

(No Model.)

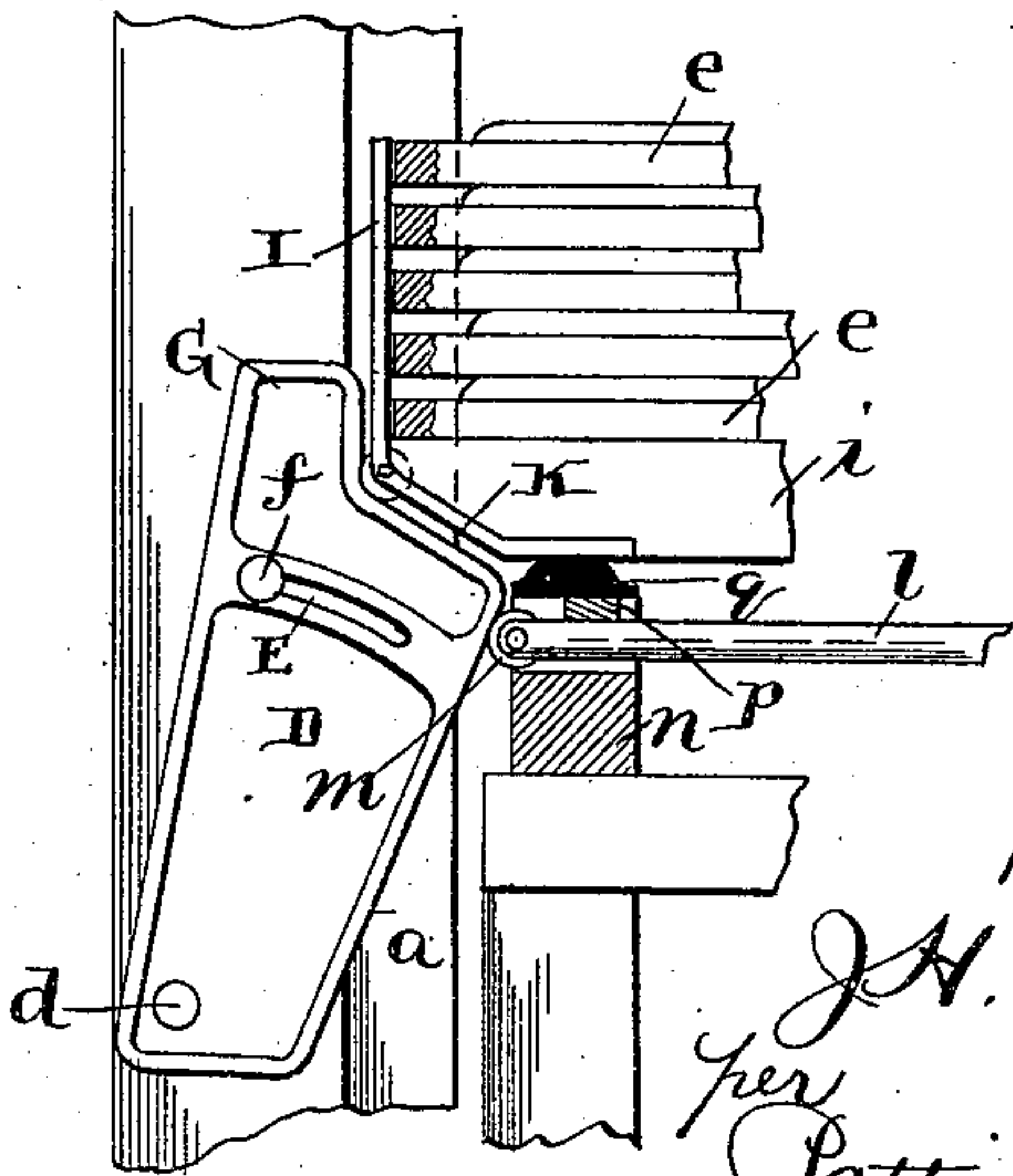
