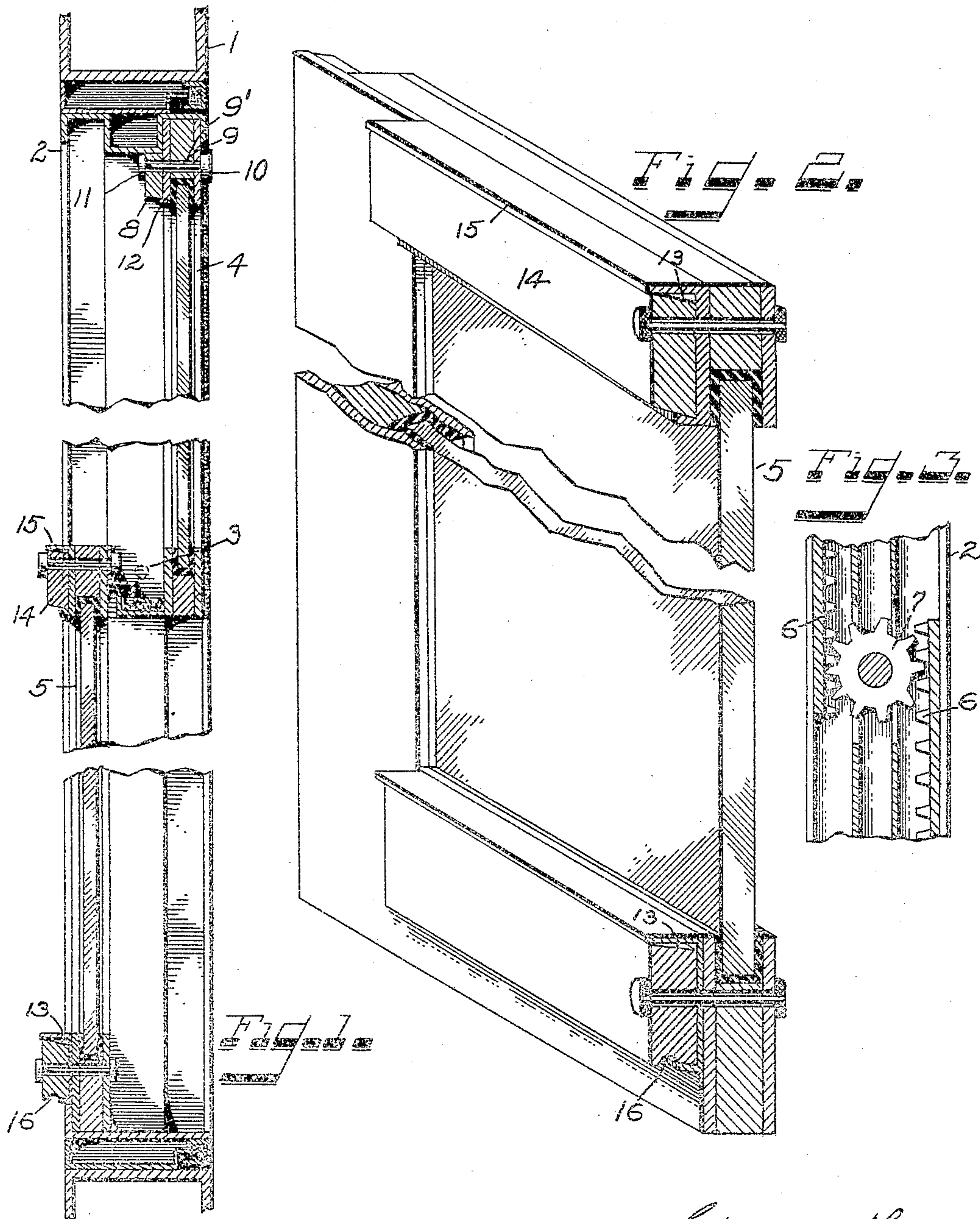


No. 778,456.

PATENTED DEC. 27, 1904.

E. H. LUNKEN.
WINDOW CONSTRUCTION.
APPLICATION FILED FEB. 11, 1904.

2 SHEETS—SHEET 1.



WITNESSES.

Geo. W. Gilman
Wm. Smith Jr.

