

R. H. Martin.

Sheet 1-2, Sheets.

Hatchway.

N^o 77,744.

Patented May 12, 1868.

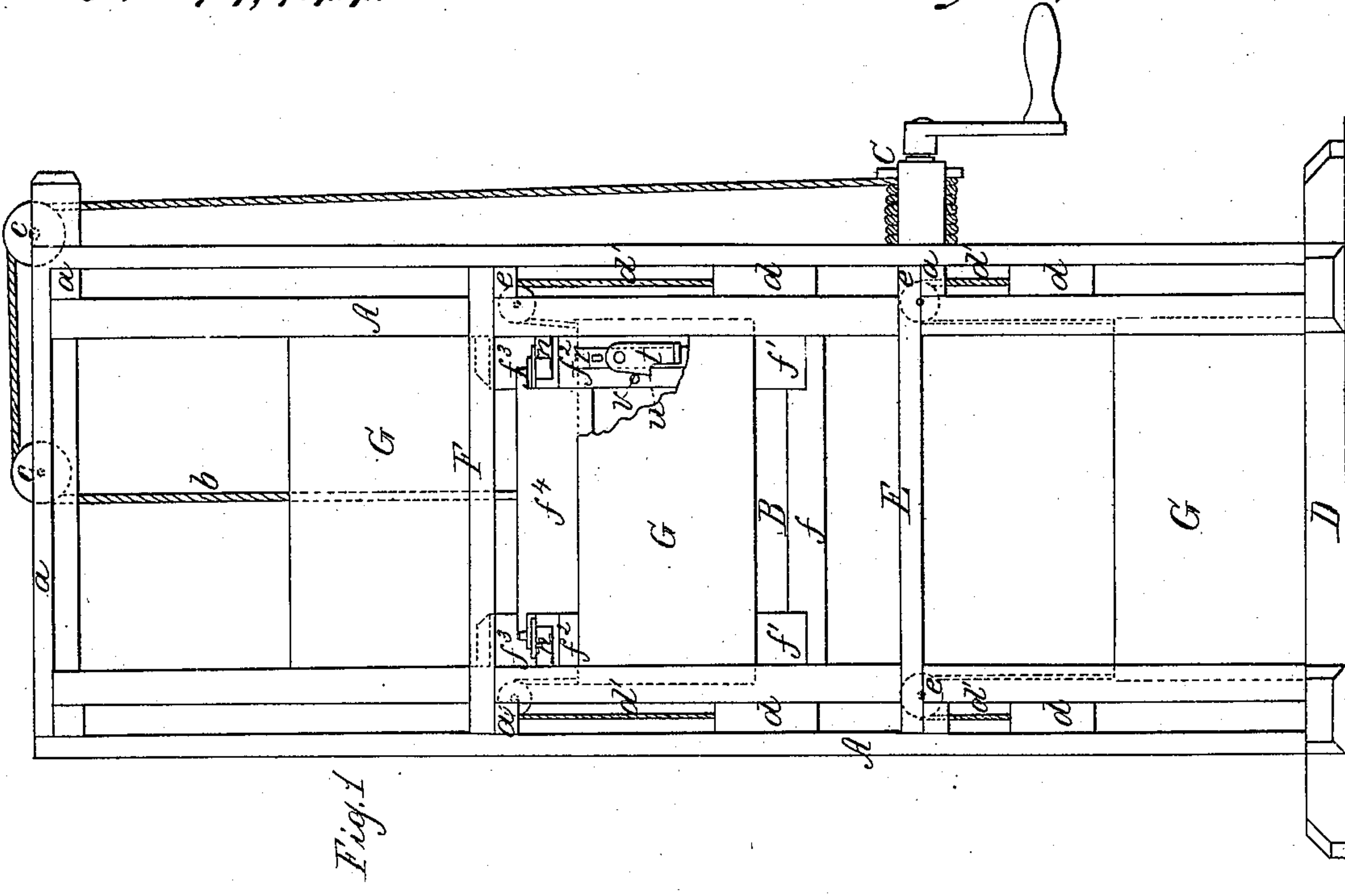


Fig. 1

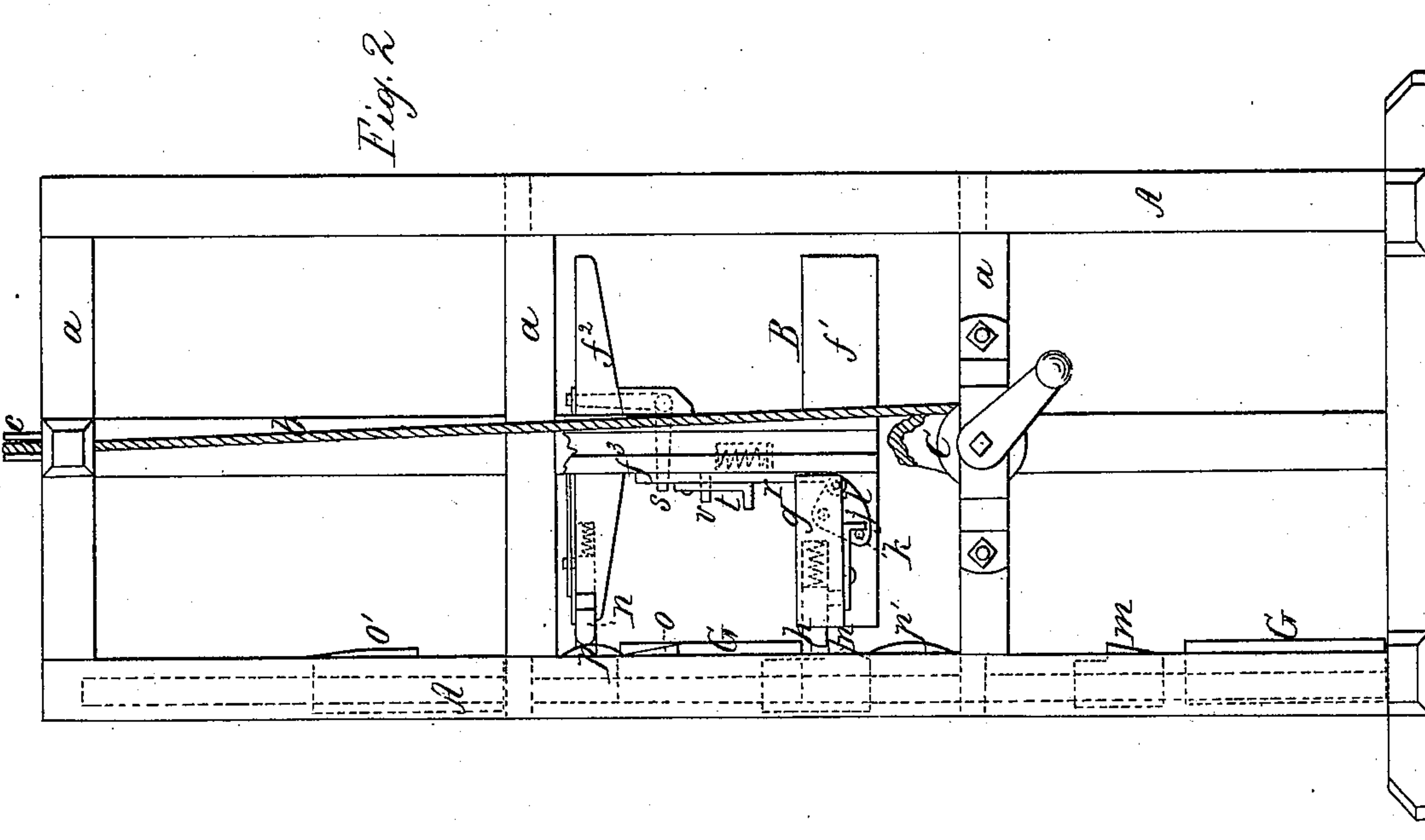


Fig. 2

Witnesses
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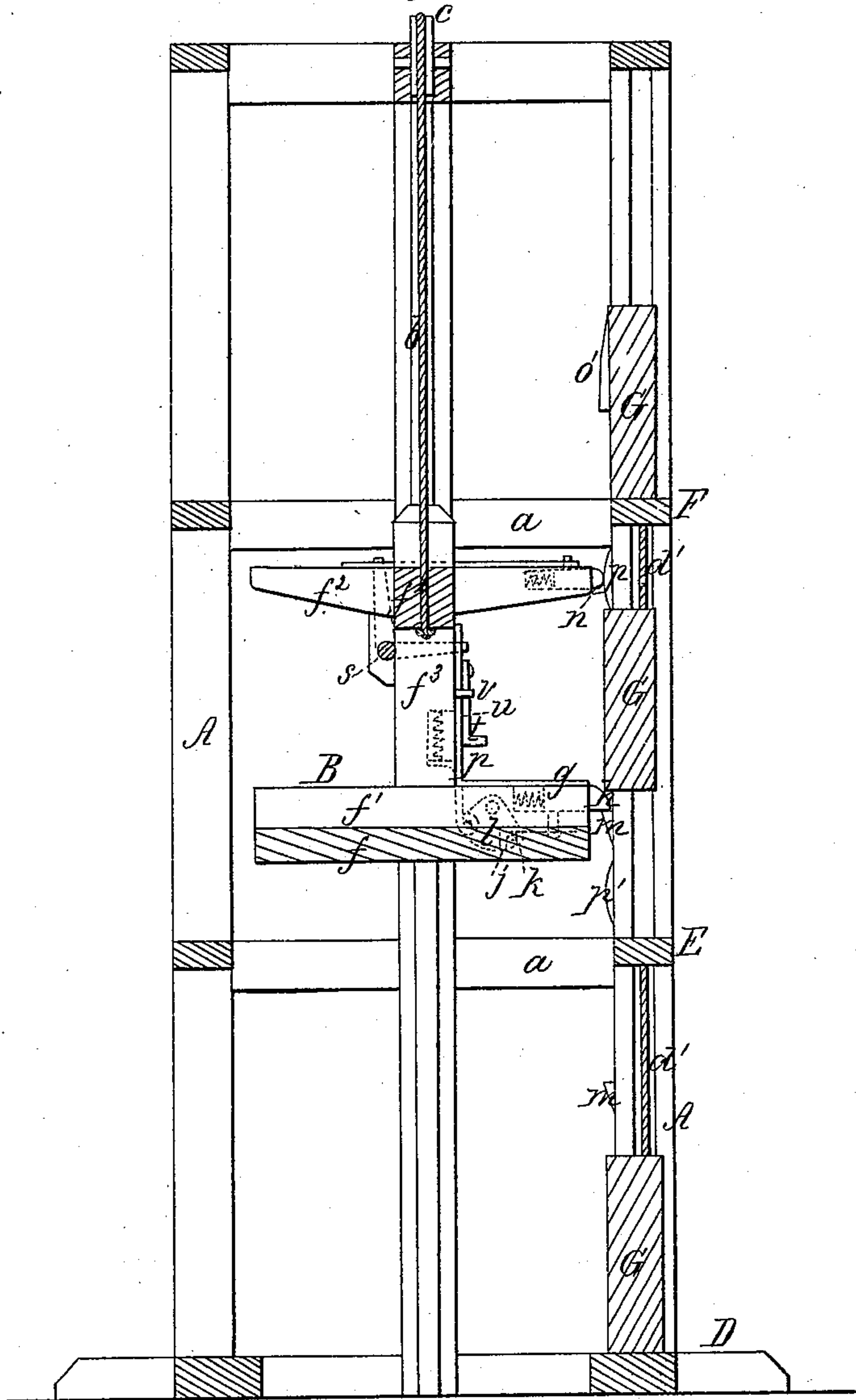
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Fig. 3



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UNITED STATES PATENT OFFICE.

ROBERT H. MARTIN, OF STATEN ISLAND, NEW YORK.

IMPROVEMENT IN SAFETY-HATCHES.

Specification forming part of Letters Patent No. 77,744, dated May 12, 1868; antedated April 25, 1868.

To all whom it may concern:

Be it known that I, ROBERT H. MARTIN, of Staten Island, in the county of Richmond and State of New York, have invented a new and useful Improvement in Safety Hatches or Hatchways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a front elevation of a hatch or hoistway with my improvement applied thereto; Fig. 2, a side elevation thereof, and Fig. 3 a vertical section of the same.

Similar letters of reference indicate corresponding parts throughout the several figures.

The many serious and often fatal accidents which have from time to time occurred in consequence of the exposed state of hatch or hoistways generally in stores, warehouses, and other places have led to various suggestions whereby greater security might be given to these structures or contrivances, but as a general thing the closing of the hatch on any one or more floors during the intervals when goods are not being raised or lowered up or down the hatchway from one floor to another is left to the caprice or attention of those engaged on the hoist or to the warehouseman whose duty it is to receive and deliver the goods. This is culpable neglect, however, as automatic or self-closing hatches are perfectly practicable; but to make them advantageous there are many requirements or desiderata to be provided for, and these my invention fully meets.

