

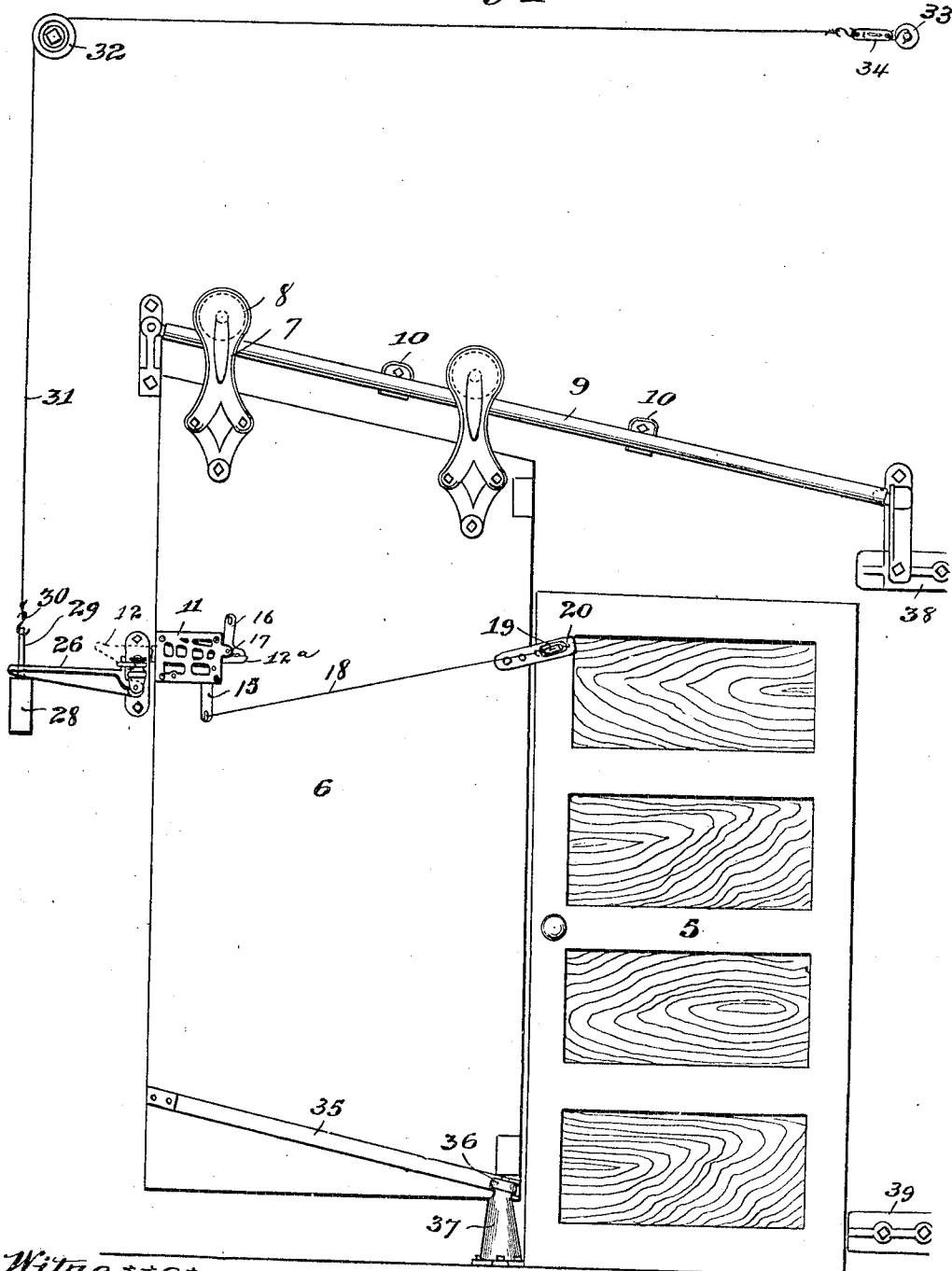
No. 830,745.

PATENTED SEPT. 11, 1906.

