(No Model.) 3 Sheets—Sheet 1.

A. A. GOUBERT.

SHUTTER FASTENER.

No. 456,115. Patented July 14, 1891.

Fig. 1.

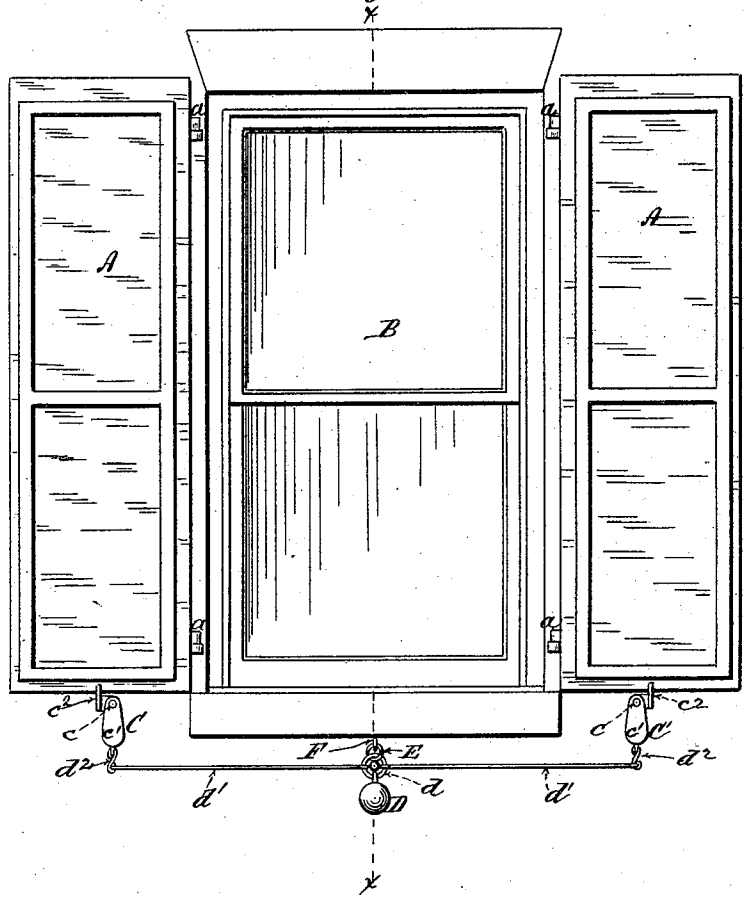
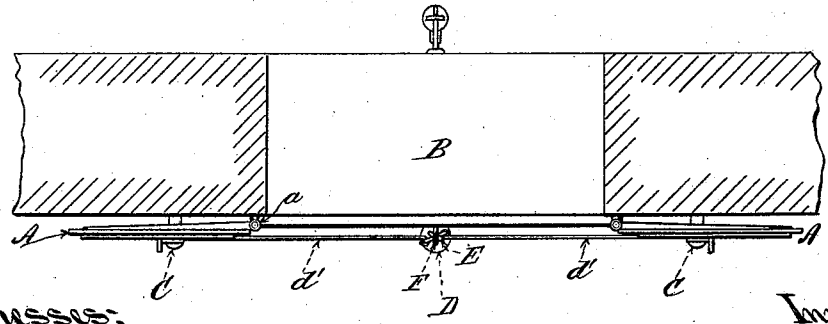


