No. 803,038. PATENTED OCT. 31, 1905.

E. C. WASHBURN.

AUTOMATIC DEVICE FOR CLOSING FIREPROOF SHUTTERS.

APPLICATION FILED JAN. 19, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

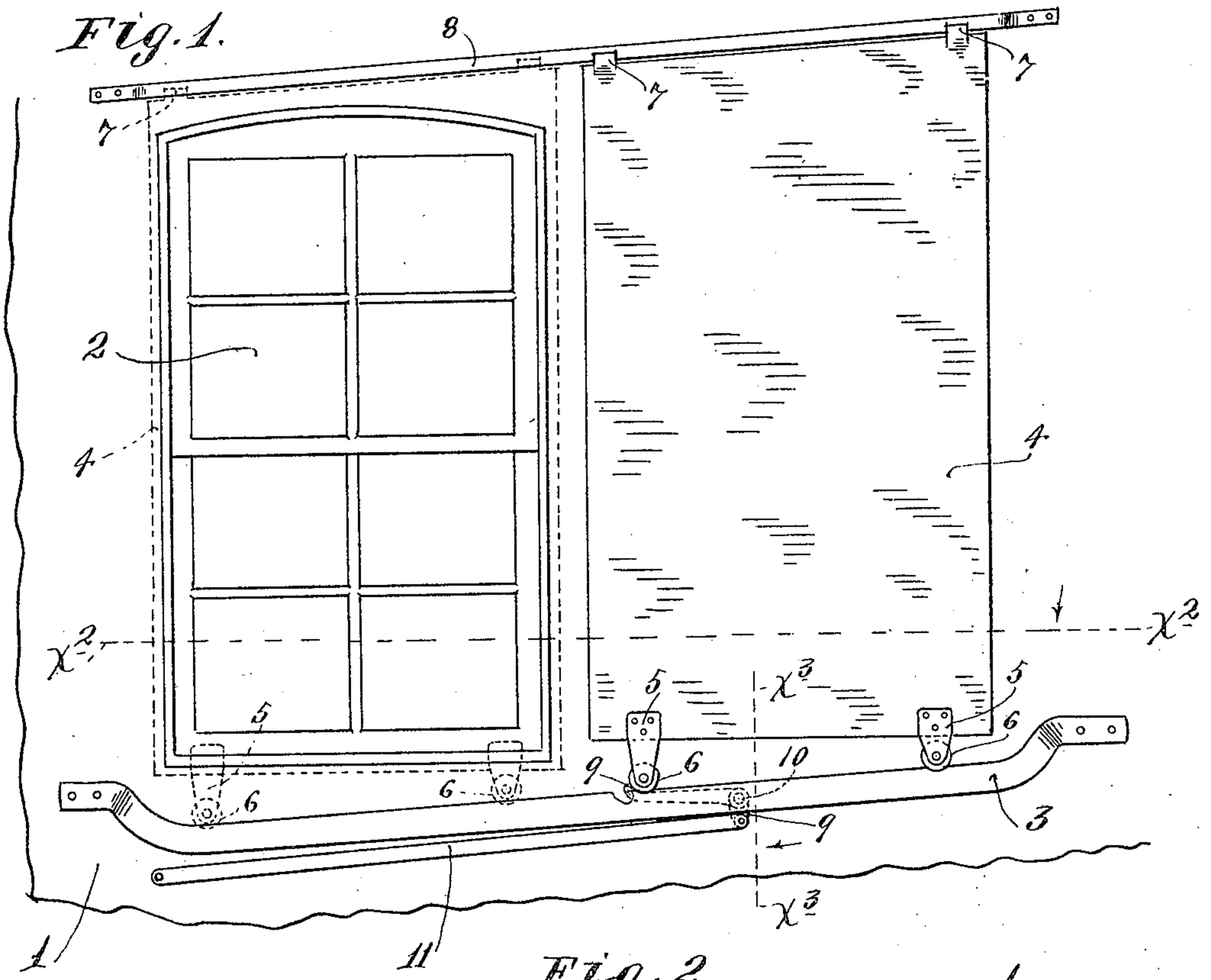


Fig. 2.