H. C. SMITH.
AUTOMATICALLY CLOSING FIREPROOF DOOR.
APPLICATION FILED MAR. 27, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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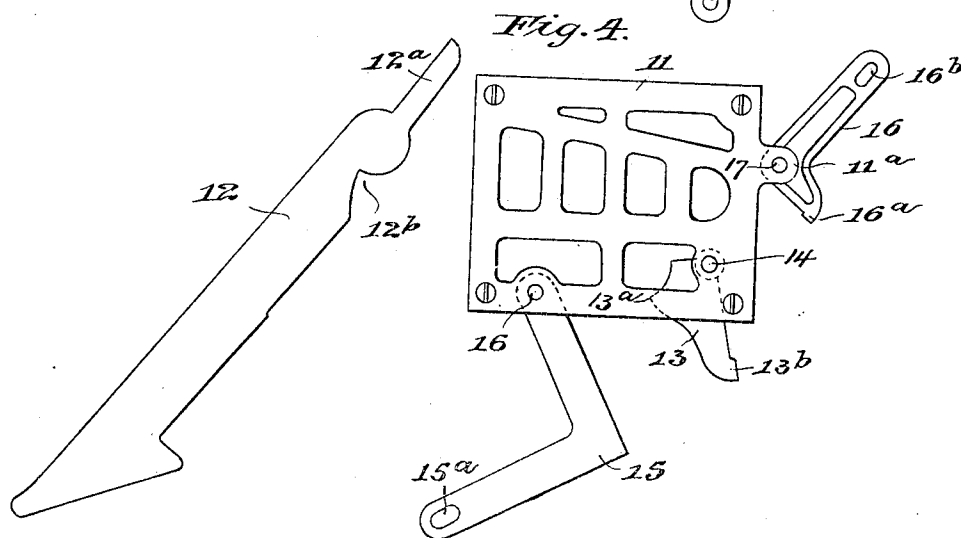
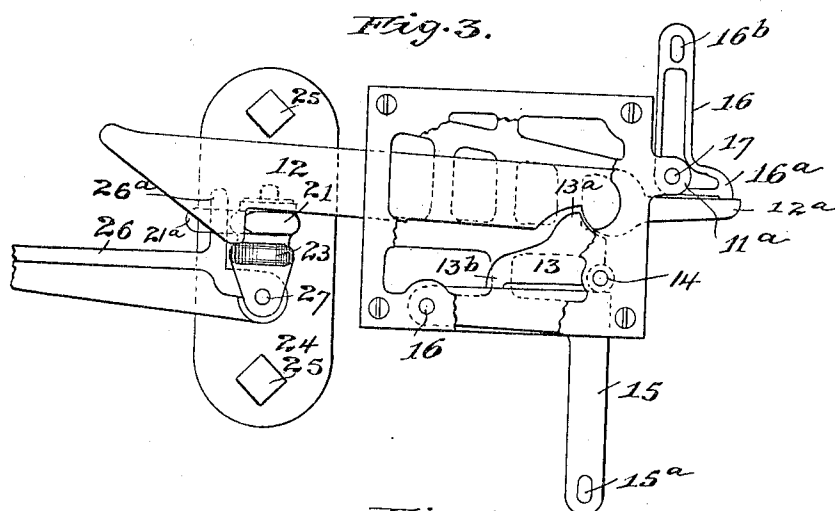
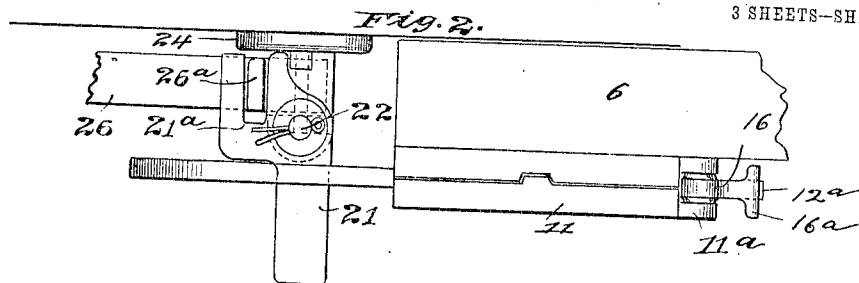
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3 SHEETS--SHEET 2.



