

No. 736,711.

PATENTED AUG. 18, 1903.

H. FISCHER.

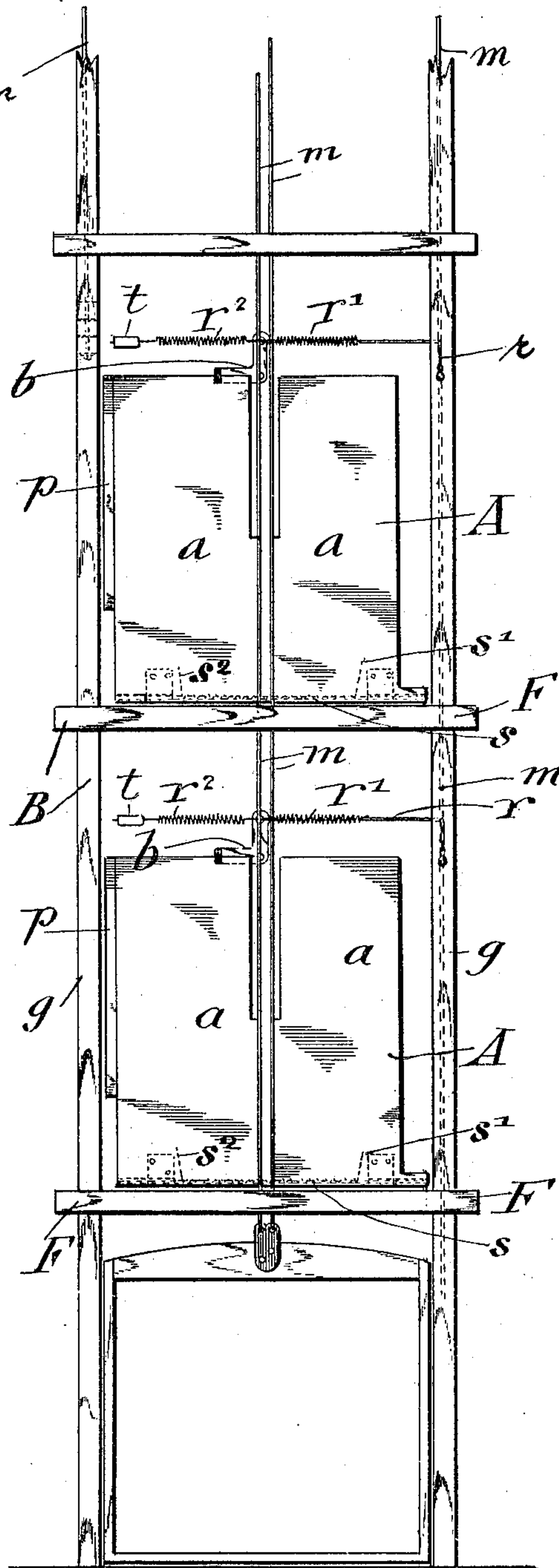
FIRE PROTECTING DOOR FOR AIR OR ELEVATOR SHAFTS.

APPLICATION FILED MAR. 26, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig: 1.



