

(No Model.)

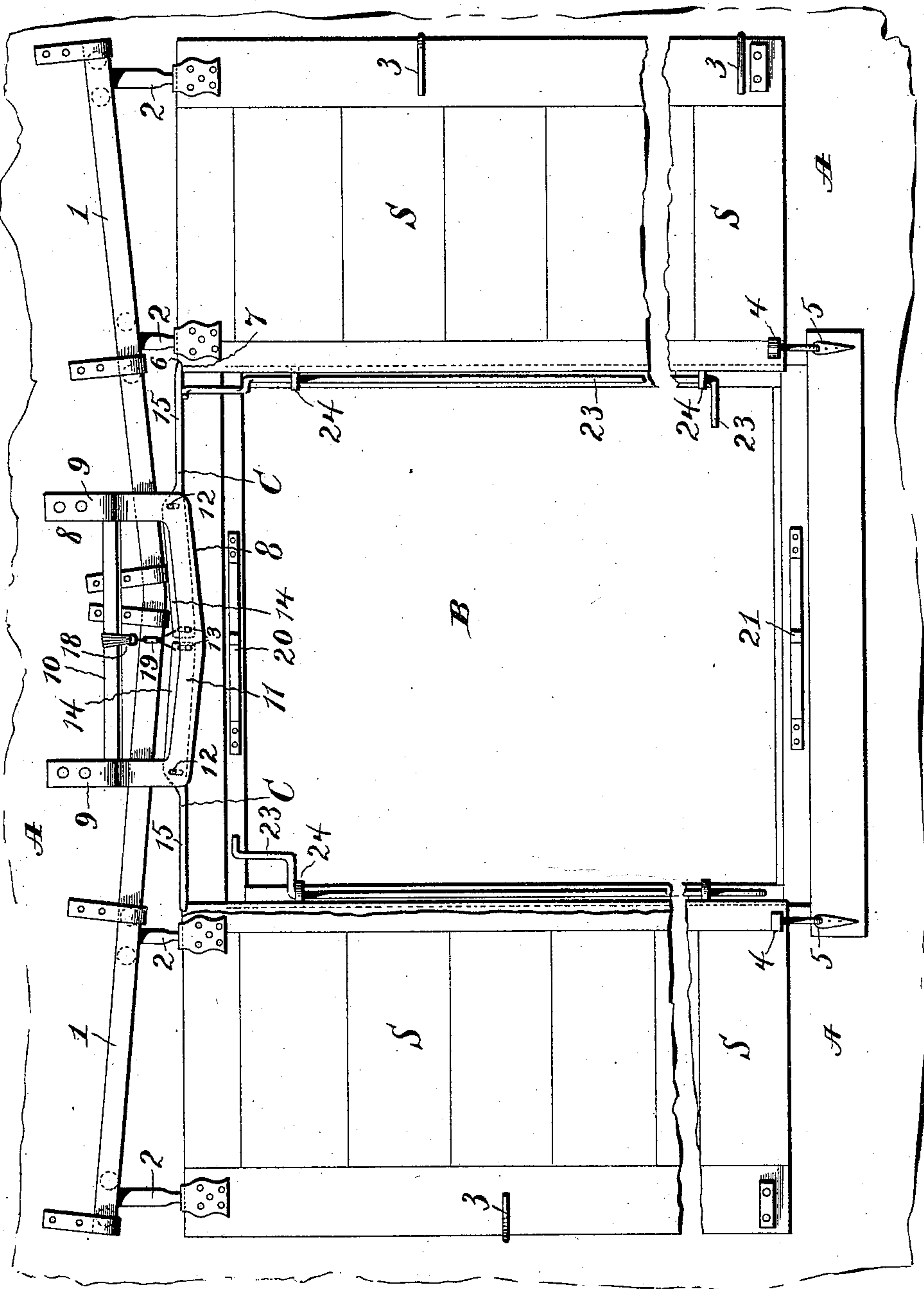
2 Sheets—Sheet 1.