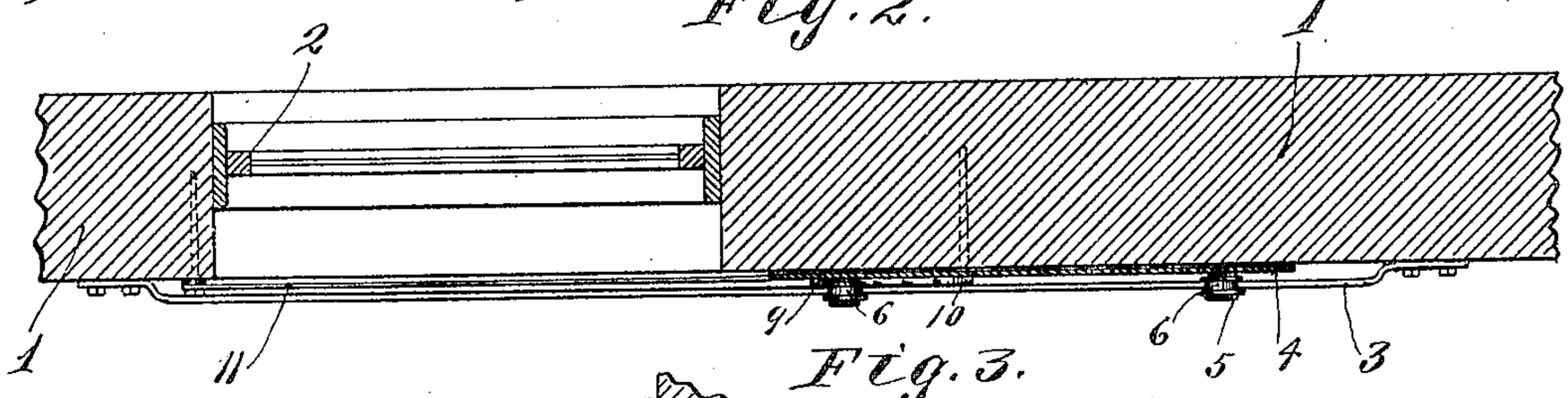
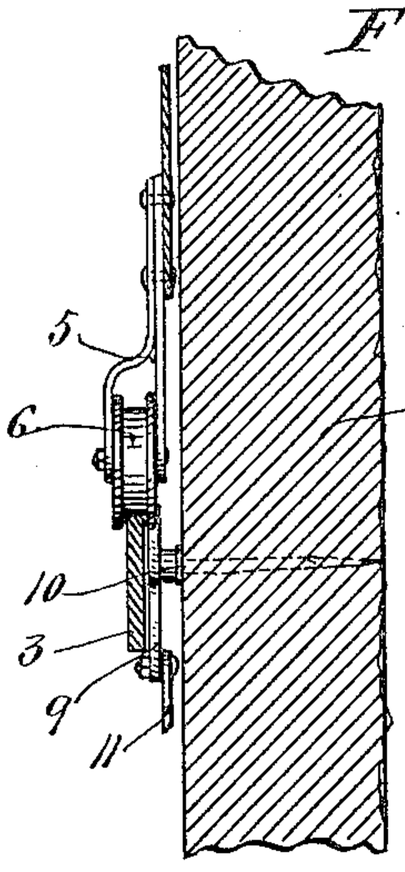


Fig. 3.



Witnesses.
A. H. Opsahl.
E. W. Jeppesen.

Inventor
Edwin. C. Washburn.
By his Attorneys
Williamson & Merchant.

