No. 724,135. PATENTED MAR. 31, 1903.

H. C. SMITH.

WINDOW.

APPLICATION FILED FEB. 13, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

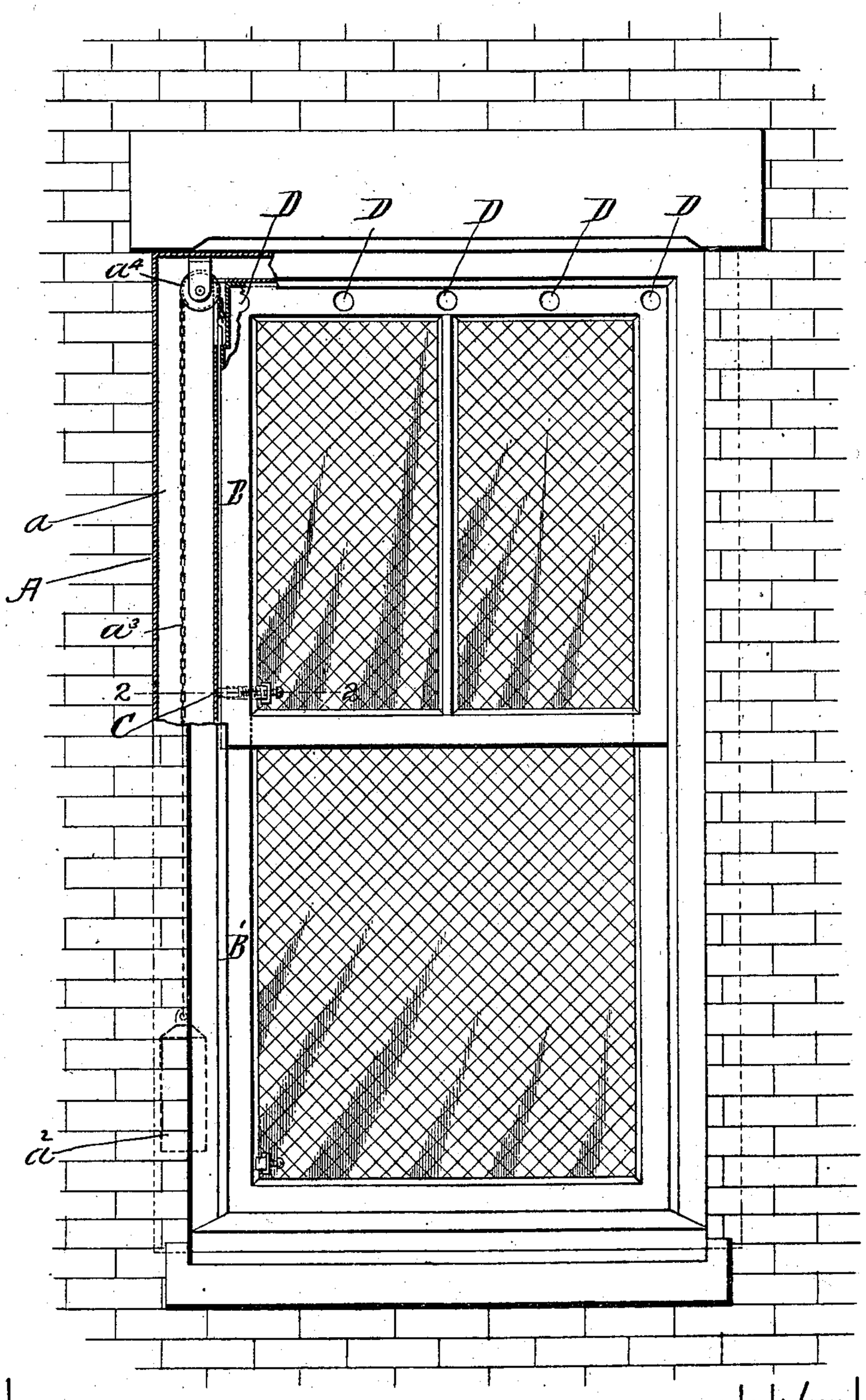

Fig. 1.

