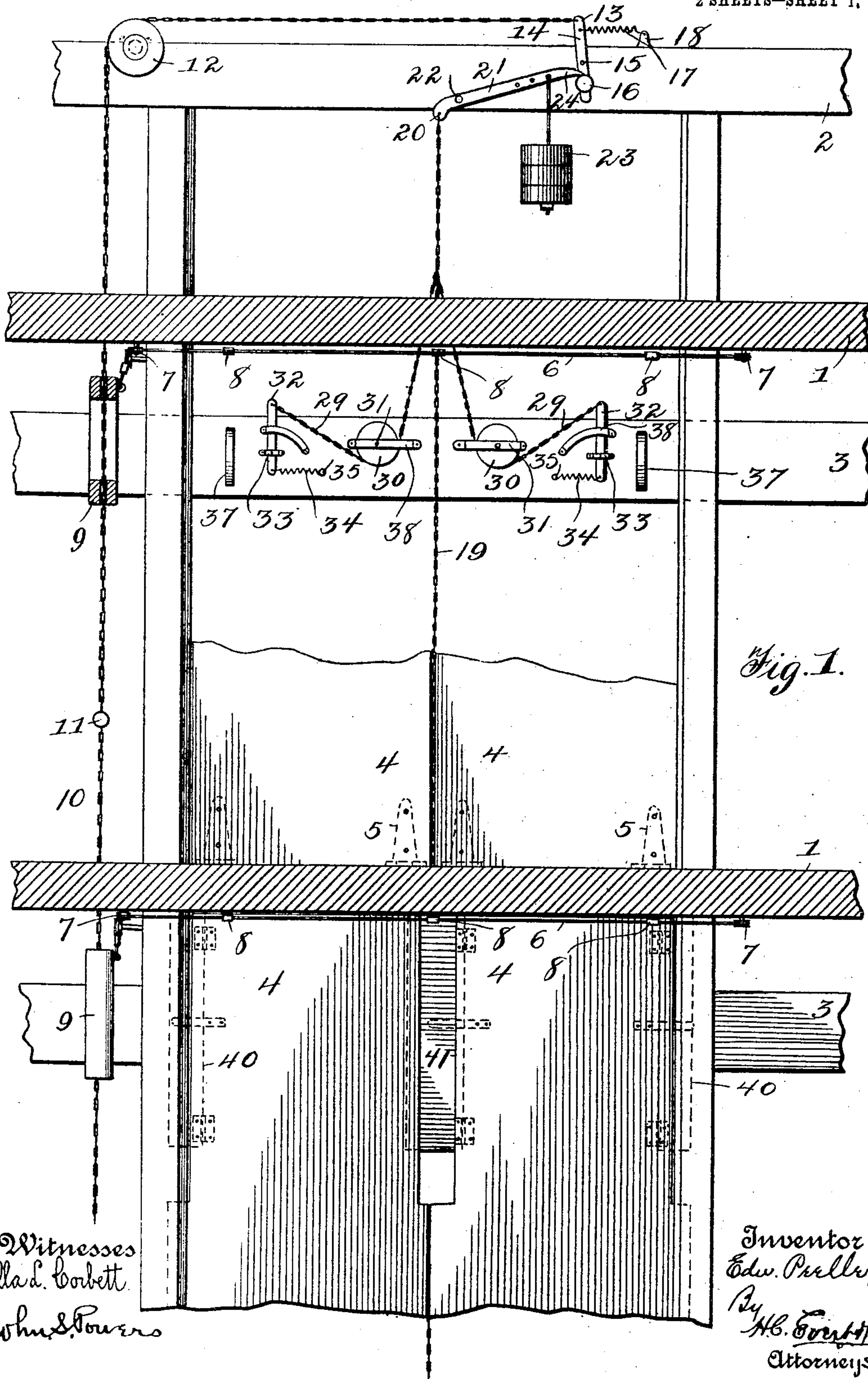


E. PELLE.
AUTOMATIC SAFETY FIRE DOOR.

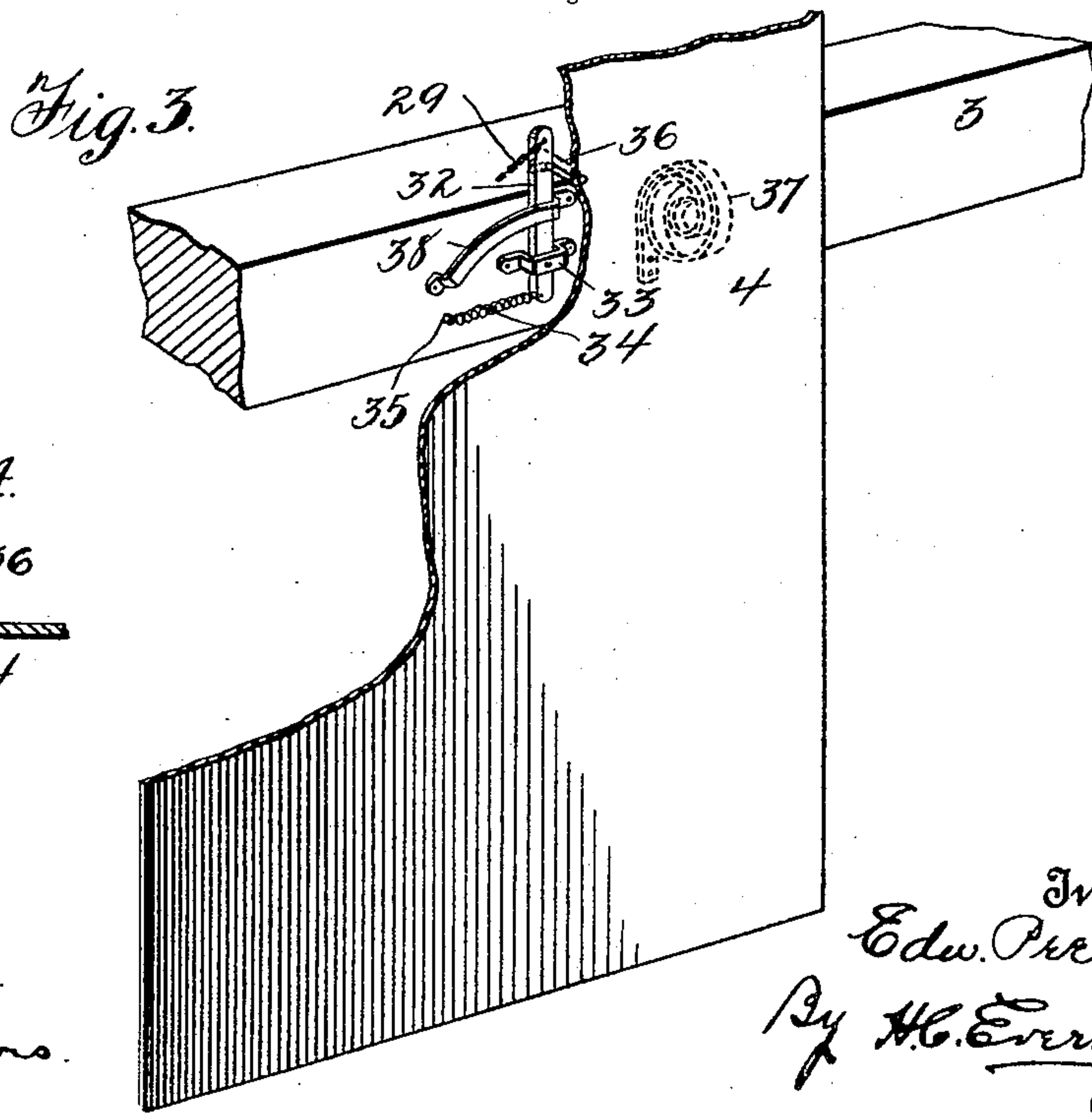