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

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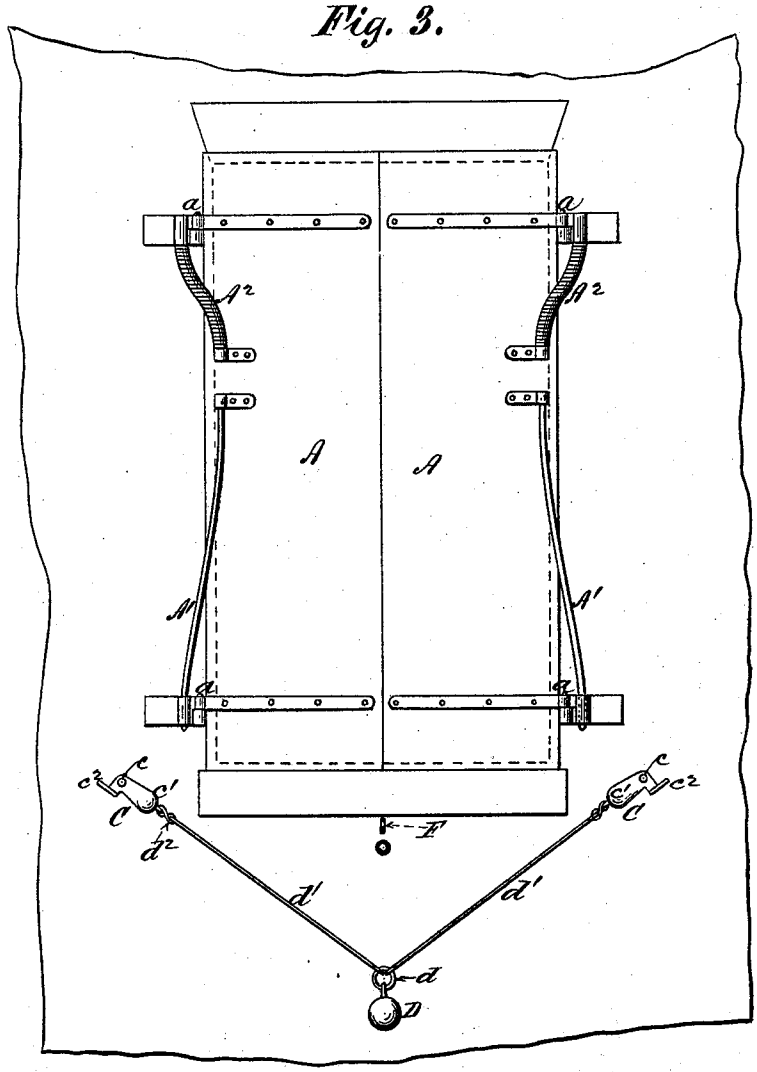
Fig. 3.



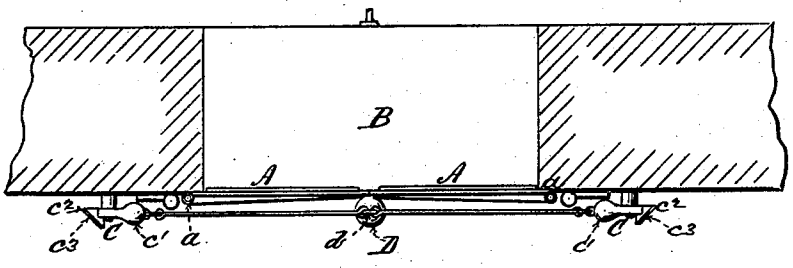


Fig. 4.

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(No Model.) 3 Sheets—Sheet 3.

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Fig. 5.

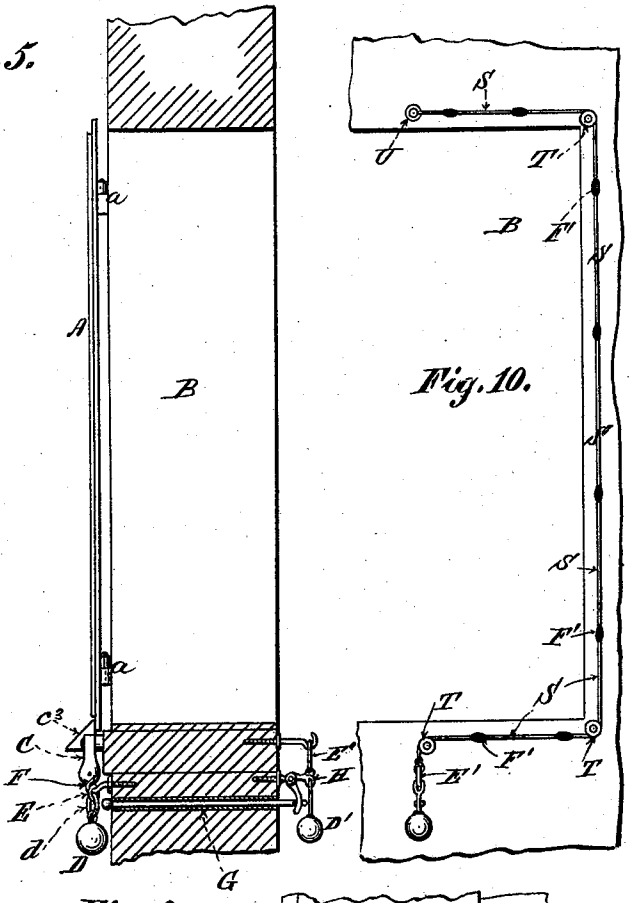


Fig. 10.