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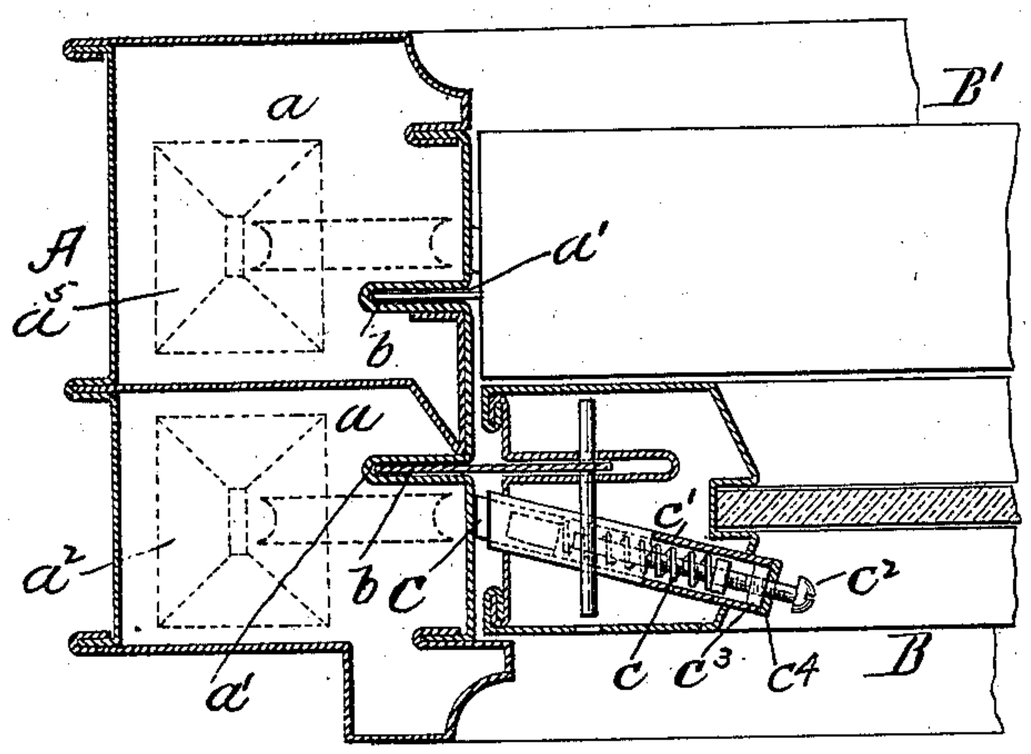

Fig. 2.

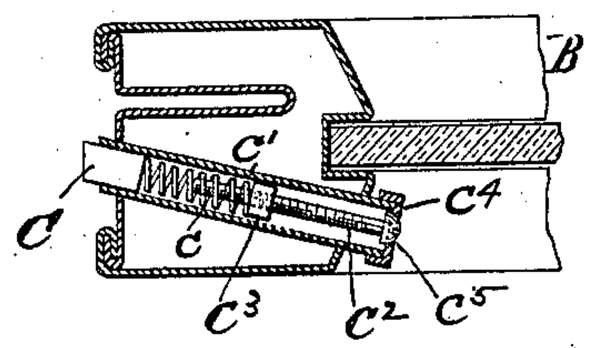

Fig. 3.