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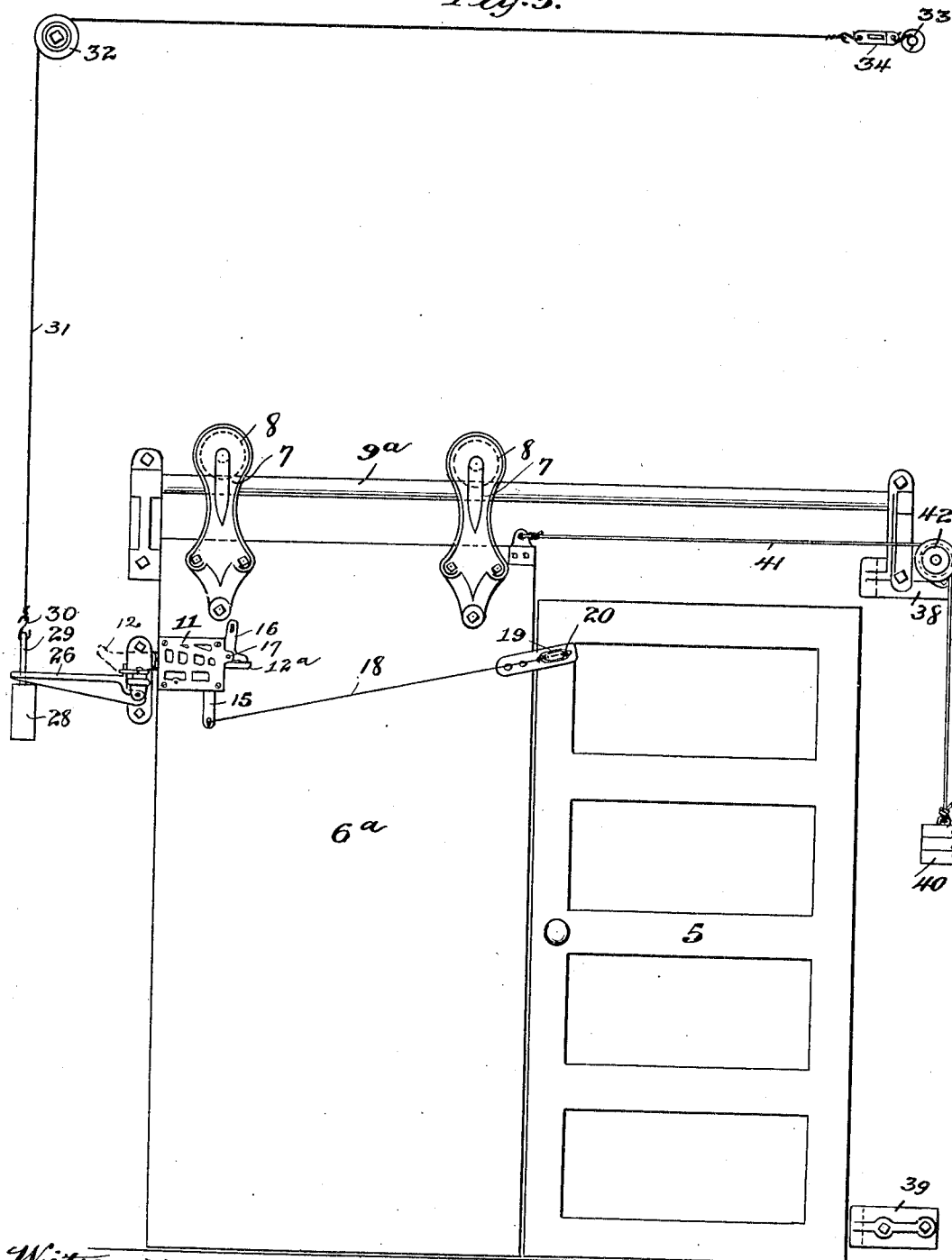
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3 SHEETS—SHEET 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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AUTOMATICALLY-CLOSING FIREPROOF DOOR.

No. 830,745.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed March 27, 1905. Serial No. 252,254.

To all whom it may concern:

Be it known that I, HENRY C. SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatically-Closing Fireproof Doors, of which the following is a specification.

My invention relates to that class of automatic fireproof closures which are commonly employed to guard an opening in a partition-wall between adjoining buildings or between adjoining rooms of the same building, the same usually consisting of a heavy fireproof door suspended from an overhead track-rail and provided with means normally retaining the same in open position, but separable or destructible under the influence of heat to permit the door to close by spring or gravity action. In some forms of these devices the door hangs on a horizontal track and is urged to its closing position by a weight or spring, the effect of which is neutralized by a destructible connection between said door and a fixed part of the casing or wall. In other forms the door is suspended on an inclined track, whereby its own weight normally tends to close it, and is held in retracted or open position by a connection destructible by fire or heat.