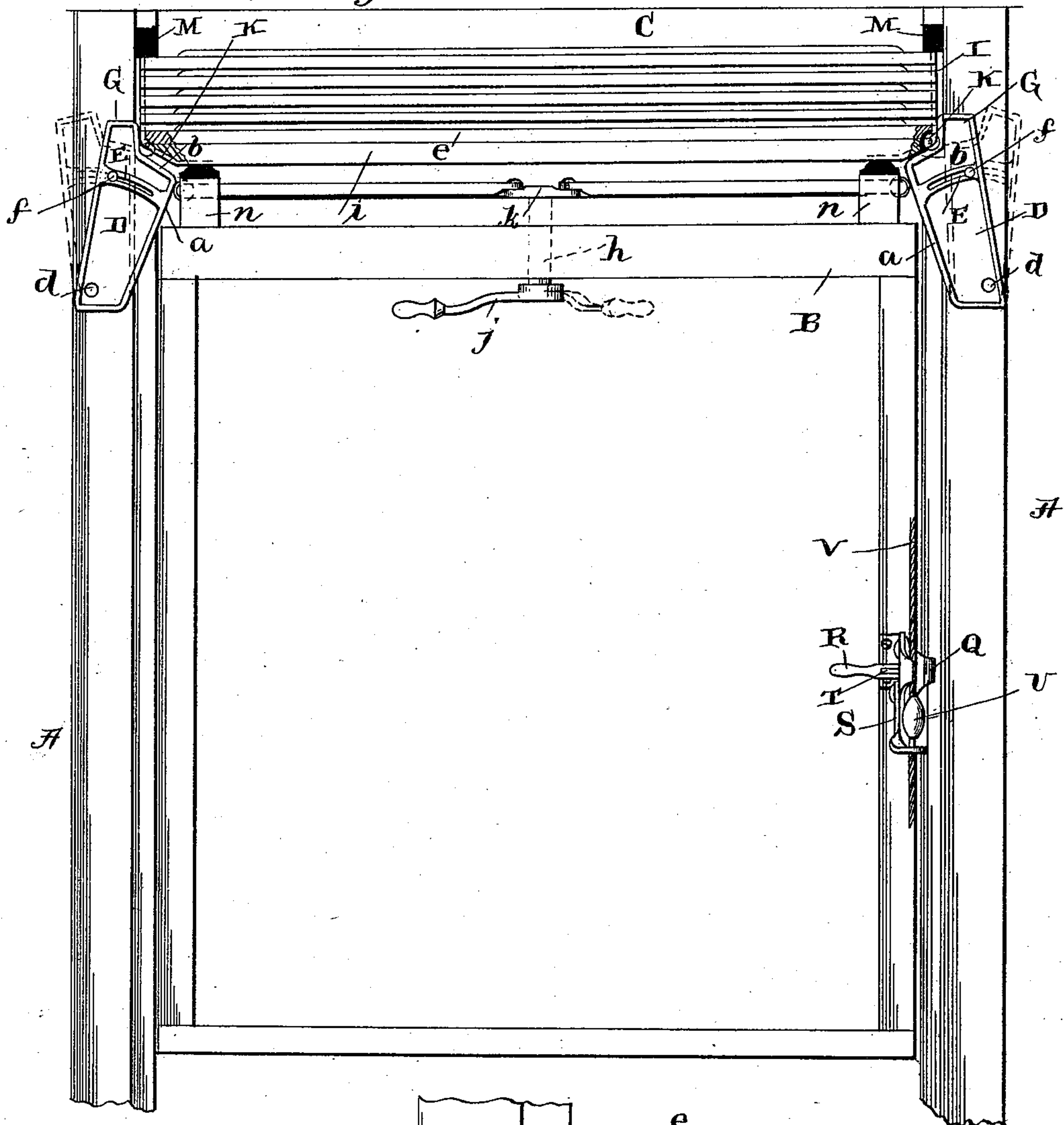
2 Sheets—Sheet 1.

