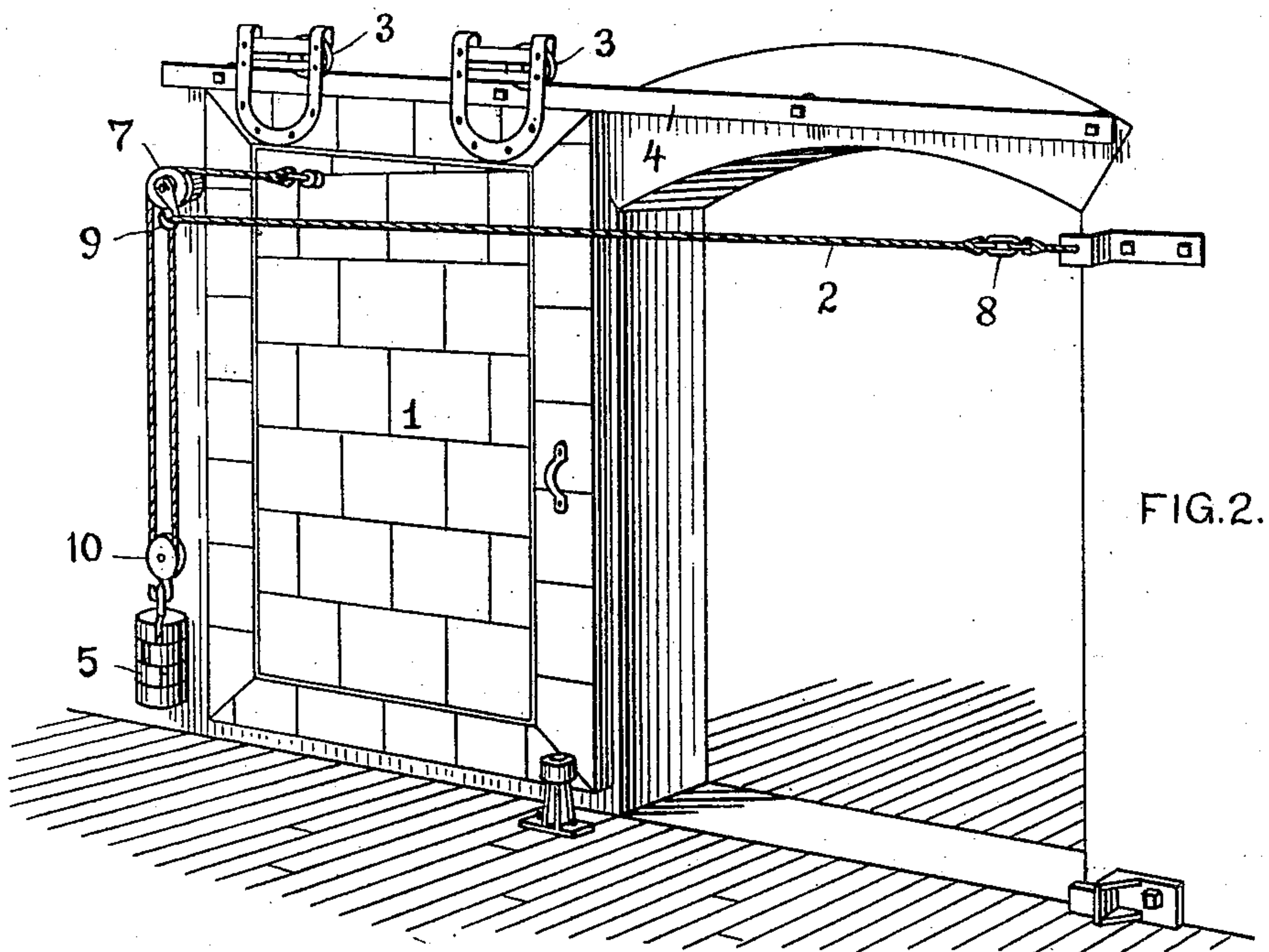