My present invention is applicable to both forms or types above mentioned and embodies certain improvements which are designed to conduce to the efficiency and reliability of the apparatus and the certainty of its action when subjected to heat at various points in its proximity.

My invention in the best mechanical forms thereof which I have as yet devised is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevational view of the complete apparatus, the fireproof door being shown as suspended on an inclined track and in open or retracted position. Figs. 2, 3, and 4 are detail views of a collapsible catch, the parts whereof are normally held in coöperative relation by heat-destructible devices, Fig. 2 being a top plan view, Fig. 3 a front elevational view, partly broken out, and Fig. 4 a view in collapsed position; and Fig. 5 is a view similar to Fig. 1, but showing the door as suspended on a horizontal track and adapted

to be closed when released by a continuously-acting weight.

Referring to Figs. 1, 2, 3, and 4 of the drawings, 5 designates a hinged door of ordinary construction closing an opening in a wall, and 6 designates a heavy door, of iron or other fireproof material, normally held to one side of the opening, but adapted to slide edgewise and close the latter when subjected to the influence of abnormal heat or fire. The door 6 is mounted by hangers 7 and track-rollers 8 on a tubular track 9, supported on brackets 10 above the doorway, said track being disposed in an inclined position, so that the door will freely run down the same to closed position under the action of gravity when unrestrained. The means for restraining the door under normal conditions and releasing it in the case of fire consist of the following: 11 designates an open-work latch-housing that is screwed to the face of the door near the outer edge thereof, as shown. Projecting from said housing beyond the line of the outer edge of the door is a hooked latch-bar 12, said bar having a tailpiece 12^a and on its under edge in advance of said tailpiece a notch 12^b, Fig. 4. Said latch-bar 12 is not pivoted in the housing, but is normally held against separation from the latter by means of a generally triangular-shaped dog 13, that is pivoted at its inner lower corner by a pivot-pin 14 to the housing, its upper end 13^a loosely fitting into the notch 12^b of the latch-bar and its outer lower end 13^b normally resting upon the upper edge of a right-angled bar 15, which latter is pivoted at 16 to the housing, as plainly shown in Fig. 3. Upon the tailpiece 12^a of the latch-bar rests the toe 16^a of a latch-releasing lever 16, pivoted at 17 between rearwardly-extending ears 11^a of the latch-housing, the upper end of said lever having an aperture 16^b for the attachment of a cord or chain, whereby said lever may be actuated to tilt the latch-bar sufficiently to disengage the same from its coöperating member on the casing. The vertical arm of the bar 15 has an aperture 15^a, to which is attached a cord or chain 18, Fig. 1, that is connected at its other end to a fusible link 19, attached to the forward end of a strip 20, that is screwed to and projects beyond the forward margin of the door, thereby bringing the fusible link 19 when the door is open oppo-

site the opening of the wall, whereby it is directly in the path of flame or heated currents of air or gas that may be drawn through said opening when the door 5 is open. The outer 5 or hooked end of the latch-bar 12 engages the forwardly-projecting arm of a lever 21, that is pivoted in a horizontal plane on a pivot-pin 22, rising from a bracket 23 integral with a base-plate 24, that is secured, as by screw- 10 bolts 25, to the wall adjacent to the outer edge of the door when the latter is open. This lever 21 has a forked rearwardly-projecting arm 21^a, Fig. 2, and is normally retained in holding engagement with the latch- 15 bar by means of an arm 26, that is pivoted at 27, Fig. 3, to the bracket 23 and carries near its inner end an upstanding lug 26^a, that enters the fork of the rear arm of lever 21, Fig. 2, thereby preventing said lever from swinging on its pivot. The arm 26 is normally 20 sustained in horizontal position, as shown in Fig. 1, by resting at its outer apertured end on the upper side of a weight-block 28, said latter having a stem 29 passing through a hole in the end of said arm 26 and attached, 25 as by a hook 30, to a chain or cord 31, that extends over a pulley 32 to a fixed point of attachment 33 above the doorway, one or more fusible links, such as 34, being interposed in said cord or chain. The lower portion of the door 6 may be provided with an inclined guide or track 35, adapted to engage an obliquely-mounted roller 36 on the upper end of a rigid pedestal 37, whereby the lower 35 end of the door is confined against outward swinging movement and caused to close snugly against the margin of the opening. Secured to the wall adjacent to the upper and lower ends of the opening and slightly to 40 one side thereof are a pair of stops 38 and 39, against which the forward edge of the door may contact at the limit of the closing movement.