The nature of my improvement consists, first, in furnishing the hatchway on any number or all of the floors with a counterpoised guard operating in combination with the hoist, and that, while at all times it leaves the hatchway open, or may do so, to facilitate communication from floor to floor or top to bottom of the hatchway, forms a sure protection against accident, and that is opened by the hoist with but little or no labor, or may be opened by hand independently of the hoist, but is self-closing; and my invention further consists in a novel mode of automatically raising or opening and keeping open any one or more of the guards for receiving and delivering goods by or from the hoist on any one or all of the floors in succession, the guards being self-closing as the hoist passes the one or more floors so opened to the hatchway; and my invention further

consists in a combination of devices whereby the man on the hoist may at pleasure cause said hoist to pass any one or more floors without raising their guards, and automatically lift the guard only of a particular floor to receive or deliver goods from or to that floor, or may at pleasure unship the hoist from gear with the guards of the several floors, so as to obtain a clear run of the hoist from top to bottom of the hatchway, or vice versa, the safety-guards on or to all the floors being kept closed.

To enable those whom my invention concerns as regards construction and operation to make and use the same, I will now proceed to describe it with reference to the accompanying drawings, in which the uprights marked A and cross-ties *a* represent the frame-work of a hatchway in a store or warehouse, and the back and sides of which may be boxed or walled in. If it, however, be desired to have more than the front open to the several floors, then a similar arrangement of the safety-guards, hereinafter described may be applied to such communicating side or sides as well.

The mechanism for operating the several safety-guards, it will be evident to almost any mechanic, may be variously changed or modified without departing from the principle of my invention, only one practicable combination of devices being here selected to illustrate my invention, and in this connection I would observe that the counterpoised safety-guards, instead of being arranged to lift vertically, may, by only slightly modifying the parts, move to open and close in different directions. I however prefer a vertical action of them.

The hoist B itself and windlass C may be of any approved construction, and the lifting chain or rope *b* and its blocks or pulleys *c*, by which power is communicated from the windlass C to the hoist B, should be arranged or regulated to suit the character or weight of the goods to be raised or lowered, and other circumstances.

D represents the ground-floor, and E and F upper stories or floors, through which the hatchway passes. Beneath the ground-floor there may be an extension of the hatchway communication with a basement or cellar. Each of said floors is closed against dangerous exposure or opening to the hatchway by a board or shutter, G, which forms the safety-guard. These guards G are shown as extending for a

safe height across the front of the hatchway, and so as to slide up and down in its frame-work. They are counterpoised, or nearly so, by balance-weights d , sliding in vertical openings in the frame-work, and connected to the guards G by chains or ropes d' , passing over pulleys e , and so that they (the guards) shut down or close and are kept closed by their own weight, but may be opened or raised by but a small extension of power in consequence of their being nearly balanced.

The hoist B may be made up of a platform, f , lower and upper side beams, f' f^2 , uprights f^3 , and a cross-tie, f^4 , the uprights f^3 , it may be, in the operation of the hoist, sliding in or on guiding ways or strips furnished the hatchway, and the cross-tie f^4 serving to attach the lifting-rope b to.

Secured to the front ends of the lower beams, f' , of the hoist are boxes g , which contain bolts h , that shoot outward by means of springs i , and are arrested in their outward throw by lips j of a lower attachment to the bolts striking stops k , which project from pivoted plates l . The balance-weights d are provided on their inner sides or faces with teeth m , which are flat at top, but beveled underneath.

Supposing the safety-guard G of the ground-floor to be raised by the action of the hoist on its balance-weights, as hereinafter described, and the platform f of the hoist to be level with said floor, then the bolts h will occupy an outward thrust above or on the top of the teeth m of the lower balance-weights. On starting to raise the hoist the lower guard G will commence to fall or close as the bolts h cease to keep the lower balance-weights down, the guards, be it remembered, being slightly heavier than the weights. The lower guard G being closed, the hoist, as it continues to rise toward the first upper floor E , will, by the action of similar upper and inner spring-bolts, n , connected with the upper side beams, f^2 , of the hoist, commence to lift the second guard G by reason of the upper bolts, n , coming in contact with projections o , flat beneath but beveled above and attached to said guard. The hoist still rising, the second guard G will, by this connection of the hoist with it, be lifted upward till fully open, when, if it be desired to receive or deliver goods from or to that floor, the guard may be kept open by stopping and, if necessary, locking the hoist. If, however, it is required to elevate the hoist to the floor F above, then the upper bolts, n , as the hoist rises past the under floor E , are released from their hold on the second guard G by said bolts riding over arched projections p on the frame-work of the hatchway, and which causes the upper bolts, n , to be pressed inward out of gear with the guard-projections o , thereby relieving said guard, which gently drops or closes by its slightly-excessive weight over that of its counterpoise. About this time, too, or shortly before the second guard is released, the lower bolts, h , are shot inward by the combined action of outer stationary arched pro-