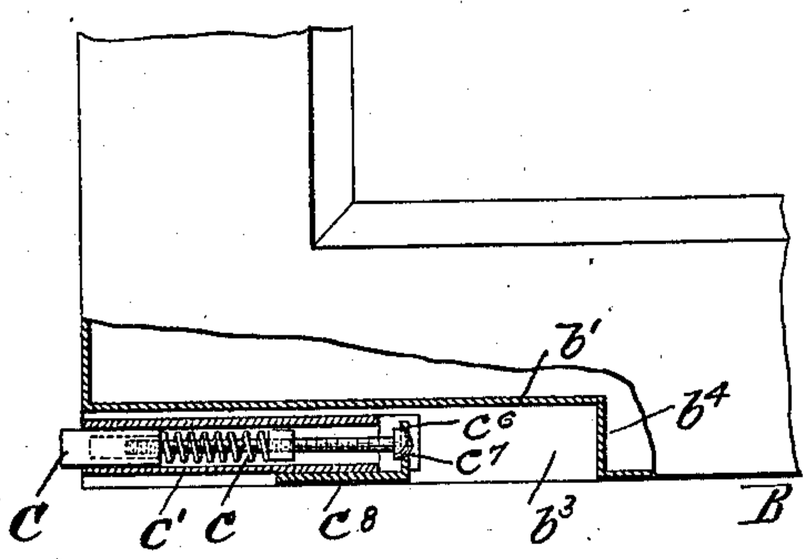

Fig. 4.

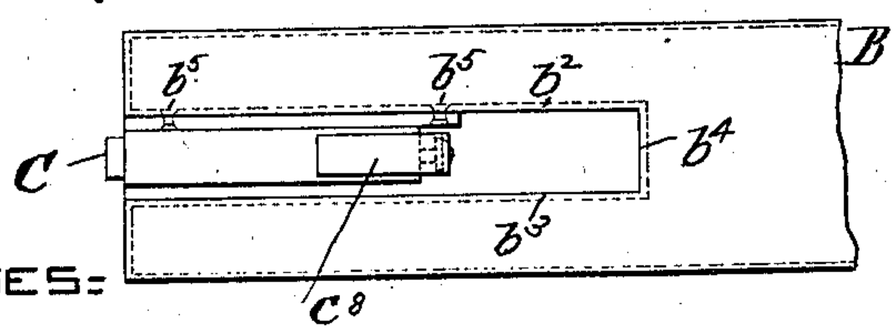

Fig. 5.

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UNITED STATES PATENT OFFICE.

HENRY COLLIER SMITH, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO SMITH-WARREN COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 724,135, dated March 31, 1903.

Application filed February 13, 1902. Serial No. 93,878. (No model.)

To all whom it may concern:

Be it known that I, HENRY COLLIER SMITH, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Windows, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

My invention relates to means whereby windows are retained in open position to automatically close in case of fire and which when closed may be reopened by turning a stream of water upon them, as from a fireman's hose. The automatic closing of the window is accomplished by the use of weights so connected with the sashes and of such relative heaviness that if the sashes be unrestrained they automatically close. With sashes vertically movable in the window-casing the weights approximate the weight of the sash, and to make them operative in sustaining the sash in an open position restraining devices are used which compensate for the overbalancing difference between sash and weight. These restraining devices preferably take the form of a friction bearing device interposed between the sash and casing and which in case of fire become automatically released, permitting the unrestrained sash to close. The sashes may be drawn to an open position by any means which accomplishes vice versa an overbalancing correlation between weight and sash, and in this connection it is within the purpose of my invention to provide a means which may effect the reopening of the window from a distance, that in case of fire water may be thrown into the building. For this purpose I have employed the overbalancing-weight of water and so provided that as it is thrown against the window, as from a fireman's hose, a sufficient amount may enter into chambers or receptacles prepared for its reception and so situated relatively to the sash that it may produce the overbalancing effect of opening it. This feature of my invention is adapted to be used in connection with windows containing heavy plate-glass, wire or other glass not easily broken, and for the purpose of illustration as applied to the upper of two vertically-moving sashes, to which it is especially applicable in conjunction with the automatic fire-releasing devices.

In the drawings, Figure 1 is a view in elevation of the window, showing especially the water-receiving openings on the exterior of the sash. Fig. 2 is a view in horizontal cross-section on the line 2 2 of Fig. 1, showing the sash holding and releasing devices. Fig. 3 represents a modified form of the sash holding and releasing device. Fig. 4 shows a means for the retention of the sash holding and releasing device exterior to the sash. Fig. 5 shows the same in plan.

Referring to the drawings, A is the window-casing. It is represented as being made of sheet metal and as having the two weight-holding runways a, corresponding with the two sashes.