J. H. McCLURE.

# FIRE DOOR FOR ELEVATOR SHAFTS.

No. 549,524.

Patented Nov. 12, 1895.



WITNESSES.

Geo. C. French,

James V. Berard

INVENTOR.

J. A. McClure

her  
Pattison Nesbit, attys

(No Model.)

2 Sheets—Sheet 2.

J. H. McCLURE.  
FIRE DOOR FOR ELEVATOR SHAFTS.

No. 549,524.

Patented Nov. 12, 1895.

Fig. 2.

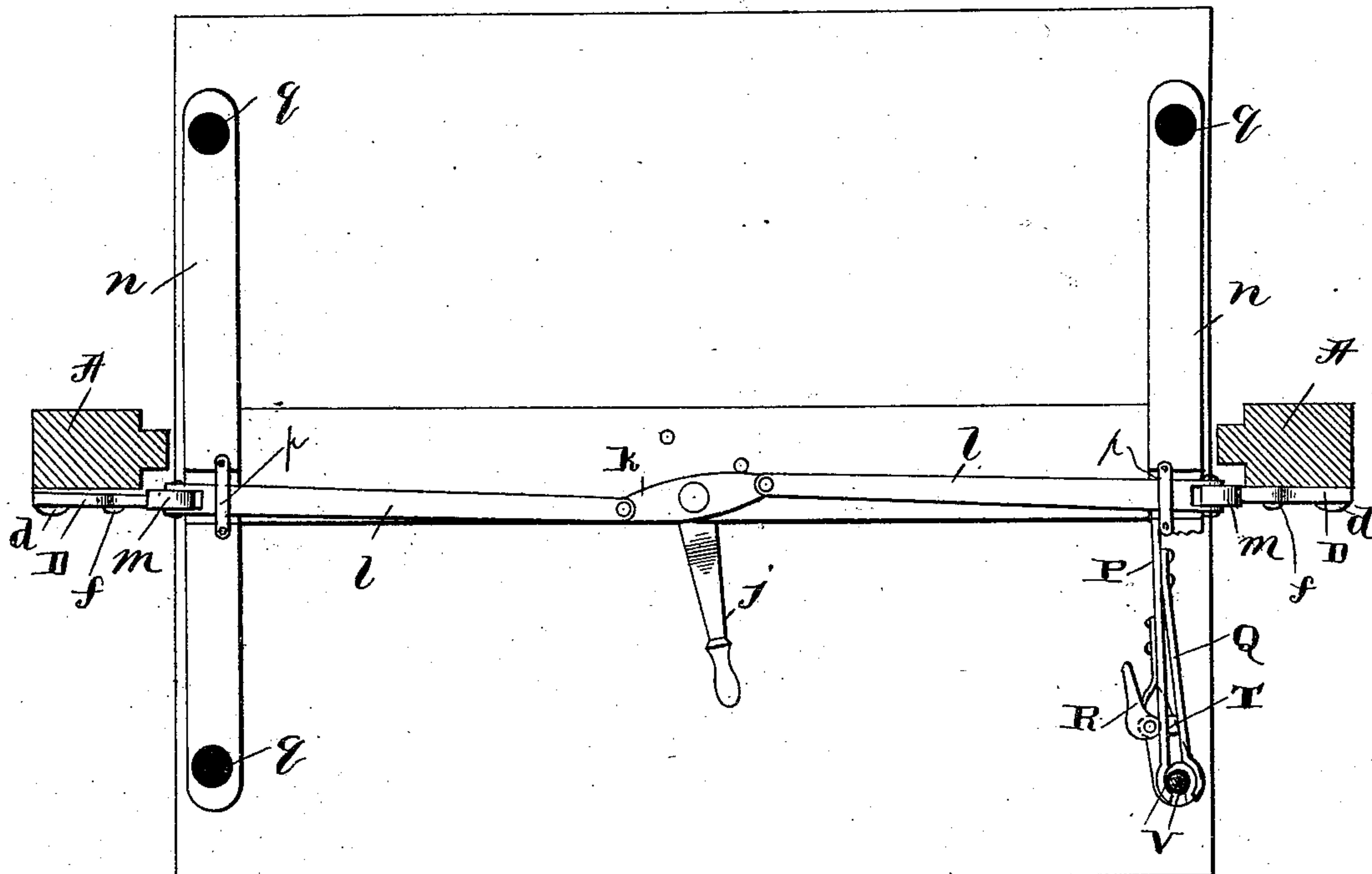
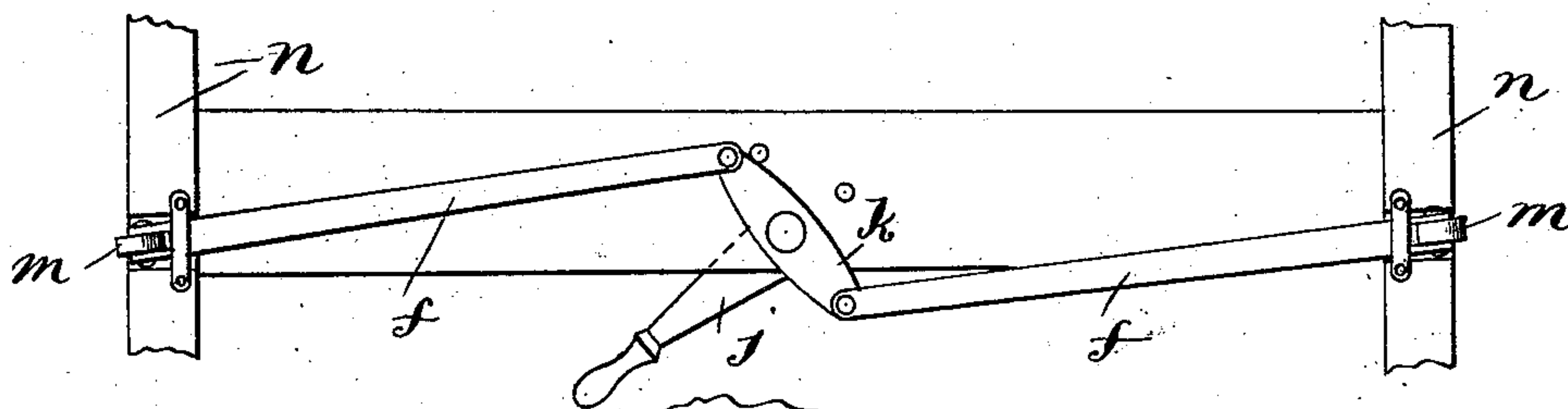
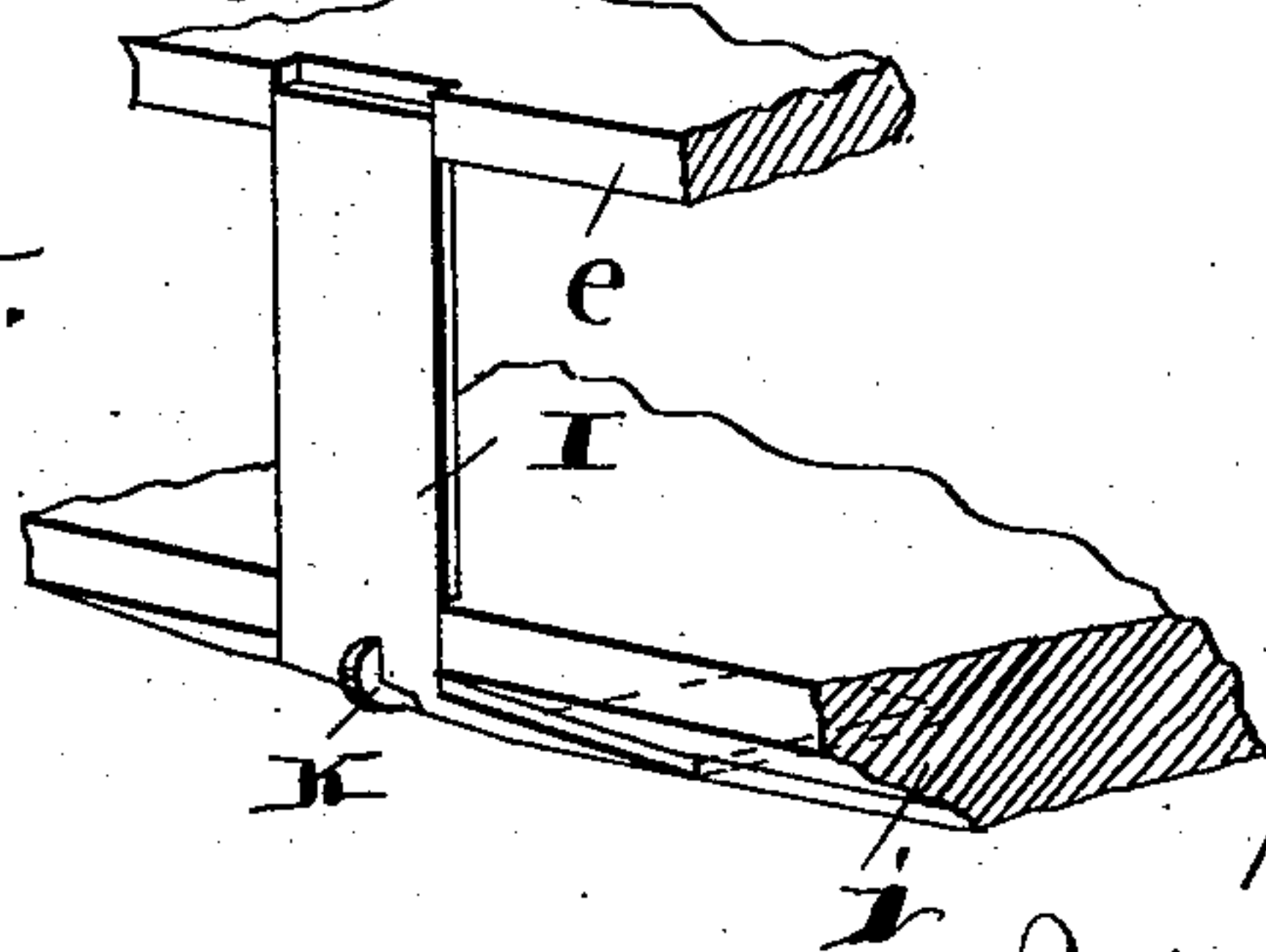