L. F. RICE.

MEANS FOR OPERATING SHUTTERS, &c.

No. 575,736.

Patented Jan. 26, 1897.



Witnesses

James Hutchinson.
G. F. Downing.

Fig. 1.

Lewis Frederick Rice,

Inventor

By H. A. Seymour

Attorney

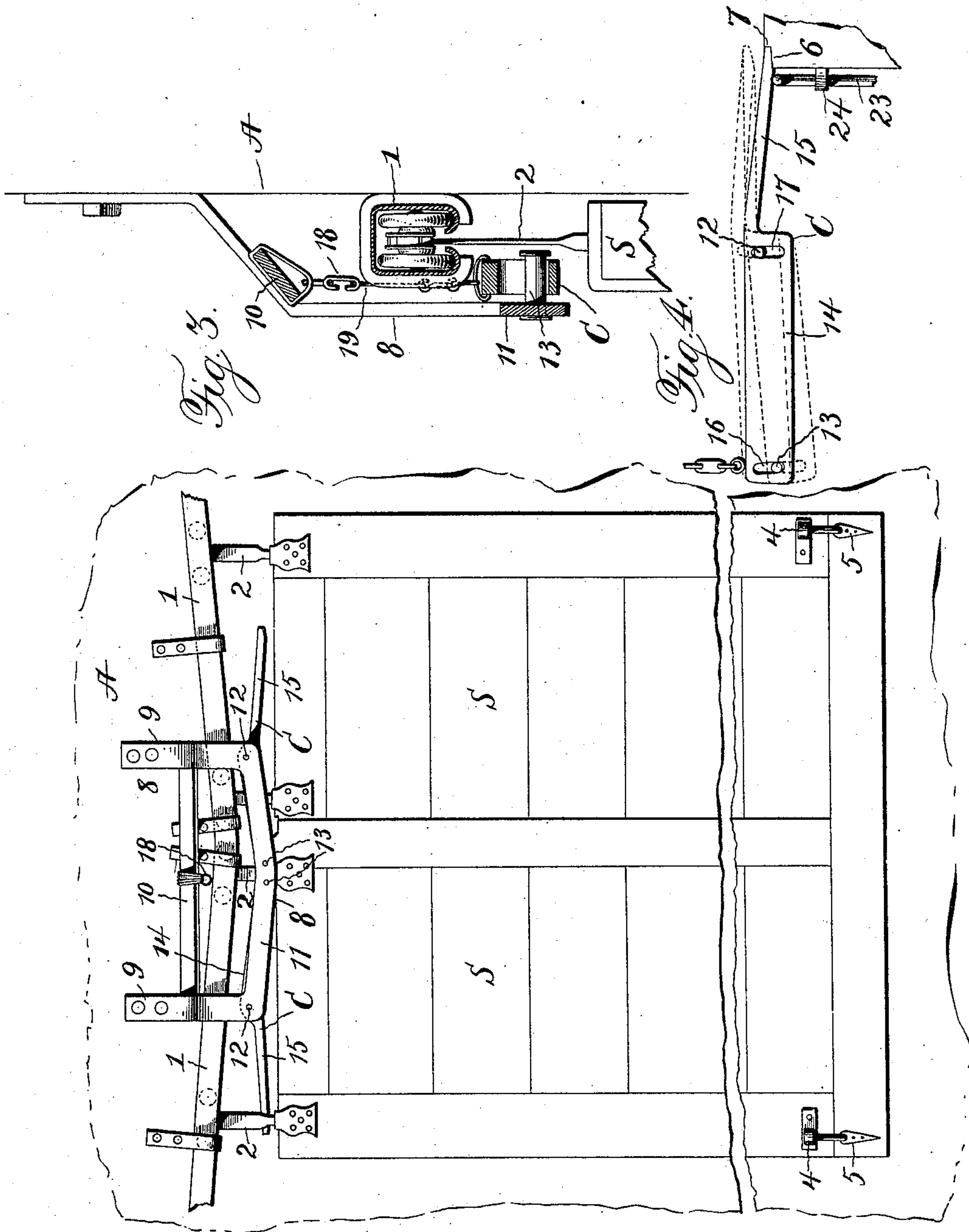
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Fig. 2.
Inventor
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Attorney

UNITED STATES PATENT OFFICE.