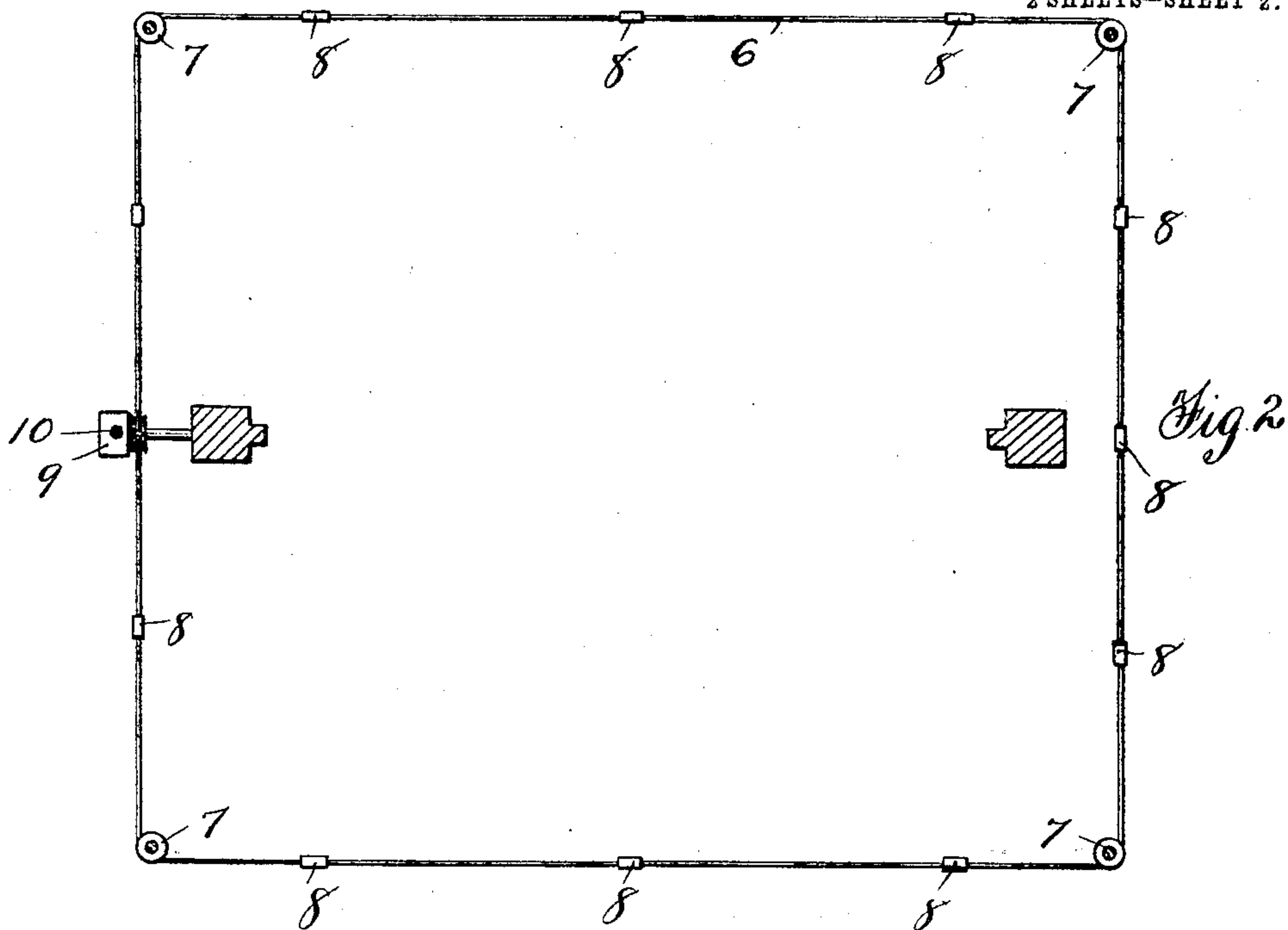
APPLICATION FILED APR. 19, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.