WITNESSES

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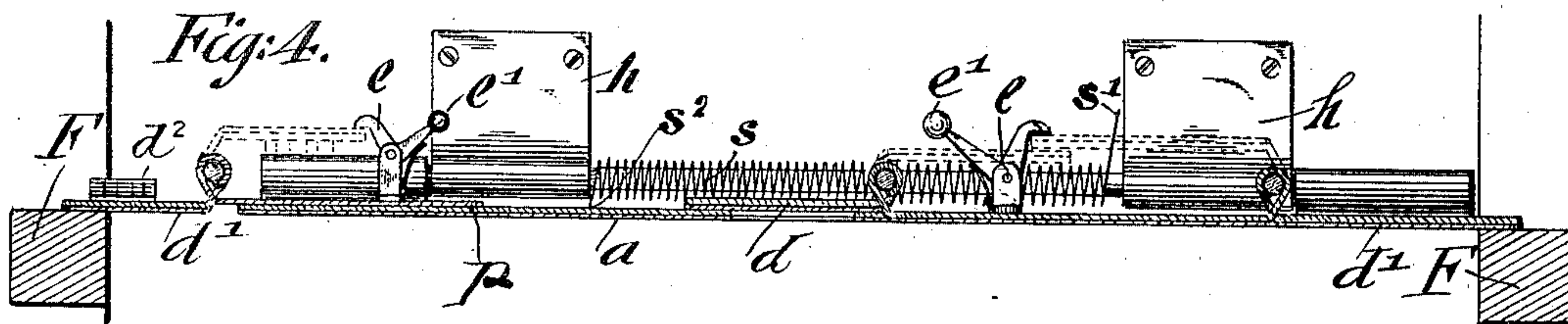
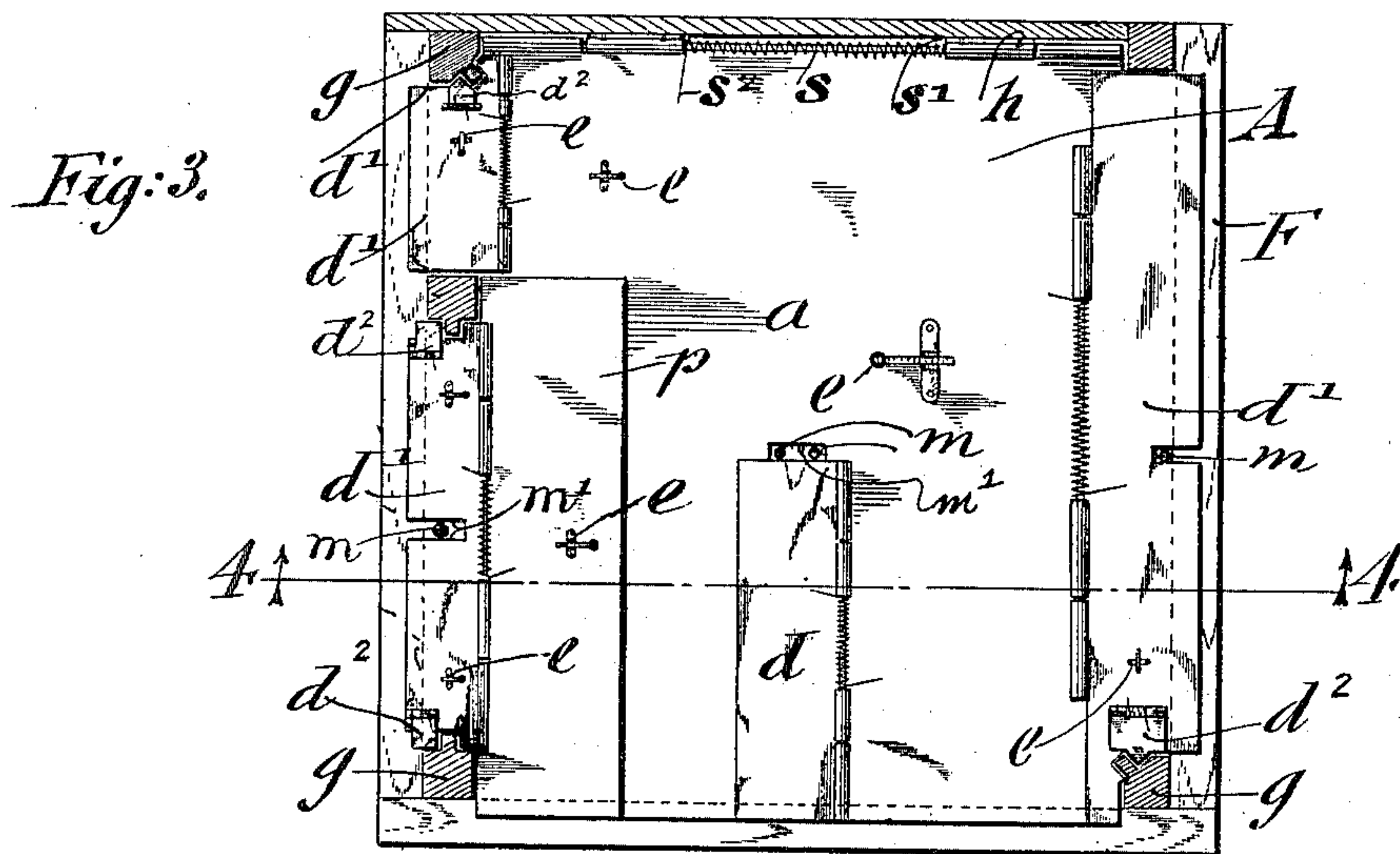
