

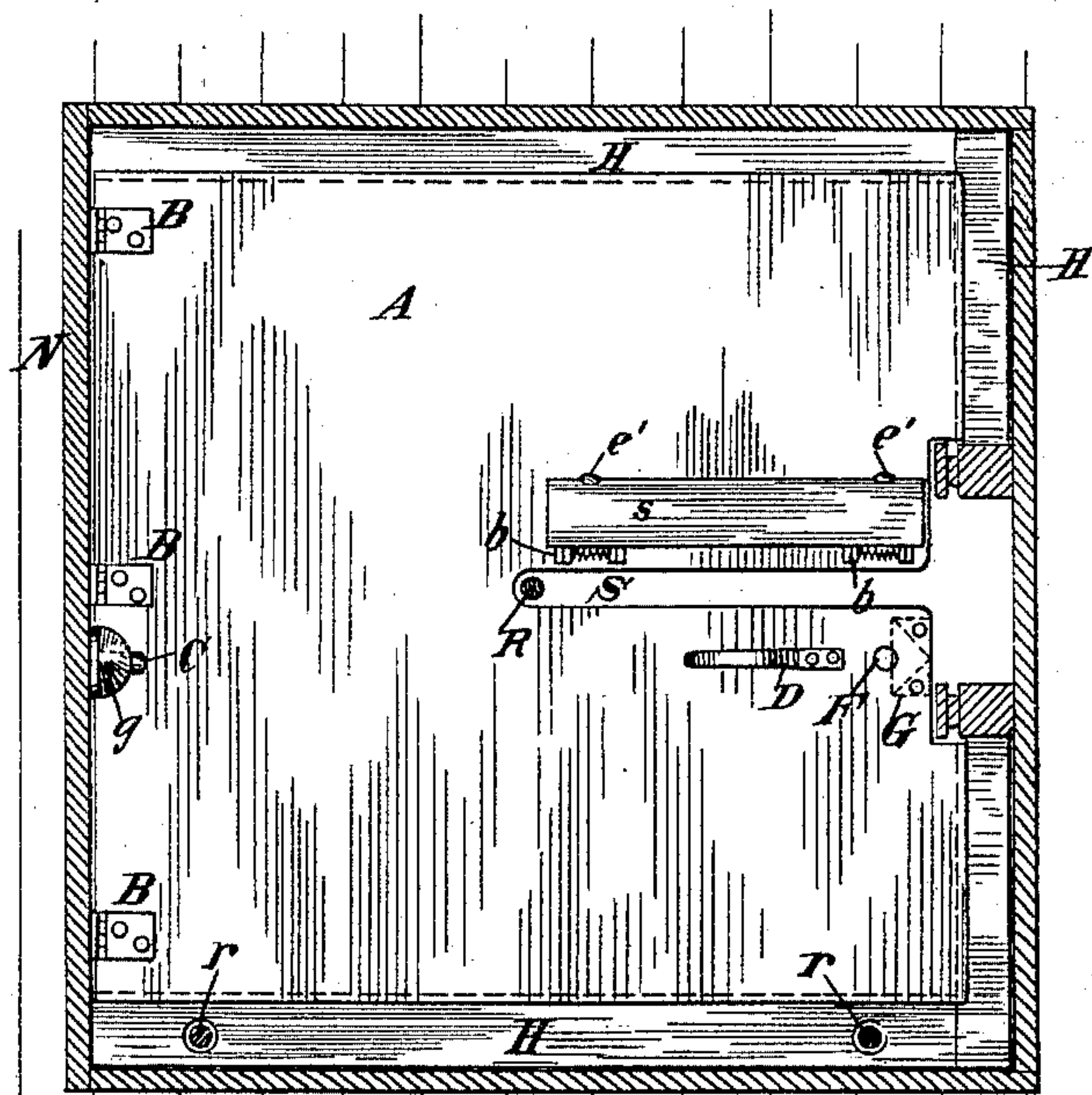
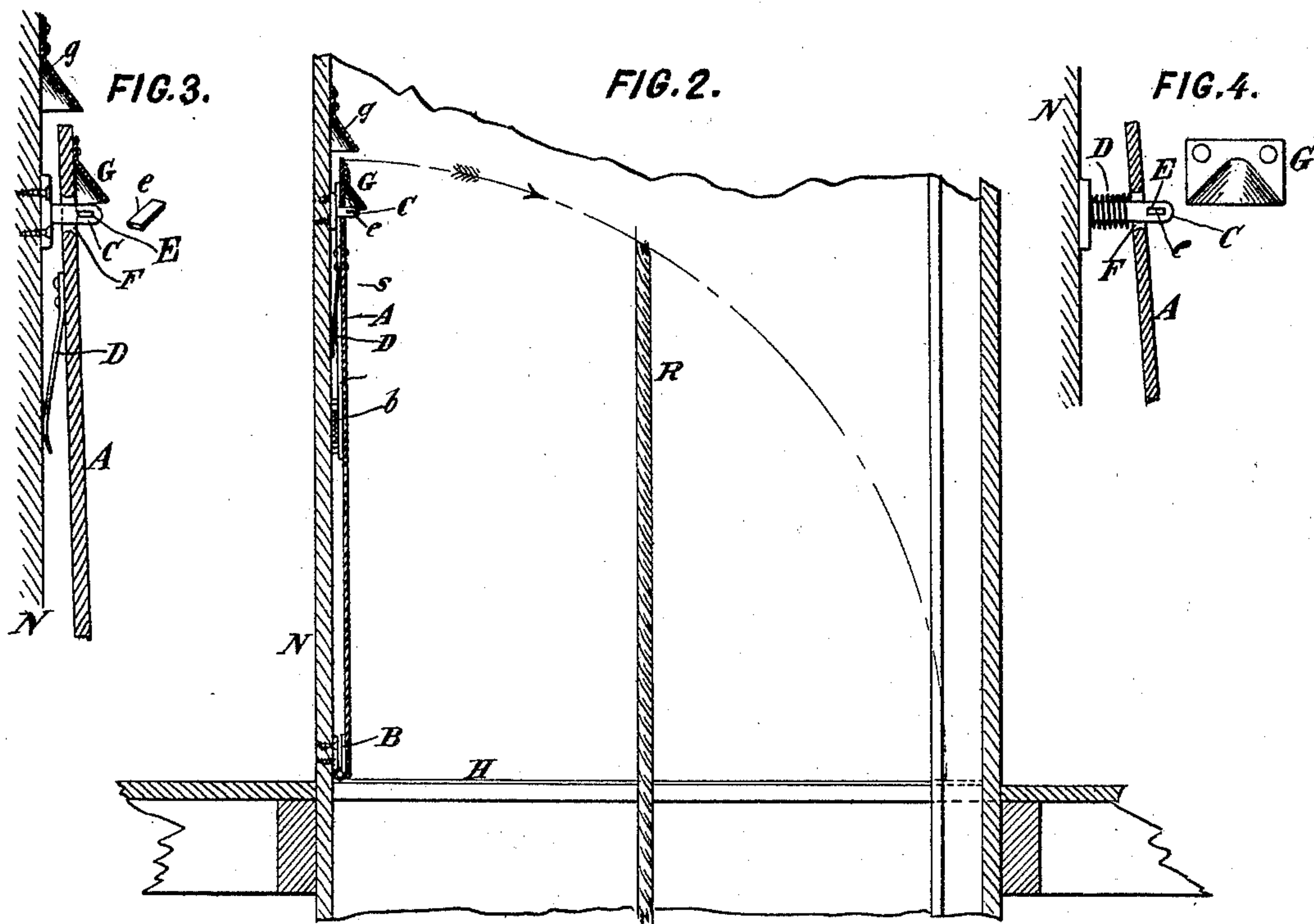
(No Model.)

