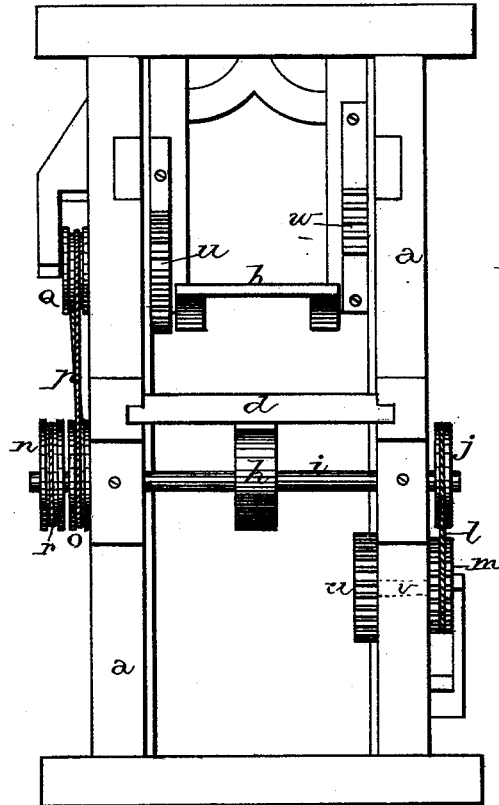
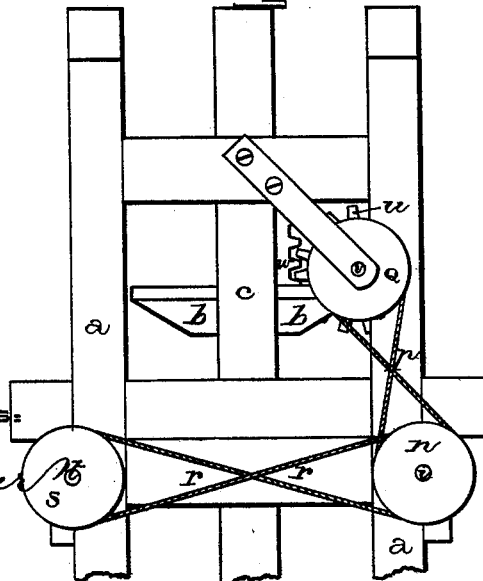


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JACOB STEINMAN AND JOHN SCHOLL, SR., OF GRAND RAPIDS, MICHIGAN.

IMPROVEMENT IN SELF-CLOSING HATCHWAYS.

Specification forming part of Letters Patent No. **218,836**, dated August 26, 1879; application filed July 5, 1878.

To all whom it may concern:

Be it known that we, JACOB STEINMAN and JOHN SCHOLL, Sr., of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Self-Closing Hatchways; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to an improvement in self-closing hatchways; and it consists in forming cogs on the carriage, on opposite sides thereof, and placing cog-wheels above and below each floor, and connecting these cogs with suitable gearing, so that as the carriage rises the trap-doors will be thrown open before the carriage, and then close after it has passed up through them, as will be more fully described hereinafter.

Figure 1 is a vertical section of our invention. Fig. 2 is a side elevation; and Fig. 3 is a reverse view of Fig. 1, showing the connecting-belts.

The accompanying drawings represent our invention.

a represents a suitable frame-work, extending up from floor to floor, and up through which the carriage *b* moves back and forth upon the central guiding-timbers, *c*.

At every floor, where the carriage passes up through, there are two horizontally-sliding doors, *d*, which move back and forth in the grooves *e*. In or upon the under side of each of these doors is formed a rack, *g*, in which the wheels *h h'* on the shafts *i t* engage, for the purpose of moving the doors back and forth to open and close the hatchway.

Upon one end of the shaft *i* is placed a single pulley, *j*, from which passes a belt or chain, *l*, around the pulley *m*, and upon the other end are secured the two pulleys *n o*.

From the inner pulley passes the crossed belt or chain *p*, up over the pulley *q*, which corresponds to the lower pulley, *m*, on the opposite side of the frame.

From the outer pulley passes the crossed

chain or belt *r*, over the pulley *s* on one end of the shaft *t*. This shaft *t* corresponds to the one *i*, and is provided with a wheel, *h'*, which engages with and moves the second door, *d*.

Upon the inner ends of each of the shafts *v*, carrying the pulleys *m q*, is secured a spur-wheel, *u*, which engages with the short racks *w* on the carriage *b*, and moves the operating mechanism above described through the shaft *i*, so as to open and close the doors *d*.

The doors *d* are always to be kept closed, except when the carriage is passing through them, so as to prevent any accidents. As the carriage rises, the rack *w* on that side meshes with the lower wheel, *u*, which causes the pulley *m* and chain or belt *l* to transmit the motion to the two shafts *i* and *t*, and move the two doors wide enough open to allow the carriage to pass up between them. As the carriage moves on up after passing through the floor, the other rack *w* meshes with the upper wheel, *u*, so as to reverse the motion of the shafts, and thus close the doors again.

Having thus described our invention, we claim—

1. In a self-closing hatchway, the carriage *b*, having a rack, *w*, secured to it on two of its sides, in combination with the wheels *u*, placed above and below the floor, and connecting devices, substantially as shown, whereby one rack and wheel cause the doors *d* to open as the carriage ascends, and the other rack and wheel cause the doors to close after the carriage has passed through, substantially as shown.

2. The combination of the frame *a*, uprights *c*, carriage *b*, having the two racks *w* on opposite sides, doors *d*, having the racks *g*, shafts *i t*, provided with wheels *h h'*, wheels *u*, placed above and below the doors, and connecting belts or chains, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 27th day of June, 1878.

JACOB STEINMAN.
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Witnesses:

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