LEWIS FREDERICK RICE, OF BROOKLINE, MASSACHUSETTS.

MEANS FOR OPERATING SHUTTERS, &c.

SPECIFICATION forming part of Letters Patent No. 575,736, dated January 26, 1897.

Application filed April 8, 1896. Serial No. 586,731. (No model.)

To all whom it may concern:

Be it known that I, LEWIS FREDERICK RICE, a resident of Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Means for Operating Shutters, &c.; 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 invention relates to an improvement in shutters and similar devices, such as doors, for closing openings in walls or floors of buildings, and more particularly to holding fire shutters or doors normally open by means of a latch and releasing them, either manually or automatically, so as to permit them to close.

A further object is to provide means whereby fire shutters or doors can be caused to close automatically when the temperature at that part of the building to which the shutters or doors are applied reaches a dangerous degree.

A further object is to provide means for holding shutters or doors normally open and for causing them to close without the use of extraneous weights or springs connected with the latch or detent.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view showing an application of my improvements with the shutters open. Fig. 2 is a similar view showing the positions of the parts when the shutters have been closed automatically. Figs. 3 and 4 are detail views.

In the drawings I have illustrated my invention applied to sliding shutters, and for convenience I will describe the construction and operation of the parts when thus applied, but it will be understood that my improvements are also applicable to doors whether they be used to close openings in the wall of a building or openings in the floor.

It is not absolutely essential that the shutters be mounted to slide, as my improve-

ments with slight changes can be made to operate effectually with swinging shutters or doors.

A represents a portion of the wall of a building, and B a window therein. Above the window B inclined tracks 1 1 are secured, the lower ends of said tracks meeting at a point over the opening of the window. From these tracks a pair of shutters S S are suspended by means of suitable hangers 2. The shutters may be limited in their outward movement by means of stops 3, secured to the wall A, and their lower ends may be guided in their movements by means of rollers 4, mounted on brackets 5, secured to the window-sill or to the wall. The upper edges of the shutters may, if desired, be inclined, and at the upper inner corner of each shutter a recess 6 is made, so as to form a shoulder 7, for a purpose which will be presently fully explained.

Over the center of the window a frame 8 is secured to the wall A and comprises arms 9 9, secured to the wall, and upper and lower cross-bars 10 11, connecting said arms. From the outer ends of the lower cross-bar 11 pins 12 project laterally toward the wall A, and at the center of said cross-bar 11 two pins 13 are similarly located. Latches C C are connected with these pins, and as said latches are identical in construction a description of one will suffice for both. The latch C is made with a heavy or weighted end 14 and a light end or latch-finger 15, the latter being adapted to enter the recess 6 in the shutter and bear against the shoulder 7, whereby to maintain the shutter normally open. At the end of the weighted portion of the latch a transverse elongated slot 16 is made, and through this slot the pin 13 passes loosely. A similar elongated slot 17 is made near the middle of the latch, and through this slot the pin 12 passes loosely.

The heavy ends of the two latches C C are connected with the upper cross-bar of the frame 8 by means of a chain 18, one link 19 of which is made, wholly or in part, of fusible metal. Normally the light ends 15 of the latches will rest against the shoulders 7 on the shutters and maintain the latter open

and will be maintained in this position by the chain 18. When in this position, the pins 12 will be in proximity to the upper ends of the elongated slots 17 and the pins 13 will be in proximity to the lower ends of the elongated slots 16. The fusible link 19 may be arranged to fuse at any desired predetermined degree of heat, but usually it should be so constructed as to fuse at about 160° Fahrenheit.