Fig 3.



May 5.



WITNESSES.  
Geo. C. Frick,  
James T. Brand

INVENTOR-  
J. H. McClure  
per  
Pattison Nesbit, atty's



# UNITED STATES PATENT OFFICE.

JOHN HENRY McCLURE, OF HOMESTEAD, PENNSYLVANIA.

## FIRE-DOOR FOR ELEVATOR-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 549,524, dated November 12, 1895.

Application filed December 5, 1894. Serial No. 530,909. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HENRY McCLURE, of Homestead, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Doors for Elevator-Shafts; and I 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.

My invention relates to improvements in fire doors or traps for elevator-shafts; and it consists in the particular construction, combination, and arrangement of parts which will be fully described hereinafter, and especially set forth in the claims.

The primary object of my invention is to provide a means for cutting off the draft in an elevator-shaft in case of fire by means of a series of doors capable of movement within the said shaft, and so constructed that when they are allowed to move down the said shaft they will stop at the respective floors, and to provide a means for supporting the doors at the upper end of the shaft when not needed, which doors are adapted to be released automatically by a device carried on the car when the car is moved upward within the shaft sufficiently far to operate the same, and when the car descends the doors are automatically left at each floor.

Another object of my invention is to so construct the supports for the said doors that they are entirely below the doors when in their elevated position, thus sustaining the weight endwise in contradistinction to sustaining it from above, whereby greater strength and cheapness are attained in the construction of these devices, as will be fully described hereinafter.

Another object of my invention is to provide a stop upon the elevator-car adapted to engage a ball upon the operating-rope of the elevator, the said stop consisting of two arms, one being capable of being opened to permit the ball to pass through, whereby the car is permitted to move upward the proper distance to receive the doors when it is desired to carry them down and deposit them at the several floors of the building, as when the elevator is stopped at night or in the case of a

fire, all of which will be fully described hereinafter and fully shown in the drawings.

In the accompanying drawings, Figure 1 is a side elevation of the upper end of an elevator-shaft, partly in section, with my invention applied thereto, the doors being shown supported and the elevator-car approaching the same for releasing the doors and carrying them down the shaft. Fig. 2 is a top plan view of the upper end of the elevator-car, showing the devices carried thereby for operating the door-supports. Fig. 3 is a view of the support-operators, as shown in a reverse position from that illustrated in Fig. 2. Fig. 4 is an enlarged detailed view of one of the supports and one end of the doors. Fig. 5 is a detached perspective view of a portion of the bottom door and the door above, showing the side plates carried by said lower door.

A designates the framework of an elevator-shaft, and B an elevator-car of the ordinary construction. C is a series of doors capable of movement up and down the said shaft, and so constructed with openings and stops that they are automatically held at the respective floors of the building when permitted to descend, the stops and openings, forming no part of my present invention, and which are so well known by those skilled in this art that it is not necessary to either show or describe the same.