B represents the upper sash, and B′ the lower sash. These also are made of sheet metal and are adapted to fit into the casing, in which they have the usual vertical movement. They are retained in position by means of the plate b, horizontally extending from the sashes into the recess a', formed in the casing; but other means for their retention may as well be employed. The upper sash B is held in a normally closed position by means of the overbalancing-weight a^2, connected with the sash by means of the cord or chain a^3, passing over the pulley a^4 at the head of the frame or casing. The lower sash, although normally closed downward, likewise has the weight a^5, which serves to counteract the weight of the sash, that it may readily be raised to an open position. Both weights approximate the weight of the sash which they serve to operate, the weight a^2 being made a little heavier than the upper sash, so that although the sash is normally held closed, but little force is necessary to hold it to an open position. Likewise with the lower sash but little force need be applied to compensate for the overbalancing tendency of the sash to close and to hold the sash open. This compensating device for holding the sash in any open position takes the form of a friction bearing-shoe C, pressed against the side of the casing by the spring c, both shoe and

spring being contained in the sleeve or case c'. The shoe C preferably is in the form of a tube, the outer end of which is closed. The spring enters the tubular extension of the shoe and bears against its bottom. Its tension is adjusted by an adjusting-screw c^2, supported by a nut c^3, attached to the sleeve or casing. This nut, or rather the head c^4 of the sleeve or tube to which the nut c^3 is attached, is held in place by solder fusible at a relatively low temperature and is adapted to be released by the melting of the solder in case of fire or undue heat in its vicinity, and when so released the tension-screw is no longer operative, and the stress upon the spring c is released, thereby releasing the pressure of the shoe against the window-frame and the sash thus unrestrained.

In Fig. 3 I have represented a modified form of the sash holding and releasing device shown in Fig. 2. It varies from the structure therein shown in that the screw c^2 in the cavity of the sleeve c', which is square, and the headed end of the screw bears against the cap c^4, which is the equivalent of the nut c^3 for releasing the friction-bearing of the shoe in that the cap is held to the sleeve by fusible solder or other fire-releasing connection. The cap c^4 fits over the end of the sleeve and has in it a hole c^5, by which access to the head of the screw c^2 is obtained for the purpose of adjusting the tension of the spring. The nut c^3 is prevented from turning because the sleeve is square, but has an endwise movement in the sleeve upon the turning of the screw, which always remains stationary. The screw is extended beyond the nut into the coil of the spring and acts as a support for it. Upon the fusing of the solder uniting the cap to the sleeve the tension upon the spring is immediately released, because the screw is no longer held, and the window automatically closes.

In Figs. 4 and 5 I have shown the sash holding and friction device as affixed to the exterior of the sash. This is accomplished by placing the sleeve or case inclosing the friction bearing-shoe in a rectangular pocket formed, preferably, on the lower rail to the respective sashes and comprising the metal inclosing sides b' b^2 b^3 b^4, the bottom and end being open. The friction device is placed in this pocket, the case c' being attached by rivets b^5 to one of the inclosing sides. Instead of the cap c^4 of the sleeve or case retaining the adjusting-screw c^2, as shown in Fig. 3, the screw c^2 is held in position by an angular plate, the side c^6 of which acts to retain the screw in position and has in it a hole c^7, by which access to the headed end of the screw may be obtained and its tension adjusted. The side c^8 of the angle-piece is fastened to the bottom of the sleeve or shoe-holding case by fusible solder and preferably to that portion of the sleeve adjoining the open bottom of the rectangular pocket that heat may have a ready access. The advantages of this construction are apparent. Upon the melting of the solder and the consequent release of the friction bearing-shoe the sashes automatically close and are held closed, which is their normal position in case of fire. If the fire is within the building, it may become necessary to open the window that water may be thrown in, and for this purpose I have shown in Fig. 1 a means whereby the upper sash may be opened whenever a stream of water is directed against the window, and this at a distance, as within the range of a stream of water from a fire-hose. The means for accomplishing this result consists in so constructing the upper sash that it may receive and hold water, the weight of which overbalances the sash to an open position. The sash being made of sheet metal and its interior being hollow, a water-holding receptacle is provided simply by making the interior water-tight, and in this connection it is to be observed that the friction bearing-shoe, which ordinarily projects through the side of the sash, occupies the position shown in Figs. 4 and 5. In other words, the sheet metal of the sash is built around the sleeve or case inclosing the friction bearing-shoe, which is accomplished by molding the bottom sheet-metal plate of the lower rail to each of the respective sashes, so as to form the rectangular recess or pocket having the sides b' b^2 b^3 b^4. Into this opening or pocket is placed the sleeve or case holding the friction bearing-shoe. I have already explained the advantages of this construction in view of accessible position of the friction-shoe, that it may become released in case of fire, and the construction is also equally advantageous in view of the fact that the metal shell of the sash is easily preserved as a water-tight compartment. Entrance to the interior of the sash is through the openings D, preferably in the top rail and along its outer surface. These openings take the form as represented, or, in fact, any form which readily allows the entrance of water as it is thrown against the window. The result is that the water enters through these openings into the interior of the sash, which becomes heavily weighted and counteracting the effect of the overbalancing-weight drops to an open position. I do not desire to confine myself to the special construction represented, for if by any other means a water-holding chamber accessible from the outer surface of the window and bearing such relation to the sash that the overbalancing effect is produced such would be within the scope of this feature of my invention.