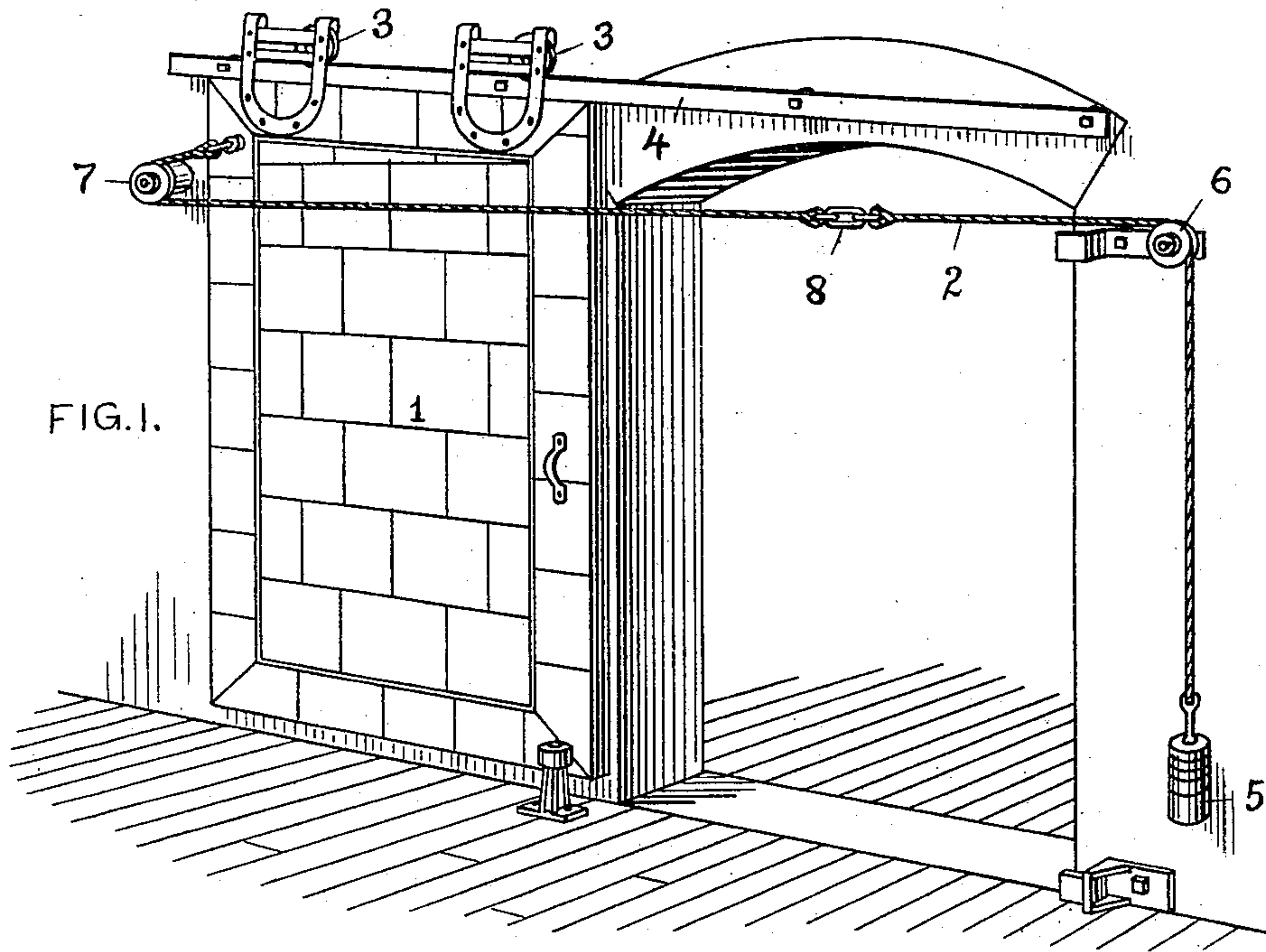