Witnesses
Ella L. Corbett.
John S. Powers.

Inventor
Edw. Pelle,
By H. C. Everett
Attorneys

UNITED STATES PATENT OFFICE.

EDWARD PEELE, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-THIRD
TO JAMES WALTER PEELE, OF BROOKLYN, NEW YORK.

AUTOMATIC SAFETY FIRE-DOOR.

No. 795,449.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed April 19, 1905. Serial No. 256,463.

To all whom it may concern:

Be it known that I, EDWARD PEELE, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented new and useful Improvements in Automatic Safety Fire-Doors, of which the following is a specification.

My invention relates to certain new and useful improvements in safety-doors for hatchways of light or air shafts and other like forms of construction and automatically-operating means for closing the same in the event of a fire.

The invention contemplates a construction in which a series of doors disposed at the hatchways in the several floors of the building may be closed simultaneously by the operation of automatic closing mechanism mounted adjacent to any one floor. Thus if a fire originates on the second floor, for example, of a five-storied structure not only will the mechanism for closing the doors of the hatchway of that particular floor be operated, but simultaneously therewith the mechanism for closing the doors of the hatchways of all the remaining floors through which the shaft extends.

The invention consists more particularly of a locking mechanism for retaining the doors normally open and a mechanism for releasing said locking mechanism, the releasing mechanism being set in motion by the breaking of fusible connections in a system of wiring under intense heat.

The novel features of the invention will appear more fully as the description proceeds, reference being had therein to the accompanying drawings, forming a part of this specification, like numerals designating like parts throughout the several views, in which—

Figure 1 is a sectional view through two floors of a building, illustrating in front elevation the correlative elements in their normal positions. Fig. 2 is a view illustrating diagrammatically the arrangement of the fusible connections and the cord or chain upon which they are mounted in a circuit about the hatchway. Fig. 3 is a detailed fragmentary perspective, partly in section, illustrating the mechanism for locking any one of the doors normally open; and Fig. 4 is a fragmentary transverse section of one of the doors, showing the relative arrangement of the catch carried thereby and the locking-lever.