L. C. TUFTS.

MEANS FOR RELEASING HATCHWAY DOORS IN CASE OF FIRE.

No. 461,857.

Patented Oct. 27, 1891.



WITNESSES:

John Becker
Edward Held.

INVENTOR

Lewis C. Tufts
BY
Herbert W. Grindal
his ATTORNEY.

UNITED STATES PATENT OFFICE.

LEWIS C. TUFTS, OF NEW YORK, N. Y.

MEANS FOR RELEASING HATCHWAY-DOORS IN CASE OF FIRE.

SPECIFICATION forming part of Letters Patent No. 461,857, dated October 27, 1891.

Application filed October 21, 1890. Serial No. 368,793. (No model.)

To all whom it may concern:

Be it known that I, LEWIS C. TUFTS, residing at New York city, in the State of New York, have invented a new and useful Improvement in Automatic Fire-Shutters for Elevator and Dumb-Waiter Shafts or for Air Wells or Shafts, of which the following is a full and exact specification.

My invention relates to that class of fire-shutters which are operated automatically to close a well or shaft to prevent the spread of fire to the upper floors of a building. To accomplish this I arrange an iron shutter in the well or shaft, so that it will not interfere with the free passage of the elevator or dumb-waiter, but will, when the surrounding atmosphere reaches a certain degree of heat close the opening and effectually stop the draft of air to the upper floors and keep the fire and smoke from ascending to and damaging the floors above the point where the fire originates.

For the better understanding of my invention I have prepared the accompanying drawings, in which—

Figure 1 represents a plan view of my invention, and Fig. 2 a section showing the shutter secured in position. The dotted lines show the direction of the fall of the shutter. Fig. 3 is a detail view showing the devices carried by the shutter and wall, the retaining-key being shown detached; and Fig. 4 represents a modification of the spring for throwing the shutter away from the wall, showing the guard for the key detached.

A represents the body of the shutter; B B, hinges which join it to the wall of the shaft.