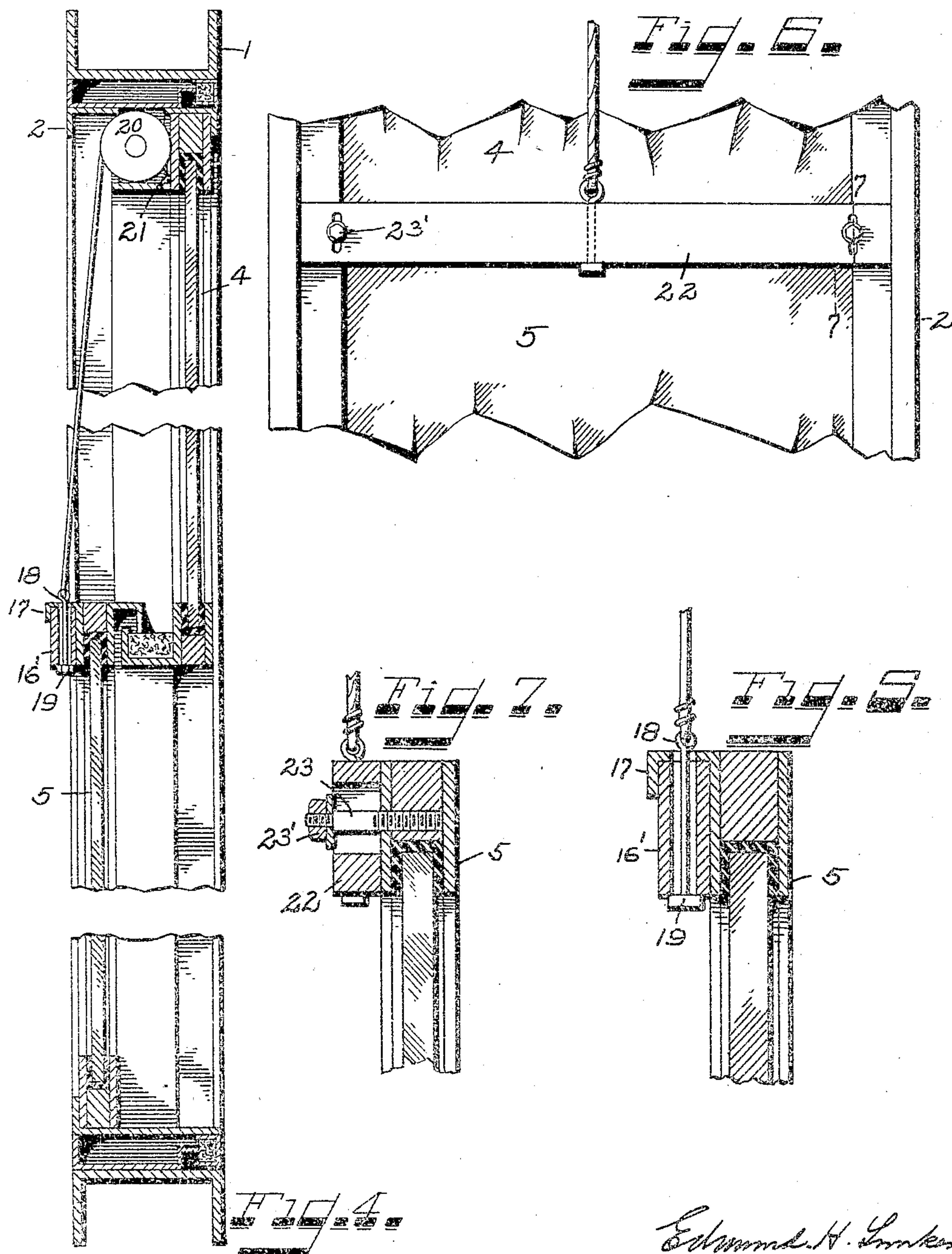
Edmund H. Lunken
INVENTOR.

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2 SHEETS—SHEET 2.



WITNESSES.

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INVENTOR.

UNITED STATES PATENT OFFICE.

EDMUND H. LUNKEN, OF CINCINNATI, OHIO.

WINDOW CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 778,456, dated December 27, 1904.

Application filed February 11, 1904. Serial No. 193,176.

To all whom it may concern:

Be it known that I, EDMUND H. LUNKEN, a citizen of the United States, residing at Cincinnati, Ohio, have invented certain new and useful Improvements in Window Constructions, of which the following is a specification.

My invention relates to window constructions of the general form disclosed in applications of the United States filed by Bernard J. Hausfeld and Edmund H. Lunken September 14, 1903, Serial No. 173,118, and January 9, 1904, Serial No. 188,199, and concerns more particularly means whereby the window-sash if left open will be automatically closed in the event of fire taking place adjacent the said window.