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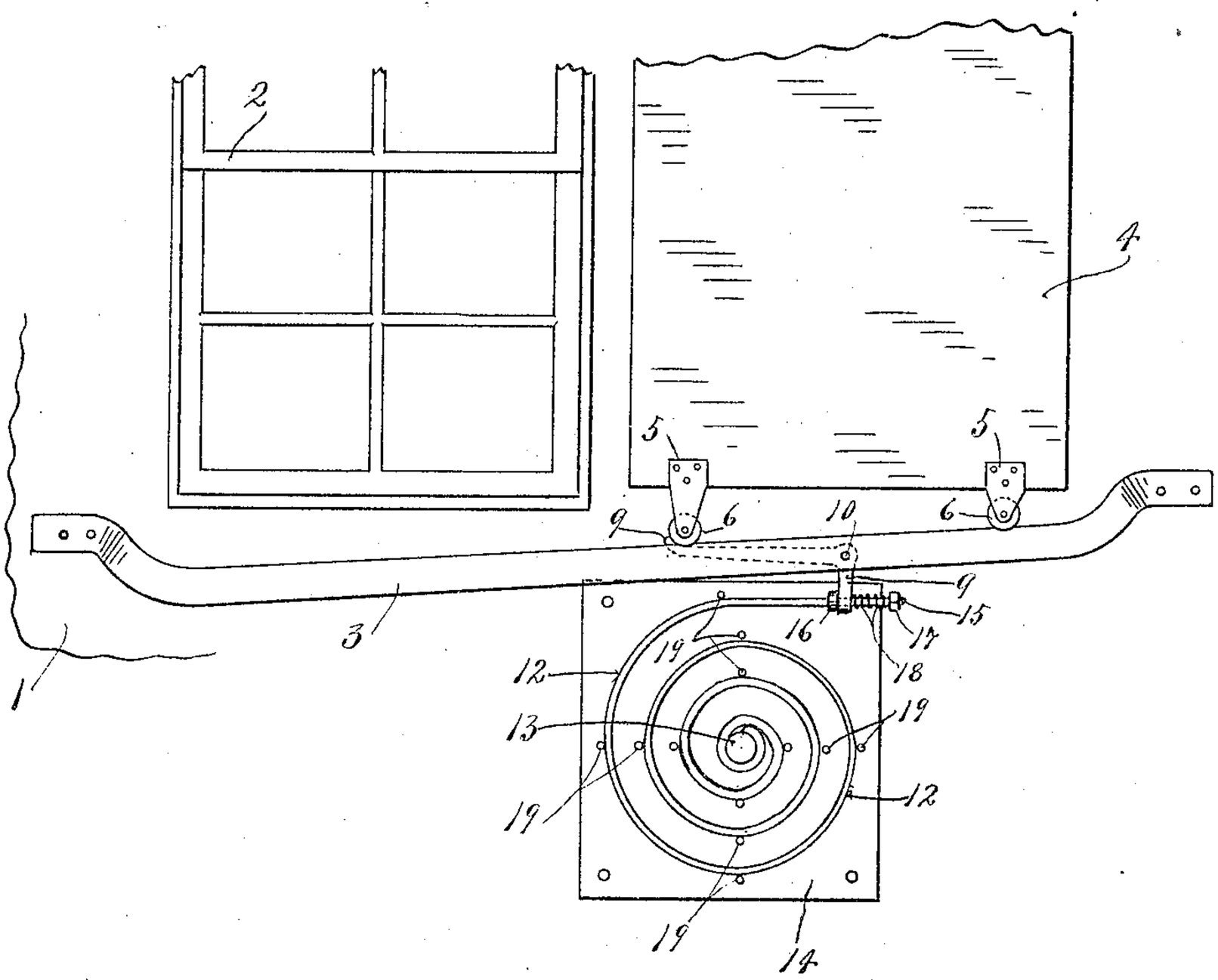
2 SHEETS—SHEET 2.

Fig: 4.



Witnesses.
A. H. Ophahl.
E. W. Jeffress.

Inventor.
Edwin C. Washburn
By his Attorneys.
Williamson Hucket.

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWIN C. WASHBURN, OF MINNEAPOLIS, MINNESOTA.

AUTOMATIC DEVICE FOR CLOSING FIREPROOF SHUTTERS.

No. 803,038. Specification of Letters Patent. Patented Oct. 31, 1905.

Application filed January 19, 1905. Serial No. 241,747.

To all whom it may concern:

Be it known that I, EDWIN C. WASHBURN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Automatic Devices for Closing Fireproof Shutters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has for its object to provide improved means for automatically closing fireproof shutters or doors, and especially those which are located on the outside of a building, and are adapted to close the windows thereof.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

In what I consider the best arrangment of the device the shutters are mounted on inclined tracks in such manner that when released they will be moved by gravity and caused to automatically close the windows with which they coöperate. The shutter is normally held in an open position by a "detainer," so called, and the thermally-actuated device is arranged to normally cause said detainer to hold said shutter in an open position, but to release the same whenever the temperature in the vicinity of the shutter is raised above a predetermined point. The said thermally actuated or released detainer should of course be arranged to hold the shutter under all variations in temperature due to climatic changes, but should be arranged to release said shutter whenever abnormally-high heat is produced by a near-by conflagration.

In the accompanying drawings, which illustrate my invention, like characters indicate like parts throughout the several views.

Figure 1 is a view in side elevation showing a portion of one side of a building and illustrating my invention applied thereto, a portion of the shutter-supporting rail being broken away to more clearly show the latch-dog. Fig. 2 is a horizontal section on the line x^2 x^2 of Fig. 1. Fig. 3 is a detail in vertical section on the line x^3 x^3 of Fig. 1, and Fig. 4 is a diagrammatic elevation showing a modified form of the device.