Just below the doors are pivoted the door-supports D, at the point *d*, so that their weight is at the inner side of the said pivotal point, thus causing them to normally drop inward, as shown in Fig. 1. These pivoted supports preferably act by gravity, owing to this construction, while they set at an incline, as shown, thus presenting an inner substantially cam-shaped edge *a*, for the purpose to be fully set forth presently. These pivoted supports D are provided with the curved openings E, through which a limiting-pin *f* extends from the elevator-shaft frame for the purpose of limiting the movement of the said supports, as will be clearly understood, and holding the same in the proper relative position for operation in combination with their co-operating parts. The upper ends of these pivoted supports D are cut out at their inner edges, as shown, for the purpose of forming the projection G and the shoulders *b*, which shoulders receive the weight of the doors C. The



lower door *e* is provided with a strengthening and thickening piece *i*, and at the center of each side of this door are secured the plates *I*, which have their lower ends set inward to form an incline, as shown at *K*, and the said plates are provided with the friction-rollers *L*, which engage the shoulders *b* and inclined or cam faces *a* of the pivoted supports *D* as the doors move upward, thus reducing very materially the friction and wear between the doors and the supports. It will thus be seen that when the doors are carried upward by the elevator sufficiently far these pivoted supports *D* automatically drop inward, as shown in Fig. 1, under the lower door, thus supporting it, which in turn supports the doors above.

It will be noticed that the supports *D* are entirely below the doors, thus avoiding the placing of any of the supporting-constructions above the doors, thus taking up space, which is very undesirable, and by means of my construction the said doors are permitted to move to the extreme upper end of the shaft and there rest against the rubber or other suitable buffers *M*, when they are carried upward by the elevator, which buffers relieve the shock, as will be clearly understood.

The plate *I* is placed at the center of each side of the lower door and secured thereto, while the other doors *C* are provided with vertical grooves to receive these plates, thus holding the said doors against any torsional twist or movement as they are carried up and down the shaft, and which plate is necessary, also, for the purpose of preventing the supports *D* from dropping in behind any one or more of the doors above when they descend. In providing these plates, which are secured only to the lower door *e*, when the supports are moved outward by the means hereinafter described, they rest against the plates *I*, as will be readily understood, thus not engaging the doors, and permitting them to pass freely downward.

Journalled in the upper end of the elevator-car *B* is a shaft *h*, having an operating-handle *j*, by means of which it is partially turned. The upper end of this shaft is provided with the arms *k*, which have connected to their outer ends the rod *l*, carrying the friction-rollers *m*. The outer ends of these rods *l* move in grooves made in the upper edges of the timbers *n* at the upper end of the elevator-car and are held therein by means of straps or staples *p*. (Clearly shown in Fig. 2.) The rods *l* are held in such position that when forced outward by the turning of the handle *j*, as shown in Fig. 2, they engage the inner incline or cam surfaces *a* of the pivoted supports *D* as the car moves upward, thus forcing the said supports out, as shown in dotted lines in Fig. 1. When the handle *j* is turned, as shown in solid lines in Fig. 1, the rods *l* are in such position that they will not force outward the pivoted supports *D*, thus permitting them to drop inward under the doors *C*.

In operation, when it is desired to deposit

the doors at the upper end of the shaft, the handle *j* is turned as shown in solid lines in Fig. 1, the rods being thus carried out of the way of the pivoted supports *D*, so that when the car reaches the upper end of the shaft carrying the doors the said supports are permitted to drop under the doors and hold them while the car moves freely downward. When it is desired to release the doors, the handle *j* is turned in the direction shown in dotted lines in Fig. 1, thus throwing the rod outward, as shown in Fig. 2, so that when the car moves upward the pivoted supports are forced outward from under the doors and they are permitted to rest upon the upper end of the car, and as the car descends they are deposited at each floor in the manner before described. Placed upon the upper end of the elevator-car are the rubber or other suitable buffers *q*, which are adapted to engage the under side of the lower door as the doors are released, so that when they drop, even though a short distance, there will not be any concussion or noise thereby.

From the above description it will be seen that after the doors have been deposited at the upper end of the shaft the handle *j* should be turned in the direction shown in dotted lines, thus throwing the rods *l* outward, ready to operate the pivoted supports for releasing the doors.

In the general operation of the elevator during the day the car does not reach a point sufficiently high to operate the supports, which travel of the car may be regulated by means of a stop, which will be described presently, so that the pivoted supports are not tripped and the doors are always held thereby in the upper end of the shaft. When, however, it becomes necessary on account of a fire or for other reasons to deposit the doors at each of the floors, the handle *j* and the rod being already in the proper position for operating the supports, it is only necessary to run the car sufficiently high in the shaft to permit the rod *l* to throw the supports outward, when the doors will be received upon the upper end of the elevator-car and then as the car descends they are deposited at the respective floors of the building. I also show a stop carried by the elevator-car consisting of an arm *P*, which extends outward from any convenient portion of the car and has its outer end slightly curved, as shown, and at one side of this arm is a spring-arm *Q*, also curved at its outward end, as shown, and a cam-lever *R*, connected with the said spring-arm *Q* by means of a link *T*, by means of which the said spring-arm is drawn against the arm *P*, so that in this closed position the ball *U*, forming a stop upon the operating-rope *V*, cannot pass through the same. When the arms are closed, the car cannot pass up the shaft sufficiently far to have the rod *l* trip the supports *D*. When, however, the arms are thrown open, as shown in Fig. 2, the ball is permitted to pass through, and then