From the construction and arrangement of parts above described it will be seen that when the link 19 becomes fused the latch will drop until it strikes and rests on the pin 12, and the weight of the heavy end of the latch will cause said latch to turn on said pin 12 as a fulcrum and raise the latch-finger free of the shoulder 7 on the shutter, the disengagement of the latch-finger being facilitated by the blow or shock induced by the falling of the latch upon the pin 12 and the pivotal movement of the latch being limited by the engagement of the upper end of the slot 16 with the pin 13. The shutter will thus be released and will close by its own gravity, the hangers 2 riding down the inclined track 1. The object of having the latch (when the shutter is open) slightly raised from the pin 12 and supported only at its extremities is that when the fusion of the link 19 sets free the heavy end of the latch that end shall fall through a limited space before the central portion of the latch comes in contact with the pin 12, and the impact of the falling heavy end upon the pin 12 will have the effect of an upward blow or shock upon the light end of the latch, thereby more effectually insuring the release of the shutter. The object of leaving a space between the pin 13 and the bottom of slot 16 is to permit the easy adjustment of the chain which contains the fusible link.

Stops 20 21 may be secured to the top and bottom of the window-frame for the reception of the inner edges of the shutters when the latter are closed.

In order to provide means whereby the shutters can be released manually when desired, a vertically-movable rod 23, supported by and rotating in suitable guides 24, secured to the window-reveal, will be provided, the lower end of said rod being within easy reach of the operator and the upper end being normally disposed directly under the lintel of the window or door opening, the entire rod and its guides being within the thickness of the wall, so as not to interfere with the free movement of the shutter. The shape of the unlatching-rod is such that by rotation within its guides its upper end is protruded beyond the face of the wall and brought directly under the free end of the latch-finger, so that by raising said rod the latch-finger can be raised out of contact with the shutter, whereby to release the latter and permit it to close.

My improvements are simple in construction, comprise few parts, are cheap to construct and apply to a building, and are effectual in all respects in the performance of their functions.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details of construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a shutter or door adapted, when released, to close automatically, of a frame, pins projecting from said frame, a latch having elongated slots through which said pins pass, said latch being adapted to engage the shutter or door, and means for retaining the latch normally in engagement with the shutter or door, substantially as set forth.

2. The combination with a shutter or door adapted, when released, to close automatically, of a frame independent of the shutter or door, pins projecting from said frame, a latch having a weighted portion, the lighter portion of said latch being adapted to engage the shutter or door, said weighted portion having elongated slots at its respective ends, through which slots said pins pass loosely, and a thermostatic device connected with the weighted end of the latch whereby to retain the lighter end thereof normally in engagement with the shutter or door, substantially as set forth.

3. The combination with a shutter or door adapted, when released to close automatically, of a fixed latch-frame and pins projecting from said frame, a latch having a weighted portion and a latch-finger, the latter being adapted to engage and rest on the shutter or door, said weighted portion of the latch also having transverse elongated slots through which said pins pass, and a suspending device attached to the free end of the latch whereby said latch will be supported at its ends, substantially as set forth.

4. The combination with a track, and a shutter or door suspended therefrom, adapted to close automatically when released, of a fixed frame having a cross-bar, pins projecting from said cross-bar, a weighted latch having transverse elongated slots through which said pins pass loosely, the forward or lighter end of said latch being adapted to engage the shutter or door, and a thermostatic device attached at one end to the heavy end of the latch and at the other end to said fixed frame, substantially as set forth.

5. The combination with a window or door frame, and a shutter or door, of a weighted latch supported over said shutter or door and adapted to engage the same whereby to re-

tain it open, and a rod mounted in the window or door frame for releasing the shutter or door, said rod being of such shape that, when rotated, its upper end will protrude beyond said frame in line with the end of the latch which engages the shutter or door, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

LEWIS FREDERICK RICE.

Witnesses:

JEFFRIES WYMAN,
T. B. DOOLITTLE.