The numeral 1 indicates one wall of a building having, as shown, a window 2. Secured to the outer face of the wall 1 and extending below the window and to one side thereof is an inclined shutter-supporting track or rail 3, the ends of which are rigidly secured to said wall by bolts, screws, or other suitable devices, and the intermediate portion of which is offset slightly outward from said wall.

The numeral 4 indicates a fireproof shutter, which at its lower portion has depending brackets 5, equipped with grooved truck-wheels 6, that run freely upon the rail 3. At its upper end the shutter 4 is provided with grooved lugs 7, that work loosely on the lower edge of an upper rail 8, the ends of which are rigidly secured to the wall 1, and the intermediate portion of which is offset therefrom. This upper rail 8 extends parallel to the body of the lower track-rail 3. In view of the inclination of the rail 3 the shutter 4 when released will by gravity be caused to automatically close or run into a closed position. (Indicated by dotted lines in Fig. 1.) Normally, however, the shutter is held in an open position (indicated by full lines in Figs. 1 and 2) by a detainer afforded by a dog or bell-crank-like lever 9, which is pivoted at 10 to the wall 1, has a crooked or upturned free end that normally engages one of the truck-wheels 6, and the other arm of which is rigidly held by a metallic bar 11, attached thereto at one end and to the wall 1 at its other end. In the construction illustrated the bar 11 affords the thermally-actuated means for tripping the detainer 9 and releasing the shutter. As already indicated, the arrangement of the expansible bar 11 and of the detainer 9 should be such that under all climatic or normal atmospheric changes the said detainer will hold the shutter against closing movements. When, however, exposed to extreme or abnormal heat, such as would be produced by a fire in the vicinity of the window or of the building, the bar 11 will be given such extreme endwise expansion or distension that it will carry the free end of the detainer 9 out of the path of movement of the truck-wheel 6, and will thereby release the shutter and permit the same to close under the action of gravity. By this simple means, as is evident, an arrangement is provided at a very small cost for automatically closing fire-shutters on the exterior of buildings.

In Fig. 4 a modified form of the expansible metallic actuating-bar is illustrated. The said bar 12 in this construction is of spiral form and at one end is anchored at 13 to a bearing-

plate 14, secured to the wall 1. At its free end the bar 12 is provided with a reduced stem 15, with a shoulder 16, and with a nut 17. The stem 15 works through a perforation in the depending arm of the dog 9, and the shoulder 16 bears against the said arm. A coiled spring 18 is compressed between the nut 17 and the depending arm of the dog 9 and holds the said arm against the said shoulder 16 under normal conditions. By adjustments of the nut 17 the tension of the spring 18 may be varied. Rigid on the bearing-plate 14 is a plurality of pins or projections 19, that cause the spiral bar 12 to maintain approximately the same spiral form under its contracting and expanding movements, and hence cause the free end thereof to move transversely of the depending arm of the dog 9. Fig. 4 illustrates the normal positions of the parts. It is evident that by pressing downward on the free end of the dog 9 the spring 18 will be compressed without requiring movement of the bar 12, and hence that the shutter 4 may be released at any time by this manipulation of the dog. The spring 18 must of course have sufficient tension to prevent accidental movements of the shutter. When the bar 12 is expanded by abnormal heat, its shoulder 16, acting on the dog 9, will of course automatically release the shutter and permit the same to close.

The term "shutter" is herein used in a broad sense to include a movable closure for a window, doorway, or other passage or opening either on the interior or exterior of a building.

From what has been said it will be understood that the device described is capable of modification within the scope of my invention, as herein set forth and claimed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a shutter, provided with truck-wheels and mounted on an incline track in position to close and open, when released, of a pivoted retaining-dog, normally holding said shutter in an open position, and an expansible metallic member, anchored at one end and operating on said dog to release the same, and permit said shutter to close, under abnormally-high temperature, substantially as described.

2. The combination with a wall 1, having an opening 2, of lower and upper inclined rails 3 and 8, respectively, secured to said wall, a shutter 4, guided at its upper end by said rail 8, and provided at its lower end with truck-wheels, running on said rail 3, a detaining-dog 9 pivotally supported from said wall and having a free end normally standing in the path of movement of said truck-wheels, and engaging one thereof, to hold said shutter open, and an expansible metallic bar 11, anchored at one end to said wall, and attached at its other end to said dog and operating, under abnormally-high temperatures, to release said dog, and permit said shutter to close, substantially as described.

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

EDWIN C. WASHBURN.

Witnesses:
ROBERT C. MABEY,
F. D. MERCHANT.