Fig. 7.

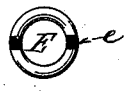


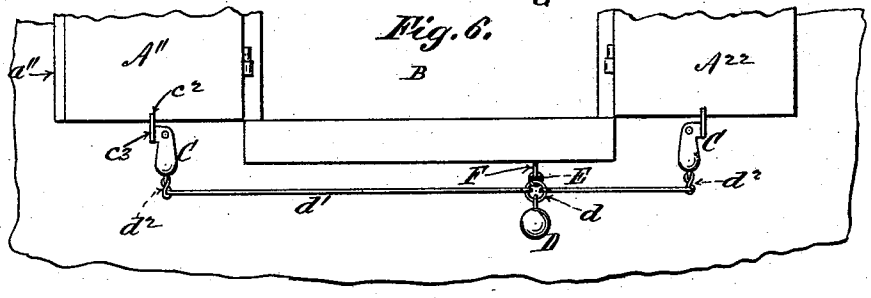
Fig. 8.



Fig. 9.



Fig. 6.



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UNITED STATES PATENT OFFICE.

AUGUSTE A. GOUBERT, OF BROOKLYN, ASSIGNOR TO FRANZ O. MATTHIESSEN, OF IRVINGTON, NEW YORK.

SHUTTER-FASTENER.

SPECIFICATION forming part of Letters Patent No. 456,115, dated July 14, 1891.

Application filed June 21, 1890. Serial No. 356,175. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTE A. GOUBERT, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Destructible Fastenings for Iron Shutters, of which the following is a description sufficient to enable those skilled in the art to which the invention appertains to make and use the same.

My improvements relate to the metallic shutters applied to buildings for the purpose of protecting them against external fire, and more especially to the class of automatically-closing shutters held by fusible connections or fastenings, substantially as set forth in the patent to F. O. Matthiessen, dated April 11, 1882, No. 256,439.

As heretofore used no provision has been made for controlling the shutters from the interior of the building in case of fire within the building itself, under which circumstances it is desirable that the shutters shall be prevented from closing, in order to admit of convenient access to the interior through the windows.

In my application for patent concurrent herewith, filed June 21, 1890, Serial No. 356,174, I describe a method of overcoming this difficulty by means which automatically disconnect or render inoperative the shutter-closing mechanism whenever the interior heat is sufficient to release a fusible connection by which said closing mechanism is maintained in position normally, and thus prevent the closing of the shutters, even though the exterior fusible shutter-fastenings be severed.

In my present application I effect the same result by means which automatically lock the shutters and their closing mechanism under like conditions, the invention consisting, essentially, in the combination, with exterior shutter-fastenings adapted to hold the shutters open against automatically-closing mechanism by means of a destructible or fusible coupling or link, of a locking device held normally out of engagement with said exterior shutter-fastenings by a fusible connection within the building, but capable upon the melting of said interior fusible connection of automatically blocking or holding the exterior shutter-fastenings against displacement, thereby preventing the closing of the shutters.

My invention also includes special features of arrangement and construction of parts whereby I am enabled to secure both shutters of a window by a single fusible exterior coupling or connection, and to provide for the closing of the shutters either simultaneously or one slightly in advance of the other upon the melting of the fusible exterior coupling.

I do not confine myself herein to the use of springs for effecting the automatic closing of the shutters when released, as weights may be used for this purpose, as in my concurrent application hereinbefore referred to, or equivalent means may be used for effecting a like result, the action of both the exterior and interior fastening and releasing mechanism being independent of any special means for moving the shutters.

It is to be understood herein that the word "fusible" in connection with the destructible suspenders or links referred to is used in a restricted sense only, a compound melting at a temperature of in the neighborhood of, say, 160° Fahrenheit being used, either in whole or in part, in the formation of such suspending devices, the design being to afford a suspender that, while sufficiently strong at ordinary temperatures to perform its functions as such, will upon a dangerous increase above normal temperature suffer disintegration and release the parts with which it has been connected, thereby either causing or preventing the closing of the shutters, as the case may be, according to its position at the exterior or interior of the building, as hereinafter more fully set forth.