C is the bolt which projects through the opening F in the shutter A, and by means of the key or pin *e*, which is inserted in the slot E, holds the shutter A in its vertical position.

D is a spring which is bolted to A and serves to throw the body of the shutter away from the wall N and beyond the line of its gravity on being released through the removal of *e* by any means.

G is a guard or protector, which serves to prevent falling bodies from striking upon and injuring the key *e* or the pin C, and also serves to collect and concentrate the heat upon the key *e*. A similar guard *g*, affixed to the wall,

prevents the admission of any objectionable body behind the shutter.

R indicates the position of the rope or cable used for lifting the car, and *r r* the positions of ropes or cables, which may extend up and down the side of the shaft for supporting counter-weights or other purpose. The strip H H, extending along the sides of the shaft, are provided with openings to allow the ropes *r r* to pass freely up or down.

S is the slot cut in the shutter to allow the shutter to fall without coming into contact with the cable R.

s is a secondary shutter hinged to the large shutter A by the spring-hinges *b b* or similar devices and fastened open when ready for operation by soldering its outer edge to A at *e' e'*.

In the operation of my shutter it is made of iron of proper weight and of dimensions of the opening to be covered, and is fastened to one wall of the shaft, as at N, by any suitable hinges. Having been raised to a vertical position, it is pressed back so that the key *e* may be inserted through the slot E and hold the shutter in place. This causes the spring D to act and to press the shutter against the key *e*. The small shutter *s* is fastened open by the solder at *e' e'* and the shutter is ready to operate. The key *e* is made, preferably, of thin metal, fusible at a relatively low degree of temperature, and should a fire occur and the hot air begin to ascend through the shaft it will melt and the spring D will throw the shutter away from the wall and beyond the line of its center of gravity and give it sufficient impetus so that it will fall and rest upon the strips H H, extending around the shaft. The rope R will pass in and along the slot S, leaving open only the space of the slot; but the solder *e' e'*, which I make slightly harder than *e*, will now melt, and the action of the spring-hinges *b b* will cause the small shutter *s* to close and thus interpose a practically air-tight and fire-proof barrier to the heat and flames. I have described the means of holding the shutter with the pin *e*; but I also practice the use of my invention by fastening the shutter by other means, such as sealing it with wax, &c.

The shutter is shown in the drawings as sin-

gle and hinged at its end; but that is a matter of arrangement only. It may be desirable in some instances to hinge it at the side or to use double shutters hinged at the sides 5 or ends. Such changes do not vary the essential features of my invention, and are simply adaptations to different conditions.

It will be noticed that the outer or upper end of the slot S is wider than the remainder 10 of it. This is to make certain that the rope R shall slip into the slot, and the small shutter s is shaped so as to cover the opening thus made.

My drawings show the spring D made as a 15 flat steel spring; but it will be obvious that any other form of spring to produce the required result may be used. For example, a spiral spring, as D, (shown in Fig. 4,) surrounding the pin C, would give the same re- 20 sult.

Should there be any space which it would be desirable to close, as between the runs, it may be more economical and simpler to close the same by a small shutter operated on a 25 similar plan.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. An automatic fire-shutter for elevator 30 and dumb-waiter shafts, &c., the same comprising a hinged fire-shutter, a bolt device, and a fusible metal key for retaining the shutter in a vertical position in engagement with the bolt device, said shutter being pro- 35 vided with a slot or opening to receive the central rope or cable and having a hinged secondary shutter, the latter being normally held open by fusible retaining means, fusing at a higher degree of heat than is required to 40 fuse the key of the main shutter, substantially as set forth.

2. In an automatic fire-shutter, the combination of a shutter for automatically closing an elevator or other shaft and provided with an opening for a fusible pin or fastening, a 45 guard on said shutter to protect said pin and to concentrate heated air thereon, a spring acting to throw said shutter away from the line of the perpendicular, and a wall-guard to protect said shutter, substantially as de- 50 scribed.

3. In an automatic fire-shutter, the combination of a strip or strips arranged around the sides of an elevator or other shaft and containing openings for the passage of ropes 55 or cables, with a shutter arranged to lie upon said strips, a secondary shutter to close an opening in said principal shutter, a spring to throw said principal shutter away from the line of the perpendicular, a pin attached to 60 the wall and projecting through an opening in said shutter, a fusible key inserted in the eye of said pin to hold said shutter, and a guard to protect said pin and key, substantially as and for the purpose set forth. 65

4. In an automatic fire-shutter for closing an elevator or other shaft, the combination of the shutter A, the supporting-strips H, provided with the openings *r r*, the hinges B B, connecting said shutter with the shaft-wall, 70 the secondary shutter *s*, the spring-hinges *b b*, the spring D, fastened to the shutter A, the pin C, arranged to project through the opening F, the fusible key *e*, inserted in the eye of said pin, and the guard G, all substantially 75 as and for the purpose set forth.

LEWIS C. TUFTS.

Witnesses:

M. W. McLAIN,
J. EDWARD WILD.