it is engaged by means of a stop S, consisting of an arm extending from the arm P, and this stop permits the car to move just sufficiently to properly operate the supports and release the doors upon the top of the elevator-car. When the elevator is being operated in the ordinary manner, the upper stop, consisting of the arm P and the spring portion Q, are closed, so that it cannot pass up to operate the supports. When, however, it is desired to operate the supports, it is only necessary to throw these arms apart by operating the cam-lever R, when the car is permitted to move upward and the supports are tripped for the purpose described.

From the above description it will be seen that I have produced a very simple and effective means for supporting the doors at the upper end of the shaft and operating them automatically by means of a device carried by the car.

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

1. The combination with an elevator shaft and car, of a series of doors adapted to be carried by the said car, supports above the car for said doors, and means carried by the car which engage the said supports for the purpose described.

2. The combination with an elevator shaft and car of a series of doors adapted to be carried by the said car, supports above the car and below the doors when the latter are raised, and adapted to engage the lower one, and means carried by the car to engage the said supports for the purpose specified.

3. The combination with an elevator shaft and car of a series of doors adapted to be carried by the said car, supports pivoted below the said doors when the latter are raised adapted to engage and support them, and means carried by the said car adapted to engage the said supports and force them from under the doors, substantially as set forth.

4. The combination with an elevator shaft and car, of a series of doors adapted to be carried by the car, the supports pivoted at their lower ends below the doors when the latter are raised and adapted to have their upper portions engage the lower door, and means carried by the car adapted to engage the supports for forcing them from under the doors, substantially as described.

5. The combination with an elevator shaft and car of a series of doors adapted to be carried by the same, supports pivoted at their lower ends below the doors when raised and each having a shoulder at its upper end adapted to engage the lower door, and means carried by the car adapted to engage the supports for forcing them from under the doors, substantially as specified.

6. The combination with an elevator car and shaft of a series of doors adapted to be carried by the car, pivoted supports below

the doors adapted to engage the same, a pin for limiting the movement of the said supports, and means carried by the car adapted to engage the said supports for forcing them from under the doors, substantially as specified.

7. The combination with an elevator shaft and car of a series of doors adapted to be carried by the car, supports pivoted below the doors when they are raised at points outside of their center of gravity whereby they normally rest inward for engaging the lower edge of the doors, and means carried by the car adapted to engage the said supports for forcing them from under the doors, substantially as set forth.

8. The combination with an elevator shaft and car of a series of doors adapted to be carried by the car, supports pivoted at points below the doors when they are raised and adapted to engage the same, and means carried by the car for operating the said supports, substantially as set forth.

9. The combination with an elevator car and shaft, of a series of doors adapted to be carried by the car, supports adapted to engage the lower edge of the doors, and movable means carried by the car adapted to engage the said supports, substantially as specified.

10. The combination with an elevator shaft and car of a series of doors adapted to be carried by the car, supports adapted to engage the doors, and endwise movable devices carried by the car adapted to engage the supports for the purpose specified.

11. The combination with an elevator car and shaft of a series of doors adapted to be carried by the car, supports for the doors, a shaft journaled upon the car, and endwise moving rods operated by the shaft for engaging the supports for the purpose specified.

12. The combination with an elevator shaft and car, of a series of fire doors adapted to be carried thereby, the lower door having an upwardly extending plate, and the doors above having a groove in which the said plate moves, substantially as described.

13. The combination with an elevator shaft and car, of a series of doors, the lower door having plates at each side carrying friction wheels, and movable stops and supports at the upper end of the elevator shaft for the said doors which are engaged by the said friction wheel, substantially as specified.

14. The combination with an elevator shaft and car of a series of doors adapted to be carried by said car, gravity supports pivoted at points below the doors when they are raised, and a means carried by the car for operating said supports.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HENRY McCLURE.

Witnesses:

C. G. ELWOOD,  
J. K. PHILIPS.