The invention consists in the features and combination and arrangement of parts hereinafter described, and particularly pointed out in the claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of a window construction embodying one form of my improvements. Fig. 2 is a perspective view, partly in section, of the lower part of the window illustrated in Fig. 1. Fig. 3 is a detail sectional view showing the manner of connecting the sashes to balance one by the weight of the other. Fig. 4 is a vertical sectional view of another embodiment of my invention. Fig. 5 is a detail view, enlarged, of part of Fig. 4. Fig. 6 is a front view of a part of a sash, showing another embodiment of my invention. Fig. 7 is a sectional view on line 7 7 of Fig. 6.

Referring first to that form of my invention shown in Figs. 1 and 2, 1 indicates a main frame, of channeled metal, adapted to be secured in the window-opening, and 2 is a secondary frame, also preferably of metal and arranged in the main frame, and, as in the construction above referred to, said secondary frame is arranged to swing about horizontally-disposed pivots, one of which is indicated at 3, though the invention may be used with a window swinging about vertically-disposed pivots. The upper sash is indicated at 4 and the lower sash at 5, arranged to slide in guide-ways in the secondary swinging frame. These

sashes, as in the applications above mentioned, are balanced so that in all positions of the secondary swinging frame the balanced condition will be maintained, and in the present instance the balancing is obtained by a connection between the sashes themselves, a rack 6 being formed on each sash and this being connected by a pinion 7 on the frame meshing with both, so that in all positions of the sashes or the secondary frame one sash will balance the other. This rack-and-pinion connection constitutes the main balancing means for the said sashes, though I do not wish to limit myself in this respect.

My present improvements consist in means whereby the balanced condition of the sash will be destroyed in the event of a fire occurring in proximity to the window, so that should the window be left open it will be closed by the overbalancing of one part in relation to the other.

In carrying out my invention I employ a weight or weights on the sash or sashes held by a fusible connection which will be exposed to the heat of any adjacent fire.

As an illustration of one embodiment of my invention I show in the drawings a weight 8, Fig. 1, arranged on the inner side of the upper sash and extending along the top rail thereof. This is held in place by flexible wires 9 passing through openings 9' in the weight and in the sash and having caps or heads 10 11 of fusible material, the latter being on the inner side and bearing against the weight, while the former is on the outer side of the window and bears against the sash. Both are exposed and will fuse when subjected to a sufficiently high temperature—say 130° Fahrenheit. When so fused, the weight 8 will drop, owing to the fact that the wires or rods are of thin flexible material. In order to insure the dropping of the weight, it is supported on a narrow ledge 12 on the sash, which is slightly inclined and receives the lower inclined edge of the weight. The upper edge of the weight, as indicated in Fig. 2, may be cut away on an inclination at 13, so that there will be no tendency for the weight to bind against the sash at its upper edge. It will be noticed that the weight is sustained by the

ledge, and the office of the wire rod and fusible caps is merely to hold the weight on the ledge. With the invention as thus far described we will suppose that the sash is balanced by suitable means and carries the weight, as above described. Now in case a fire occurs and the sash is in an open position as soon as the flame or sufficiently high heat reaches the fusible cap either on the inside or outside of the window the weight will be released and will fall off of the supporting-ledge, and the counterbalance existing between the sash and the balancing means being thus destroyed the sash will be closed automatically.

In the complete embodiment of my invention, as illustrated in Fig. 1, I arrange a weight in connection with both the upper and lower portions of the lower sash, in addition to furnishing the weight in connection with the upper sash, as above described, those shown at 14 being of the same form as that above described and being supported on a ledge, as before described, and in addition I provide upper ledges 15, one for each weight, which serve as protectors and prevent displacement of the weight when pressure is applied in raising or lowering the sash.

The lower weight may be provided with a finger-grip at 16 for use when raising the lower sash.

With the complete arrangement disclosed in Fig. 1 if the sashes are opened slightly an automatic action will result whether the heat or flame strikes either the lower or the upper part of the window, and in the construction above referred to wherein the sash are interconnected and are balanced one by the other the complete closing of the window will result from the release of the weight at either the upper or lower part of the window. The weight is provided at the upper part of the lower sash to meet the conditions when the lower sash is raised to the top of the window and the upper sash lowered.

I place all the weights on the inner side of the window, so that they will all drop on the inside the window and will not endanger the lives of persons on the outside of the building.