In the accompanying drawings I illustrate means for carrying out my improvements practically, although I do not wish to confine myself strictly to the identical form and construction of parts shown, since it is obvious that various modifications may be made therein without departing from the essential features of my invention.

Figure 1 is an elevation of a window provided with two iron shutters held open by

ordinary shutter-catches controlled by a single destructible fastening or fusible suspender. Fig. 2 is a plan of the parts in the position shown in Fig. 1, the window space being indicated without sashes or frame. Fig. 3 is an elevation similar to Fig. 1, showing the shutter-fastenings released and the shutters closed. Fig. 4 is a view similar to Fig. 2 of the parts in the position shown in Fig. 3. Fig. 5 is a central vertical section on plane of line x x, Fig. 1; Fig. 6, an elevation of the lower portions of window-opening, shutters, &c., showing a modified arrangement of the shutter-fastening device, whereby one shutter will be released slightly in advance of the other when the fusible suspender is severed. Figs. 7, 8, and 9 represent modifications in the form and construction of the destructible suspending-links, which are used for sustaining in their normal positions the shutter-fastening devices and the automatic locking mechanism therefor. Fig. 10 is a partial representation of the inner side of a window-opening, illustrating a modified form of the destructible suspender for the automatic locking device.

The shutters A A are of ordinary construction, hinged at a a, so as to cover the window-opening B when closed.

As before intimated, the automatic closing of the shutters A A may be effected by any suitable means, the accompanying drawings illustrating the use of springs for this purpose, as in the patent to Matthiessen, hereinbefore referred to, A′ A′ representing torsion-springs, and A^2 A^2 spiral springs, tending constantly to close the shutters A A.

The shutters A A are held open against this tendency of the springs by the catches C C, pivotally attached to the outer wall of the building, as at c c. These catches are formed with counter-weights c' c', which maintain the catches C C upright and in position to hold the shutters open by means of the locking arms or projections c^2 c^2. The outer sides of the locking-arms c^2 c^2 are formed with inclined surfaces c^3 c^3, which cause the depressing of the locking-arms c^2 c^2 against the counter-weights under the action of the lower edges of the shutters as the latter are opened and turned against the wall. The catches C C are connected with a weight D, suspended upon a fusible link or holder E in such manner that upon the softening of said fusible means of suspension by external heat the catches C C are drawn into position to release the shutters A A, as illustrated in Figs. 3 and 4, when the springs A′ A^2 force the shutters together over the window-opening B.

The form and arrangement of the fusible link or suspender E may obviously be varied to suit the requirements of special use, the principle involved consisting in preventing the action of suitable tripping or releasing mechanism under ordinary conditions by means of a fusible connecting or suspending device, which, when exposed to an unusual degree of heat, melts, and thereby allows the shutter-releasing mechanism to act.

Each catch C may be provided with an independent releasing-weight D and fusible suspender E, if desired, although I prefer to connect the catches C C of the shutters A A of a window with a drop-weight D common to both.

As shown in the drawings, the fusible coupling E consists of a link or ring made in whole or in part of a fusible compound e, which will melt at a given temperature above that which is normal. By this link E the weight D is suspended from a stationary hook or fastening F, attached to the wall. A ring d, attached to the weight, serves to afford means for connection with the fusible link E and with the catches C C through the medium of the rigid rods d' d' and links d d, the latter being sufficiently long and loose to permit of the turning of the catches C C by hand to release the shutters without disturbing the fusible link E and weight D when it is desired to close the shutters by hand. When the shutters are of equal width and do not overlap when closed, the releasing weight D and fusible link E are placed centrally, as shown in Figs. 1, 2, 3, and 4, so that upon the melting of the link E and descent of the weight D the shutters will close simultaneously. Where, however, the shutters overlap when closed it is of course desirable that one shall close slightly in advance of the other, and this I accomplish by arranging the releasing-weight D and fusible suspender E farther from the shutter A″, which is formed with the overlapping edge a'' and comparatively close to the other shutter A^{22}, as illustrated in Fig. 6, so that upon the descent of the releasing weight D the catch of the latter shutter A^{22} will be withdrawn from its lower edge an instant before the overlapping shutter A″ upon the other side is released, thus insuring the folding of the edges of the shutters in proper relation to each other under the action of the springs A′ A^2 or equivalent shutter-actuating mechanism.