(No Model.)

W. J. LANE.
AUTOMATIC FIRE DOOR.

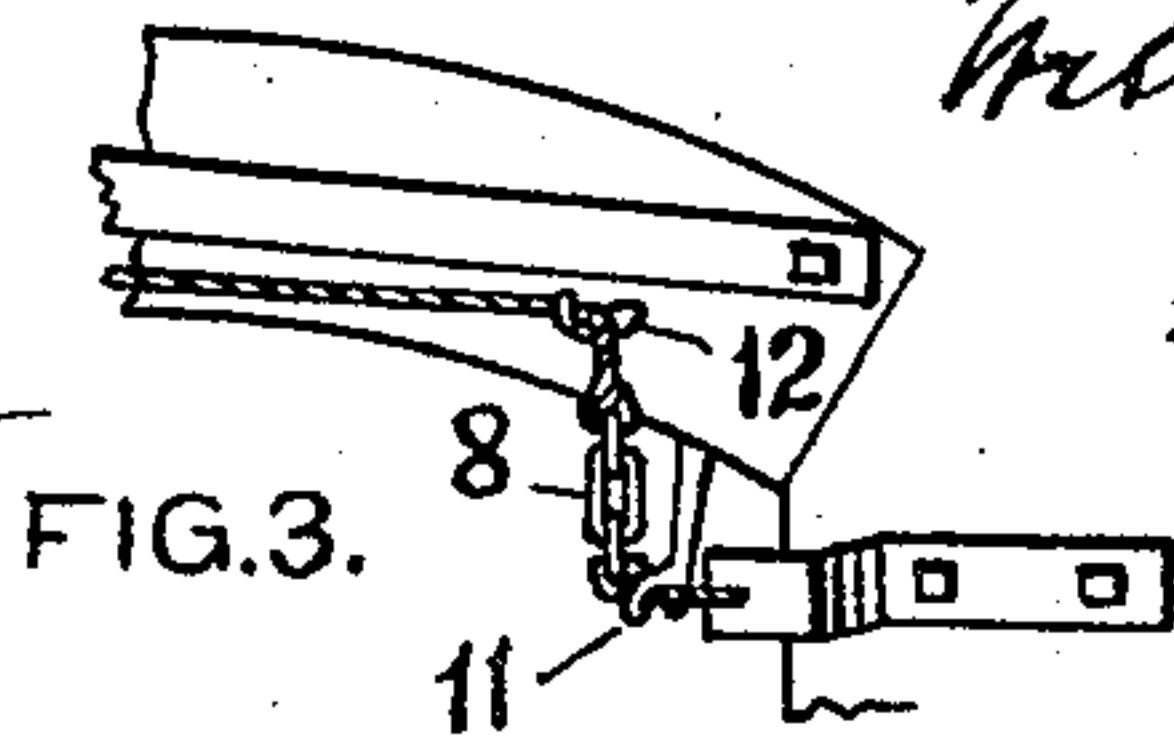
No. 583,492.

Patented June 1, 1897.



WITNESSES:

J. E. Carson
Herman Kech



INVENTOR

William J. Lane

BY

Geo. H. Benjamin
ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM J. LANE, OF POUGHKEEPSIE, NEW YORK.

AUTOMATIC FIRE-DOOR.

SPECIFICATION forming part of Letters Patent No. 583,492, dated June 1, 1897.

Application filed November 25, 1896. Serial No. 613,444. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. LANE, a citizen of the United States, residing at Poughkeepsie, State of New York, have invented
5 new and useful Improvements in Automatic Fire-Doors, of which the following is a specification.

My invention has relation to automatic fire-doors and to an improved form of that type
10 of fire-door wherein a sliding door hung so as to close by gravity is restrained under ordinary conditions from closing by a cord or chain a part of which is adapted to be destroyed under the influence of an abnormal
15 degree of heat, so that the restraining force is removed and the tendency to close is unchecked.

Doors of the class above named have in general been open to the objection that they were
20 so arranged that if the door were left partly closed it would shield the fusible or otherwise destructible element from flames or currents of hot air coming from that side of the door opposite to that on which said destructible
25 element was located. The result of such an accident would be to retard the heating of the destructible element, so as in many cases to prevent closing of the fire-door until it was too late.