While I have illustrated and described two weights on the lower sash and one on the upper sash, it will be readily understood that the lower weight may be dispensed with and the upper one only used, the same results being obtained, or but one weight on the lower sash may be employed, the only reason for employing a plurality of weights being to insure a quicker operation of the window in case of fire.

Referring now to another embodiment of my invention, as shown in Fig. 4, I may employ a weight 16', held under a shield 17 on the meeting-rail of the lower sash by a flexible cord or other flexible connection connected to a bolt 18 passing down through the weight and having a nut 19 at its lower end, upon

which the weight rests. The other end of the cord passes over a pulley 20 on the frame and is attached at 21 to the top rail of the upper sash. The sashes being interconnected, as above described, by the racks and pinion, the flexible connection will remain taut between the lower sash and the top of the window in all positions to which the sashes may be adjusted. Upon the occurrence of a fire and the fusing or burning of the cord or upon the melting of the nut 19, which is of fusible material, the weight will fall, the counterbalance relation of the sashes will be destroyed, and the sashes will close. The rope, as shown in Fig. 6, is located at the center of the window, though a separate rope may be used for each side of the window.

The preferred form of my invention is illustrated in Figs. 6 and 7; in which the weight 22 is slotted vertically near each end and receives studs 23, passing through the said slots into the meeting-rail of the lower sash. The studs prevent all movement of the weight horizontally, but permit vertical movement thereof. The weight is retained on the studs by nuts and washers 23'. The combustible or fusible cord is connected with the weight and with the upper sash, and it normally holds the weight slightly raised in relation to the studs or in suspension, so that the force of the weight will be acting fully on the upper sash. When the rope is ruptured by the fire or heat, the weight will drop, and thus will lighten the upper sash and increase the weight of the lower sash, thus causing the sashes to be closed. By this construction the weight will remain attached to the lower sash by the burning or fusing of the cord, wire, or other connection or upon the melting of the fusible nut.

It will be understood that where herein I use the term, "combustible or fusible connection" I use the same in a generic sense, to mean the cord, the nut, or both, or any equivalent device to be affected by heat and alter the relation between the weight and the sash or sashes.

Excepting where particularly specified in the accompanying claims, I do not wish to limit myself to any particular style of window construction or sash-balancing arrangement, as various features may be changed without departing from the essential principles of my invention.

It will be noticed that in the two forms of my invention first described I do not depend upon the weight to apply force or power in operating any part when it drops away from its normal position; but, on the contrary, I depend solely upon the lightening of the sash, due to the absence of the weight, to effect the automatic operation. In the third form of my invention, however, I utilize in addition to the lightening effect as regards one sash the positive action of the weight in relation to the other sash. In other words, the weight

is transferred from the upper to the lower sash to apply its positive force to the latter.

I claim as my invention—

1. In combination with a pair of interconnected sliding sashes, a weight associated with one of the sashes and means for holding said weight in place adapted to be parted by heat, said sash with its associated weight balancing the other sash whereby when said weight falls the sashes will close because one overbalances the other, substantially as described.

2. In combination with a pair of interconnected sashes, a weight arranged on one sash and means adapted to be parted by heat connecting the said weight with the other sash, one of said sashes overbalancing the other when the weight is displaced and closing both sashes through the connections between them, substantially as described.

3. In combination with a pair of interconnected sashes, a weight movably mounted on one sash and means connecting the said weight with the other sash and adapted to be parted by heat, the said weight when released being retained by the sash first mentioned, substantially as described.

4. In combination, a pair of interconnected sashes, a weight and means suspending the weight from one of the sashes, said means being adapted to be parted by heat, said weight when released acting on the other sash.

5. In combination a pair of interconnected sashes, a weight having slots, studs passing

through the slots into the sash to hold the weight thereto and allow it movement, and means adapted to be parted by heat and suspending the weight from the other sash, substantially as described.

6. In combination a pair of interconnected sashes, a weight and a flexible connection between the said weight and one of the sashes, the release of said weight destroying the balanced condition of the sashes whereby they will close by one sash overbalancing the other and acting through the connections between them, substantially as described.

7. In combination a pair of interconnected sashes, a weight arranged on one sash, and a flexible connection between the said weight and the other sash adapted to be parted by heat, substantially as described.

8. In combination with a window-sash and main balancing means a weight independent of the main balancing means and moving with said sash, means connecting the said weight with the sash adapted to be parted by heat and means associated with the window for catching and retaining the said weight when released from the sash, substantially as described.

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

EDMUND H. LUNKEN.

Witnesses:

GEO. W. GILMORE,
WM. J. SMITH, Jr.