It will be seen from the foregoing that ample provision is made for the automatic release and closing of the shutters should there be an excess of exterior heat, in which case it is desirable to protect the interior; but in case of internal fire the automatic closing of the shutters would be objectionable, in that it would impede the work of the fire department, and this objection is the main obstacle in the way of the general adoption and use of this class of automatically-closing shutters. I therefore use in conjunction with the exterior releasing mechanism an automatic bolting or dogging device, which in case of excess of heat within the building is released in such manner as to engage with and prevent the subsequent action of the exterior shutter-releasing mechanism.

This locking device may obviously be varied considerably in construction and ar-

rangement without deviating from my invention in this respect. A simple form of device for this purpose is shown in the drawings, consisting of a bolt G, extending through a tube g in the wall, the outer end g' of the bolt G projecting in line with the ring d of the exterior releasing mechanism, while the inner end of the said bolt engages with one arm h of a bell-crank lever H, the other arm h' of said lever having a weight D′ attached to it which tends to force the bolt out into engagement with the ring d. The bolt G is held back in its normal position by means of a destructible suspender or link E, which connects the arm h' of the bell-crank lever H with a fixed support I, (shown in the drawings in the form of a hook,) thus sustaining the weight D′ under ordinary circumstances of use until the destruction of the suspender E′ by an excess of interior heat, when the weight will drop and shoot the bolt G into engagement with the exterior shutter-releasing mechanism.

As regards the form of engagement of the bolt G with the exterior shutter-releasing mechanism I do not wish to confine myself to the use of the ring d for this purpose, since any construction of parts which will permit of the engagement of the outer end of the bolt G when projected to effect the dogging or locking of the shutter-releasing mechanism will be equally effective and within the principle of my invention in this particular.

In order to render the operation of the interior locking mechanism as sensitive and prompt as possible, the suspender E′ may be connected to and supplemented by a series of cords, chains, or wires S, connected by fusible couplings E″ and extending over suitable pulleys T, arranged around the window-opening B, or extending to any desired point in the interior, where the end is secured, as at U in Fig. 10. Thus the interior locking mechanism may be released by an excess of heat acting upon any one of the series of flexible couplings F″, extending over a comparatively large area.

I have herein shown and described weights as employed for furnishing the necessary power to operate both the exterior and interior releasing and locking mechanism automatically, although it is obvious that springs may be substituted for the weights, if preferred.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a self-closing shutter and with an exterior catch for holding it open, substantially as described, of a weight independent of said catch, suspended normally on the exterior wall by a fusible holder and being linked to the exterior catch, so that upon the release of the weight by the melting of its said fusible holder the weight will withdraw the catch and release the shutter, substantially as set forth.

2. The combination of the self-closing shutters A A, catches C C, formed with the counterweight c' c' and locking-arms c^2 c^2, the connecting-links d^2 d^2, rods d' d', weight D, and fusible suspender E, substantially in the manner and for the purpose described.

3. The combination of the self-closing shutters, catches C C, connecting-rods d' d', weight D, and fusible suspender E, said weight and fusible suspender being arranged nearer to one shutter than to the other for the purpose of effecting the release of one shutter before the other, substantially in the manner set forth.

4. The combination of a self-closing shutter, a catch for holding said shutter open, an exterior automatic device for withdrawing said catch and releasing said shutter, substantially as described, and mechanism for automatically locking said exterior releasing device upon the severance of a fusible suspender in the interior of the building, substantially in the manner and for the purpose set forth.

5. The combination, with an exterior automatic device for releasing self-closing shutters, substantially as described, of the bolt G for locking said exterior shutter-releasing mechanism, said bolt being held normally out of engagement with said exterior shutter-releasing mechanism by a fusible suspender within the building and being connected with means for projecting it outward upon the severance of said fusible suspender, substantially in the manner and for the purpose set forth.

6. The combination of the self-closing shutters A A, catches C C, connecting-rods d' d', weight D, ring d, and fusible suspender E with the bolt G, bell-crank lever H, weight D′, and flexible suspender E′, arranged and operating substantially in the manner and for the purpose set forth.

7. The combination of the self-closing shutter, means for automatically releasing said shutters, a device for automatically locking said shutter-releasing mechanism, and a fusible suspender for said automatic locking device, consisting of a series of flexible sections connected by a series of fusible couplings, arranged and operating substantially in the manner and for the purpose set forth.

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