30 It is the object of my invention to provide means whereby fire-doors of the type above named may be controlled by a destructible element which cannot be shielded by the fire-door except when actually closed, or substantially so, and at the same time will not involve the use of any projection attached to
35 the door itself, involving a practical narrowing of the available opening.

My invention is illustrated in the accompanying drawings, wherein—
40

Figure 1 shows a view of one well-known form of door of the type above named embodying the objectionable structure my invention is intended to obviate. Fig. 2 is a
45 view of one form of my improved door, and Fig. 3 is a detail view of a modification of one portion of the device illustrated in Fig. 2.

In the form shown in Fig. 1 the fire-door 1, made in any well-known manner suitable to
50 prevention of the spreading of fire from one side of the opening it commands to the other, is mounted so as to automatically close when

released from the restraint of the cord or chain 2, as, for instance, by means of rollers
3 on a track 4, inclined so that the door tends
55 to close by gravity. The tension on the cord 2 is produced by a weight 5 and is so directed by means of the two pulleys 6 and 7 as to tend to hold the door open. It is usual to make the opening tendency of the weighted
60 cord about equal to the closing tendency of the weight of the door and thus cause the door to maintain any position in which it is placed. The door can thus be opened and closed by hand and left partly opened, if de-
65 sired for any reason.

At some convenient point in the cord 2 the destructible element 8 is introduced. This usually consists of a link of metal of such a nature as to be fused with comparative ease
70 and the fusing-point is so calculated that the link will be destroyed when a dangerous degree of heat affects it. It is evident that however this destructible element is placed upon the cord there will be positions of the door
75 at which the element in question is shielded from hot currents of air or flames passing from the opposite side of the door either by the door 1 itself or by the wall. This is due to the fact that the destructible element is made movable
80 and advances to meet the door as the latter closes. Thus this element passes the edge of the door some time before the door is closed and is thus shielded. Hence if for any reason the door is left partly closed the usefulness of
85 the automatic door is diminished by one-half, inasmuch as it will not become operative in case of fires on the opposite side of the opening. I overcome this objection in the manner shown in one of its embodiments in Fig.
90 2 of the accompanying drawings. It will be seen that the cord 2 as used in accordance with my present invention is fixed at that side of the door-opening opposite to that occupied by the sliding valve when open, and
95 that the destructible element 8 is interposed in this cord so near to the point of attachment to the fixture that it is not shielded by the door until the same is to all intents and purposes closed. The other end of the cord
100 2 extends over a pin or hook 9, preferably situated quite near to the vertical line through the pulley 7, and then forms a bight, in which I hang a movable pulley 10, supporting the

usual weight 5, the other end of the bight returning upward to pass over the pulley 7 and be attached to the door in the usual way, as shown. One advantage of this invention is
5 that the door may have a wider opening in proportion to the fall of the weight 5, as said weight when attached to a movable pulley only travels one-half as far as the door.

The operation of this form of door is obvious.
10 The destruction of the element 8 by an abnormal degree of heat causes the weight 5 to fall, and the door is thus released and allowed to close by gravity. It will be seen that the whole space under the rope or chain
15 2 is clear, the width of the door-space not being interfered with by any projection from the door-valve 1.

Where it is necessary to use the entire height of the door-opening, the form of attachment shown in Fig. 3 is appropriate.
20 Here the fixed end of the cord is attached in the same manner as in Fig. 2, but it is made to avoid crossing the door-opening by passing around two supplemental hooks or pins
25 11 and 12 before being carried to the pin 9,

which in this instance is preferably placed higher relatively to the door than is shown in Fig. 2. Inasmuch as no part of the cord between the hook or pin 9 and the door-opening is intended to move in the normal use of
30 the door the friction caused by the passage of the cord over these various pins or hooks is immaterial.

What I claim is—

In an automatic fire-door, a sliding valve
35 hung so as to tend to close by gravity, a movable pulley, a weight attached thereto, a cord supporting said movable pulley, having one end thereof attached to said door-valve, and the other end attached near the point of
40 closure of the door, and a destructible element interposed in said cord near the latter point of attachment, substantially as described.

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

WILLIAM J. LANE.

Witnesses:

G. H. SHERMAN,
GEORGE LANE.