jections, p' , and the bevel of the teeth m of the second guard's balance-weights as said lower bolts pass these parts or devices. After passing, however, the lower bolts again shoot outward over said teeth. The hoist continuing its ascent, the upper bolts, n , next come in contact with projections o' on the top guard G , similar to the projections o on the second guard, and lift or open the upper guard till fully open, when the platform of the hoist will be on a level, or thereabout, with the upper floor F . In this way any number in succession of guards, according to the number of floors the hoist is required to accommodate, may be raised and allowed to drop or close during the ascent of the hoist. In the descent of the hoist, also, a similar automatic action takes place to lower goods from one floor to the other. Thus, supposing the hoist to be at the top and the top guard G open, then as the hoist descends the upper bolts, n , leaving the projections o' of the top guard, the latter closes, and on the lower bolts, h , striking the teeth m of the balance-weight of the second guard G the hoist becomes geared with said guard to raise it by depressing the balance-weights thereof, and while doing so the upper bolts, n , are pressed inward by riding over the stationary arched projections p to avoid contact with the guard or its projections. The hoist having raised the second guard G , and it being required to again and farther lower the hoist from the second guard-floor E to the ground-floor D , the hoist in descending causes the lower bolts, h , to ride over the stationary arched projection p' , which presses them inward, and, releasing them from their lap on their teeth m of the second guard's balance-weights, causes the latter guard to drop or close, and when the lower bolts reach the teeth m of the lower guard they, as the hoist farther descends, lift or open said guard by depressing its weights, the upper bolts, n , meanwhile riding over the stationary arched projections p' to avoid contact with the lower guard or its projections. It, however, is not always necessary in the working of the hoist, either in ascending or descending, to stop at each floor. Consequently it is useless and injurious in point of wear, as well as adding slightly to the labor of working the hoist, to raise and lower the safety-guards of those floors it is not designed to stop at. To obviate this I connect the upper and lower bolts, h and n , with a vertical slide, r , which is attached at its lower end to the pivoted plate l of the lower bolts, and at its upper end by a bell-crank, s , to the upper bolts, so that on lifting said vertical slide r the two sets of bolts will be drawn inward and unshipped from gear with the safety-guards as they pass them, and may be kept or locked out of gear by the man traveling on the hoist turning a lever, t , which may also answer to lift the vertical slide r till a lip, u , on said lever catches on a stop, v . By releasing the lever t from its catch on the stop v the spring-bolts fly outward again, so that connection of the hoist with the safety-guards

is or may be re-established. This gives the desired facility to the man on the hoist of lifting the guard of and stopping at any one floor and passing the others, or of running the hoist right through, up or down, without stopping or operating any of the intermediate guards. By hanging the guards independently of the hoist and nearly balancing them they may also be easily raised by hand if it be desired to intercept the hoist; but on releasing the hand they become self-closing, which gives them their character of safety. In some cases the guards may not be counterpoised.

What I claim herein as new and useful, and desire to secure by Letters Patent, is—

1. The combination, with a hatchway-hoist to the several floors or any of them of a warehouse or other structure, of partially balanced or counterpoised safety-guards, substantially as specified.

2. The combination, with rising and falling or opening and closing safety - guards to a hatchway on any or all of the floors of a building, of self-shooting bolts on the hoist operating automatically to open the guards both in the ascent and descent of the hoist, essentially as shown and described.

3. Providing the hoist with unshipping or back locking gear to its self-shooting bolts for operation at pleasure of the latter with any one or more of the safety-guards without lifting the others on intermediate floors, or for running the hoist up and down the hatchway without stopping at or raising any of the guards, substantially as herein set forth.

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Witnesses:

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