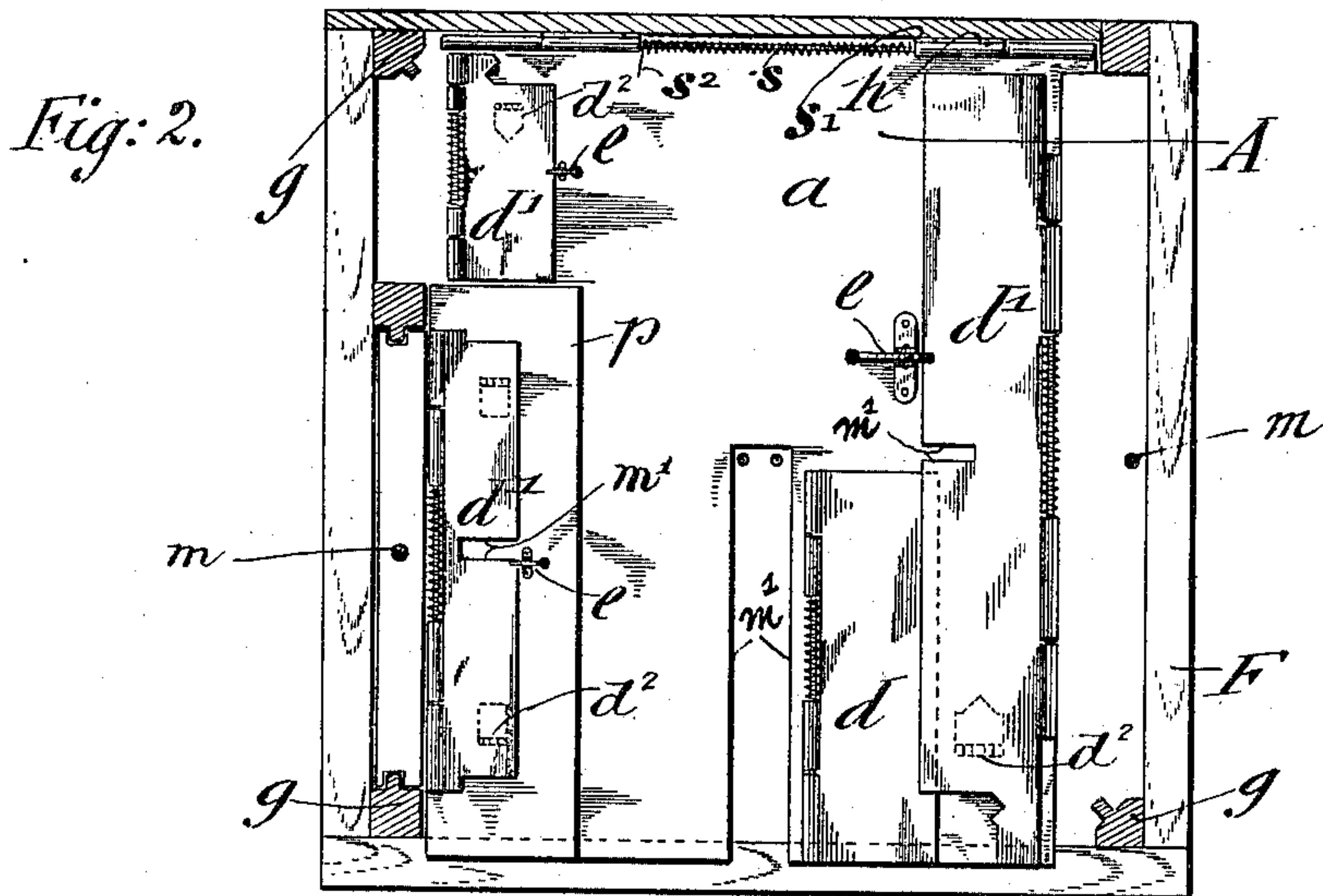
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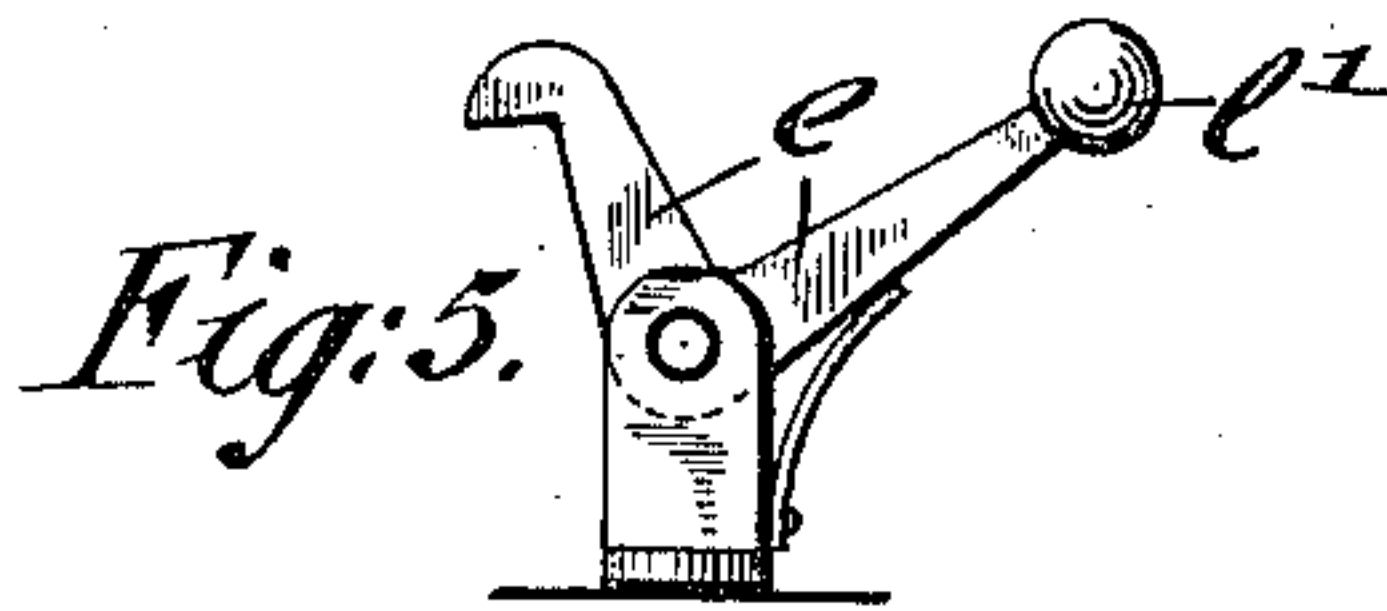
APPLICATION FILED MAR. 26, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HENRY FISCHER, OF PATERSON, NEW JERSEY.