Referring more particularly to the drawings, 1 1 represent the floors; 2, an anchor-beam located directly above the top floor, upon which the releasing mechanism is mounted, and 3 3 anchor-beams located adjacent each floor and directly below the same, upon which the operating mechanism and the door-locks are mounted.

The doors 4 4 are arranged in pairs and are hinged at 5 to the flooring at one side of the hatchway and when open lie in vertical alinement with the various anchor-beams. A flexible wire or rope 6 is arranged in a circuit about each hatchway and is held taut by pulleys 7, arranged at each angle of the shaft. Fusible links or other forms of connection 8 are disposed at regular intervals along the wires 6, which have secured at their ends a tripping-weight 9, apertured to allow a chain 10 to pass therethrough, which will be hereinafter referred to as the "tripping-chain" to more clearly distinguish from other chains employed in the construction. The chain 10 extends the length of all the floors and midway between each pair of adjacent floors is provided with rigidly-mounted blocks 11 of sufficient size to stop the weight 9 in its downward movement. The chain 10 is trained over a sheave 12, mounted upon the beam 2, and its free end is attached at 13 to a lever 14, having pivoted connection adjacent its lower end, as at 15, to the beam 2, a friction-roller 16 being mounted on the lower end of said lever 14, the latter being held from movement under the weight of the chain by a retractile spring 17, having its one end secured to the said lever, near the upper end thereof, and its other end secured to an apertured bracket 18, mounted upon the beam 2.

A chain 19, which will be hereinafter designated the "master-chain," since the movement thereof controls the entire system of doors and door-releasing and door-locking mechanisms, extends in the rear of the doors 4 the entire length of all the floors and is secured at 20 to the shorter end of a lever 21, pivoted to the beam 2 at 22 and carrying a suspended weight 23 at its longer end, which has at its termination the configuration of a pawl 24 and is engaged by the friction-roller 16 of the lever 14, thus normally supporting the lever 21 against the tension of the weight 23.

As the doors are arranged in pairs adjacent

each hatchway, the releasing and locking mechanism mounted upon the anchor-beam 3 for one door will be duplicated adjacent the other door, so that a description of the mechanism applied to a single door will suffice. Short-length chains 29, to be hereinafter referred to as "locking-chains," since they are connected and positively operate the locking mechanism to release the door, are connected to the master-chain 19. These chains 29 are always taut and are trained under sheaves 30, mounted in keepers 31 upon the beams 3. Each chain 29 has connection at its free end to a lever 32, pivotally mounted adjacent its lower end in a keeper 33 upon the beam 3. A retractile spring 34, having its respective ends secured to a pin 35 fast in the beam 3 and the lower end of the lever 32, serves to retain the said lever normally upright against the weight of the chain 29. The lever 32 engages a rigid hook 36, carried by the door, the said lever being limited in its movement about the pivotal connection 33 in disengaging said hook by a quadrant 38.

Springs 37 of any desirable type are mounted upon the anchor-beams 3 adjacent each door and serve to force the latter outward when released until the said doors drop by gravity.

For convenience in passing the various chains and other obstructing elements which happen to be in the path I have provided in the doors 4 4 laterally-disposed hinged closures 40 and upon one of the doors an intermediate hinged closure 41 in the manner well known in the art, these closures being indicated in dotted lines in Fig. 1.

In the event of a fire the intense heat will melt some fusible connection 8 of the wire 6 and permit the tripping-weight 9 to fall suddenly. As the weight 9 descends it will acquire sufficient momentum when it strikes the block 11 to draw down the tripping-chain 10, thereby tripping the lever 14 against the tension of the spring 17 and disengaging the roller 16 from the end 24 of the lever 21. When the latter is released by the roller 16, its longer end will be drawn downward by the weight 23, consequently raising the shorter end of the said lever and the master-chain 19, thereby simultaneously drawing up the locking-chains 29. The latter when drawn up pull forward the levers 32 against the tension of the springs 34, thereby disengaging said levers from the hooks 36, carried by each door 4, at which time the springs 37 will force the doors outwardly past their dead-center until they drop by gravity and close the hatchway. The master-chain 19, being connected to the entire series of locking-chains 29, will of course operate the latter and release the locking mechanism coacting therewith simultaneously.

It is obvious that various slight changes may be made in the construction and ar-

rangement of elements without departing from the scope of my invention as set forth in the appended claims.