Having thus fully described my invention, I desire to claim by Letters Patent of the United States—

1. In a window having a movable sash, overbalancing means for holding the sash in a normally closed position, and means for the reception and retention within the sash of water as it is thrown against the window that the weight of the same may act to overbal-

ance and reopen the sash, substantially as described.

2. A movable window-sash, overbalancing-weight for holding the sash in a normally closed position, a water-holding chamber contained within said sash, and means connecting said water-holding chamber with the exterior of the sash that water thrown against the window may enter the said chamber, as and for the purposes set forth.

3. A metallic window-sash having an interior suitable for the reception and retention of water, overbalancing-weights for holding the said sash in a normally closed position, means connecting the interior of the said sash with its exterior surface, so that water thrown against the window may enter the said interior of the sash and counterbalancing the weights aforesaid bring the sash to an open position.

4. A window having a sash vertically movable, overbalancing-weights for holding the same in a normally closed position, a friction bearing-shoe for holding the sash open, releasable however in case of fire that the sash may automatically close, and means for the reception into and retention within the sash of water thrown against the window that the weight of the same may overbalance the weight aforesaid and bring the sash to an open position, substantially as described.

5. A window-sash vertically movable, having a shoe to bear against the window-frame, a spring to press against the shoe, a tension-screw to hold the spring and vary its tension and a nut for holding and adjusting the screw, the said nut being held in place by fusible solder, the melting of which releases the said nut and screw, and removes the pressure of the spring in the sash-holding shoe and permits the window to close automatically.

6. A window-sash vertically movable and having a shoe to bear against the window-frame, a spring to press against the shoe, a threaded screw, a nut adjustable thereon for holding the spring and varying its tension, and a support against which the screw may bear and be held in position, which support is held in place by fusible solder, the melting of which releases the screw and removes the pressure upon the sash-holding shoe and permits the window to close automatically.

7. An upper window-sash vertically movable having an interior suitable for the reception and retention of water, overbalancing-weights for holding the sash in a normally-closed position, and openings in the upper rail to said sash suitable to permit of the entry of water into the sash that the same may overbalance the weights aforesaid and bring the sash to an open position, substantially as described.

8. An upper window-sash vertically movable, having an interior suitable for the reception and retention of water, a friction bearing-shoe upon the exterior of the sash and fastened thereto for holding the sash open, releasable however in case of fire that the sash may automatically close, and openings in the upper rail to said sash suitable to permit of the entry of water into the sash that the same may overbalance the weights aforesaid and bring the sash to an open position, substantially as described.

HENRY COLLIER SMITH.

In presence of—
MIKE QUINLAN,
BERTHA GUTSTADT.