FIRE-PROTECTING DOOR FOR AIR OR ELEVATOR SHAFTS.

SPECIFICATION forming part of Letters Patent No. 736,711, dated August 18, 1903.

Application filed March 26, 1903. Serial No. 149,706. (No model.)

To all whom it may concern:

Be it known that I, HENRY FISCHER, a citizen of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Protecting-Doors for Air or Elevator Shafts, of which the following is a specification.

This invention relates to an improved protecting-door for air and elevator shafts in apartment-houses, tenement-houses, hotels, &c., so that the shaft can be closed up instantly in case of fire at any desired floor, so as to effectively prevent the rising of the smoke and fire in the elevator-shaft, which forms one of the sources of the rapid spread of fires in the buildings referred to; and for this purpose the invention consists of a protecting-door arranged in the air or elevator shafts at each floor, said door being hinged to one of the walls of the shaft and composed of a main section provided with recesses for the upright guide-timbers of the shaft, recesses for the suspending-cables of the car, weights, &c., auxiliary hinged doors applied to the main portion being intended to close the said recesses; fulcrumed, weighted, and spring-actuated locking devices for retaining the spring-actuated auxiliary doors in open position on the main portion; a locking device for holding the main door in upright position against the wall of the shaft, which locking device when released will permit the door to drop instantly and by the sudden contact of the same with a suitable ledge on the walls of the shaft will cause all the weighted retaining devices to release the spring-hinged auxiliary doors, so as to close up all the open spaces of the shaft and prevent the passage of smoke and air-currents, and thereby the spread of fire, through the shaft, causing thereby a smothering of the fire.

The invention consists, further, of certain details of construction and combinations of parts, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents an elevation of an elevator-shaft with two of my improved protecting-doors arranged in raised position along the rear wall of the shaft. Fig. 2 is a horizontal section of the shaft, showing the door in lowered posi-

tion, but with the different auxiliary doors turned over and locked to the main portion of the door ready for being folded up in normal position of rest against the rear wall of the shaft, as shown in Fig. 1. Fig. 3 is a horizontal section showing the main doors in lowered position and the auxiliary doors in closed position. Fig. 4 is a vertical transverse section, drawn on a larger scale, on line 44, Fig. 3; and Fig. 5 is a detail side view of the weighted and spring-actuated locking-hook for retaining the auxiliary doors against the main door, so as to be in open position.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a door, which is arranged in the air or elevator shafts of buildings on a level with each floor. The door consists of a main portion *a*, which is hinged at one end by hinges *h* to the rear wall of the air or elevator shaft B. On the pintle of the hinged connection of the main portion *a* with the rear wall of the shaft is arranged a helical spring *s*, one end, *s'*, of which presses on the rear wall of the shaft, while the opposite end, *s''*, presses on the main portion *a*. The door is held in upright position on the rear wall of the shaft B by a retaining device which consists of a bell-crank lever *b*, pivoted to the rear wall of the shaft. One arm of the bell-crank lever *b* is provided with a hook *h* for engaging the main portion *a*, while the other arm is connected by a helical spring *r'* with a rope *r*, which passes to the front portion of the elevator-shaft, so that by a direct pull on the rope *r* the door is released from the lever *b* and the lever by the spring *r''* again returned to its original position. The door being released and forced away from the wall by the spring *s* drops into its lowermost position and rests on a suitable ledge F or frame of the shaft structure. At one end of the spring *r''* a strip *t* of fusible metal may be used, so that when fused by the heat of the fire, the tension of the spring *r''* being decreased, the spring *r'* will actuate the lever *b* and so disengage its hook-shaped end from the door, so that the same may drop and close the shaft.

The main portion *a* is provided with recesses *m'*, when the same is used for an elevator-shaft, for permitting the cables *m*,

