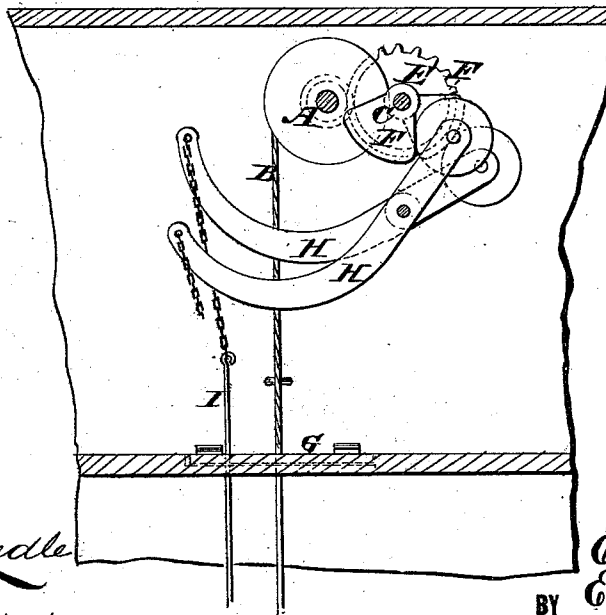
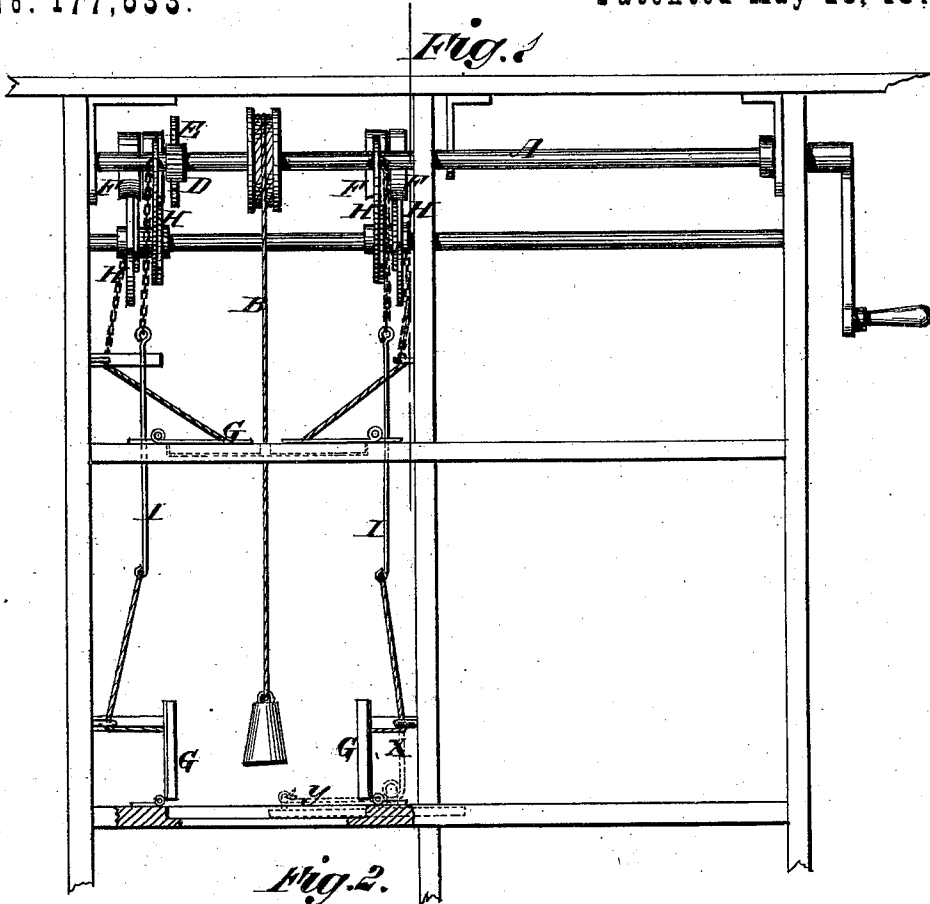


E. M. HACKETT & E. MOESSNER.

HATCHWAYS.

No. 177,633.

Patented May 23, 1876.



WITNESSES:

A. McAndee
A. F. Terry

INVENTOR:

E. M. Hackett
E. Moessner
BY *Wm. J. [Signature]*
ATTORNEYS.

UNITED STATES PATENT OFFICE

EDWARD M. HACKETT AND ERNST MOESSNER, OF NEW YORK, N. Y.

IMPROVEMENT IN HATCHWAYS.

Specification forming part of Letters Patent No. **177,633**, dated May 23, 1876; application filed July 10, 1875.

To all whom it may concern:

Be it known that we, EDWARD M. HACKETT and E. MOESSNER, both of the city, county, and State of New York, have invented a new and Improved Hatch Opening and Closing Apparatus, of which the following is a specification:

Our invention consists in a new arrangement of the cams, cam-levers, connecting cords or chains, whereby the number of elements required to operate hatchway-doors is lessened, space economized, and the whole mechanism simplified and rendered more desirable.

Heretofore hatchway-doors have been opened and closed by mechanism consisting of cams connected to the hoisting-drum by intermediate gearing, to which cams were arranged levers, the cams being placed between the pivotal points of the levers, and the ends of the levers retaining the cords or chains passing down to the levers attached to the rear of the hatchway-doors. To each of said last-mentioned levers was attached a weight to counterbalance the hatchway-door. This combination and arrangement of mechanism necessitated additional space at the rear of the hatchway-door, in which the parts could conveniently operate, which made the whole device objectionable as a practical thing, and prevented its introduction. The constant strain of the weights upon the cam-levers and cams was also another objection.

We have arranged the pivotal points of the levers between the cams and the ends of the levers to which the cords or chains are attached, and have connected the cords or chains direct to the hatchway-doors, thereby enabling us to dispense with the levers at rear of doors, and weights attached thereto, and to economize the space heretofore required for the operation of such last-mentioned levers and weights.

Figure 1 represents a side elevation of the apparatus and section of one of the hatchways, and Fig. 2 represents a section taken on the line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A is the shaft, on which is placed the drum carrying the hoisting-rope B. C is a cam-shaft, gearing with it by wheels D and E, on which shaft is a series of cams, F, one set for each set of hatchway-doors G, and with each set of cams are levers H, the outer ends of which levers are connected directly to the doors by cords or chains I, so as to open such doors as the carriage or other load approaches, and to close, or allow them to close, after the load passes. The pivotal points of these levers are arranged between the cams and the ends of the levers containing the cords or chains which connect directly with the hatchway-doors, thus giving greater capacity in the cam-levers for opening the doors, and dispensing with the levers at the rear of the doors and their accompanying weights, and economizing the space heretofore necessary for the retention and play of such additional mechanism of door levers and weights.

In case there is only one door, one cam and cam-lever so arranged only need be employed to each floor; and, by a system of double chains or cords, one cam and cam-lever may be made to serve for two doors.

It will be understood that the apparatus is alike applicable for swinging and sliding doors; but, in the latter case, springs or cords and weights will be employed to move the doors one way, whereas in this case they close by gravity.

The dotted lines *x y* in Fig. 1 indicate the arrangement for sliding doors.

We claim—

The combination of the hoisting-drum and series of cams connected thereto by intermediate gearing with a series of cam-levers so arranged that their pivotal points shall be between such series of cams, and the cords or chains connected directly from said levers to the respective hatchway-doors, substantially as described.

EDWARD M. HACKETT.
ERNST MOESSNER.

Witnesses

FRANK BLOCKLEY,
T. B. MOSHER.