The operation of the apparatus will be 45 readily understood from the foregoing description of its construction and may be briefly summarized as follows: The door 6 when occupying the open position shown in Fig. 1 is normally retained therein against 50 the tendency of gravity to close the same by the engagement of the latch-bar 12 with lever 21, this latter being prevented from turning by the lug 26^a so long as the arm 26 is sustained in its horizontal position. If now the 55 fusible link 19 is melted and broken by the approach of fire or heat to the doorway, the retaining means of the angle-bar 15 is broken and said angle-bar drops by gravity to the position shown in Fig. 4. This permits the 60 dog 13 to drop away from its locking engagement with latch-bar 12, and consequently the connection between said latch-bar and its housing is broken, and the housing draws away from the latch-bar as the gravity of the 65 door causes it to roll down the track 9 to

closed position. It will thus be seen that the destruction of the link 19, located opposite the door-opening, causes the automatic closing of the door irrespective of the detaining connection 31. On the other hand, if the 70 fire or heat approaches in such a way as to first attack and melt the link 34 or any other links interposed in the connection 31 the weight 28 will instantly drop, carrying with it the arm 26, retracting lug 26^a from lever 21 75 and allowing the latter to yield under the pull of the latch-bar, thus releasing the detaining connection and permitting the door to roll closed irrespective of the action of the collapsible catch mechanism. 80

In Fig. 5 I show my invention applied to that type of automatic fireproof closure wherein the door 6^a is hung on a horizontal track 9^a and is provided with a closing- 85 weight 40, connected to the door by a cord 41, guided over a suitably-located pulley 42. When the door is released in the manner and under the circumstances above described, the weight 40, descending, draws the door to closed position in a manner well understood. 90

It will thus be seen that my present invention provides a plurality of safety devices connected to and operating through a catch mechanism that normally retains the door open, the destruction of any one of which 95 permits the door to close irrespective of the others. This renders the door sensitive to the effect of heat at more than one point adjacent to the opening, thereby enhancing its efficiency and practical utility for its intended purposes. 100

It is evident that the invention might be varied and modified in respect to details of construction and relative arrangement of parts by those skilled in the art without departing from the principle or sacrificing any 105 of the benefits and advantages thereof. Hence I do not limit the invention to the details shown and described, except to the extent indicated in specific claims. 110

I claim as my invention—

1. An automatically-acting fireproof closure for doorways, comprising a door, a track above the doorway on which said door is suspended, a collapsible latch mechanism normally holding said door at one side of the doorway, a tension member connecting an element of said latch mechanism with a fixed point on the door and normally retaining said mechanism against collapse, and a fusible 120 link constituting an element of said connection, substantially as described.

2. An automatically-acting fireproof closure for doorways, comprising a door, a track above the doorway on which said door is suspended, a collapsible latch mechanism normally holding said door at one side of the doorway, said latch mechanism comprising essentially a housing, a separable hooked latch-bar, a catch with which the hooked end 130

of the latter engages, and means adapted to retain said latch-bar against separation from said housing, and a connection including a fusible link between said latch-bar-retaining means and a fixed point on the door normally maintaining the former in operative condition, substantially as described.

3. An automatically-acting fireproof closure for doorways, comprising a door, a track 10 above the doorway on which said door is suspended, a collapsible latch mechanism normally holding said door to one side of the doorway, said latch mechanism comprising essentially a housing, a separable hooked 15 latch-bar, a catch with which the hooked end of the latter engages, a pivoted dog retaining said latch-bar against separation when in operative position, a pivoted member adapted to hold said dog in operative engagement 20 with the latch-bar, and a tension connection

including a fusible link between said pivoted member and a fixed point on the door, substantially as described.

4. An automatically-acting fireproof closure for doorways, comprising a door, a track 25 above the doorway on which said door is suspended, a hooked latch-bar connected to said door, a pivoted lever, one arm whereof is engaged by the hook of said latch-bar, a pivoted arm having a stop normally engaging 30 the other arm of said lever, and a cord or chain including a fusible link normally retaining said arm elevated with its stop member engaging said lever, substantially as described.

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