weights, &c., to pass, these recesses extending inwardly and being closed by small auxiliary doors d . At the sides of the main portion are likewise arranged hinged and spring-actuated doors d' , which are so shaped that they fit into the upright guide-timbers g and rails of the elevator-shaft. The auxiliary doors are folded up on the main portion a when the door is not required for use and locked by means of fulcrumed and spring-actuated locking-catches e , each provided with a weighted arm e' , which devices are shown in detail in Fig. 5 and which are placed over the edge of the auxiliary doors after the same are folded over on the main portion a , as shown in Fig. 2. In some cases the auxiliary doors may be made to overlap each other, as shown in Fig. 2—as, for instance, the door d , which closes the cable-recess, and the door d' —in which case both doors are retained by a single locking device. When the auxiliary doors are folded over and locked to the main portion, the main portion is raised to its position of rest alongside of the rear wall, as shown in Fig. 1. If fire should break out in any part of the building, the doors near the floors in which the fire started are lowered, so as to confine the fire to the lower floors, so as to prevent a draft or air-current and the spread of the flames through the shafts to the upper as well as to the lower parts of the building. If desired, the protecting or safety doors on all the floors may be closed when the alarm of fire has been given, so as to keep the protection against the spread of fire through the elevator-shaft. The releasing and dropping of the doors are accomplished either electrically or mechanically, as before described, the closing of the auxiliary doors taking place automatically—that is, when the main portion drops on the ledge or frame of the shaft the sudden stoppage of the main door causes the different weighted locking-hooks to be forced by the inertia of the weights against the action of the springs into open position for releasing the doors, which are then immediately swung by the tension of the springs on their individual hinges, as shown in Fig. 3, into closed position, closing up thereby all the recesses of the guide-timbers of the shaft. The auxiliary doors d' are provided with secondary auxiliary doors d'' , shaped to conform to the contour of the guide-timbers, and also provided with safety-hooks to hold the same back onto the primary auxiliary doors d' . All the auxiliary doors are operated automatically by the shock imparted to the main door by the sudden stopping of the same, so that they close immediately all the openings through which smoke may pass. The lower sides of the main and auxiliary doors are preferably lined with a protecting-covering of asbestos cloth, while the doors themselves are preferably made of stout sheet metal reinforced in a suitable manner at the edges, if required. The safety-doors, which can be readily dropped at a moment's notice when-

ever required, form an effective protection against the spread of fire and are entirely out of the way when supported in their normal position alongside of the wall of the elevator-shaft.

Very often doors cannot be made in the shop which correspond exactly to the interior of the shaft, and so some degree of adjustment before final fastening is desired. For this reason the auxiliary doors intended for one side of the main door are hinged to a rectangular plate p , which after some adjustment is soldered onto the main door.

When the doors are used for air-shafts, the construction is considerably simplified, as the number of hinged or auxiliary doors is thereby diminished.

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

1. The combination, with an air or elevator shaft, of a safety-door hinged to one of the side walls of the same, a locking device on the wall to which the door is hinged, mechanism for releasing the locking device so as to permit the dropping of the door whenever required, recesses in said door for the cables, auxiliary doors for said recesses on the main door, means for locking the auxiliary doors when folded over on the main door, and means for releasing said auxiliary-door-locking means by the sudden stoppage of the main door when dropping, substantially as set forth.

2. The combination, with an air or elevator shaft, having upright guide-timbers for the car, of a spring-actuated main door hinged to one of the side walls of said shaft, said main door being provided with recesses for the cables and upright guide-timbers of the shaft, spring-actuated auxiliary doors hinged to the main door for closing said recesses, and fulcrumed, weighted and spring-actuated safety-catches for holding the spring-actuated auxiliary doors in open position when folded over on the main door and for releasing the auxiliary doors when the main door has dropped, substantially as set forth.

3. The combination, with an air or elevator shaft, having upright guide-timbers, of a spring-actuated main door hinged to one of the side walls of the shaft and provided with recesses, a supporting-ledge on the wall of the shaft, means for locking said main door to the side wall to which the same is hinged, means for releasing said locking means when required, auxiliary spring-actuated doors hinged to said main door and provided with recesses for the cables and formed to aline with the contours of the guide-timbers, secondary auxiliary doors on said auxiliary doors, and means for retaining the auxiliary doors when folded over onto the doors to which they are hinged, substantially as set forth.

4. The combination, with an air or eleva-

tor shaft, having upright guide-timbers of a spring-actuated main door hinged to one of the side walls of the shaft, and provided with recesses, a supporting-ledge on the wall of the shaft, means for locking the main door to the side wall to which the same is hinged, means for releasing said locking means when required, auxiliary spring-actuated doors hinged to the main door, some of said auxiliary doors being provided with recesses for the cables, while others are shaped to correspond to the recesses which they are to close, and fulcrumed, weighted and spring-actu-

ated locking devices for locking the auxiliary doors in open position on the main door, 15 ready for being released on dropping of the main door, and released by the stoppage of the same by the supporting-ledge, substantially as set forth.

In testimony that I claim the foregoing as 20 my invention I have signed my name in presence of two subscribing witnesses.

HENRY FISCHER.

Witnesses:

PAUL GOEBEL,
C. P. GOEBEL.