Having fully described my invention, I claim—

1. A device of the type described, comprising devices for normally locking hatchway-doors in the open position, means for actuating said devices to release said doors, ceiling-wires arranged about the hatchways and provided at intervals with fusible connections, a weight carried by each of said ceiling-wires, a chain provided with means for normally maintaining said actuating means inoperative and a block rigidly mounted upon said chain, adjacent each hatchway, said weight being adapted to positively engage said block to move said chain upon the breaking of a fusible connection, as and for the purpose set forth.

2. A device of the type described, comprising a ceiling-wire provided at intervals with fusible connections, and a weight secured thereto a tripping-chain provided with a rigid block to be engaged by said weight, a master-chain, means for locking the hatchway-doors in the open position and connected to and actuated by said master-chain to release said doors, a lever carried by said tripping-chain, a lever carried by said master-chain provided with a weighted end, said first-named lever engaging said second lever to normally hold said master-chain against movement, and means for overcoming the center of gravity of said hatchway-doors when released by said locking devices.

3. A device of the type described, comprising devices normally locking hatchway-doors in the open position, means connected to and actuating said locking devices to release said doors, a chain provided at its end with means for normally holding said actuating means against movement, a rigid block carried by said chain, and a suspended weight normally held by fusible connections, and adapted when released to travel along the axis of said chain to positively engage said block, whereby to move said chain, as and for the purpose set forth.

4. A device of the type described embodying devices for normally locking hatchway-doors in the open position, means connected to and actuating said locking devices to release said doors, a suspended weight normally held by fusible connections and adapted to have movement upon the breaking of one of said connections, a chain provided at its end with means for normally holding said actuating means against movement, and an obstacle lying in the path of travel of said weight and positively connected to said chain.

5. A device of the type described, embodying devices for normally locking a series of hatchway-doors in the open position, means

for actuating said devices to release said doors, a ceiling-wire arranged about each hatchway and provided at intervals with fusible connections, a weight carried by each of said ceiling-wires, a chain provided with means for normally maintaining said actuating means against operation, and a series of blocks rigidly mounted upon said chain, one block being disposed adjacent to each hatchway and in the path of the adjacent weight, any one of said weights being adapted to positively engage the adjacent block to move said chain and release the entire series of locking devices, upon the breaking of any one of the fusible connections in the respective ceiling-wires.

6. A device of the type described embodying a ceiling-wire provided at intervals with fusible connections, and a weight secured thereto, a tripping-chain passing through an opening in said weight and provided with a rigid block engaged by said weight, a master-chain, means for locking the hatchway-doors in the open position and connected to and actuated by said master-chain to release said doors, a lever carried by said tripping-chain and a lever carried by said master-chain, provided with a weighted end, said first-named lever engaging said second lever to normally hold said master-chain against movement.

7. A device of the type described embodying devices for normally locking hatchway-doors in the open position, means connected to and actuating said locking devices to release said doors, a chain provided at its end with means for normally holding said actuating means against movement, a rigid block carried by said chain and a suspended weight normally held from movement by fusible connections and disposed in concentric relation to said chain, said weight being adapted when released to engage said block in its movement and move said chain, as and for the purpose set forth.

8. A device of the type described, embodying devices for normally locking hatchway-doors in the open position, means connected to and actuating said locking devices to release said doors, a suspended weight normally held by fusible connections and adapted

to have movement upon the breaking of one of said connections, a chain provided at its end with means for normally holding said actuating means against movement and an obstacle lying in the path of travel of said weight and having rigid connection with said chain.

9. A device of the type described embodying devices for normally locking hatchway-doors in the open position, means connected to and actuating said locking devices to release said doors, a suspended weight normally held by fusible connections and adapted to have movement upon the breaking of one of said connections, a chain provided at its ends with means for normally holding said actuating means against movement, an obstacle lying in the path of travel of said weight and having rigid connection with said chain and means for imparting movement to the doors when released by the locking devices.

10. A device of the type described, embodying a ceiling-wire provided at intervals with fusible connections, and a weight secured thereto, a tripping-chain provided with a rigid block to be engaged by said weight, a master-chain, means for locking the hatchway-doors in the open position and connected to and actuated by said master-chain to release said doors, a lever carried by said tripping-chain, a spring connected to said lever and an adjacent anchor-beam for maintaining said lever in an approximately vertical position against the weight of said tripping-chain, a lever carried by said master-chain and carrying at its end an adjustable element for maintaining the master-chain taut, said first-named lever engaging said second lever to normally hold said master-chain against movement, and expansive springs mounted upon an anchor-beam and bearing against the hatchway-doors to impart movement thereto when released by said locking devices.

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

EDWARD PEELLE.

Witnesses:

GEO. A. FOOS,

PERRY B. RIALE.