

No. 782,729.

PATENTED FEB. 14, 1905.

W. S. DOE.
CLOSING DEVICE FOR WINDOWS.

APPLICATION FILED OCT. 29, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

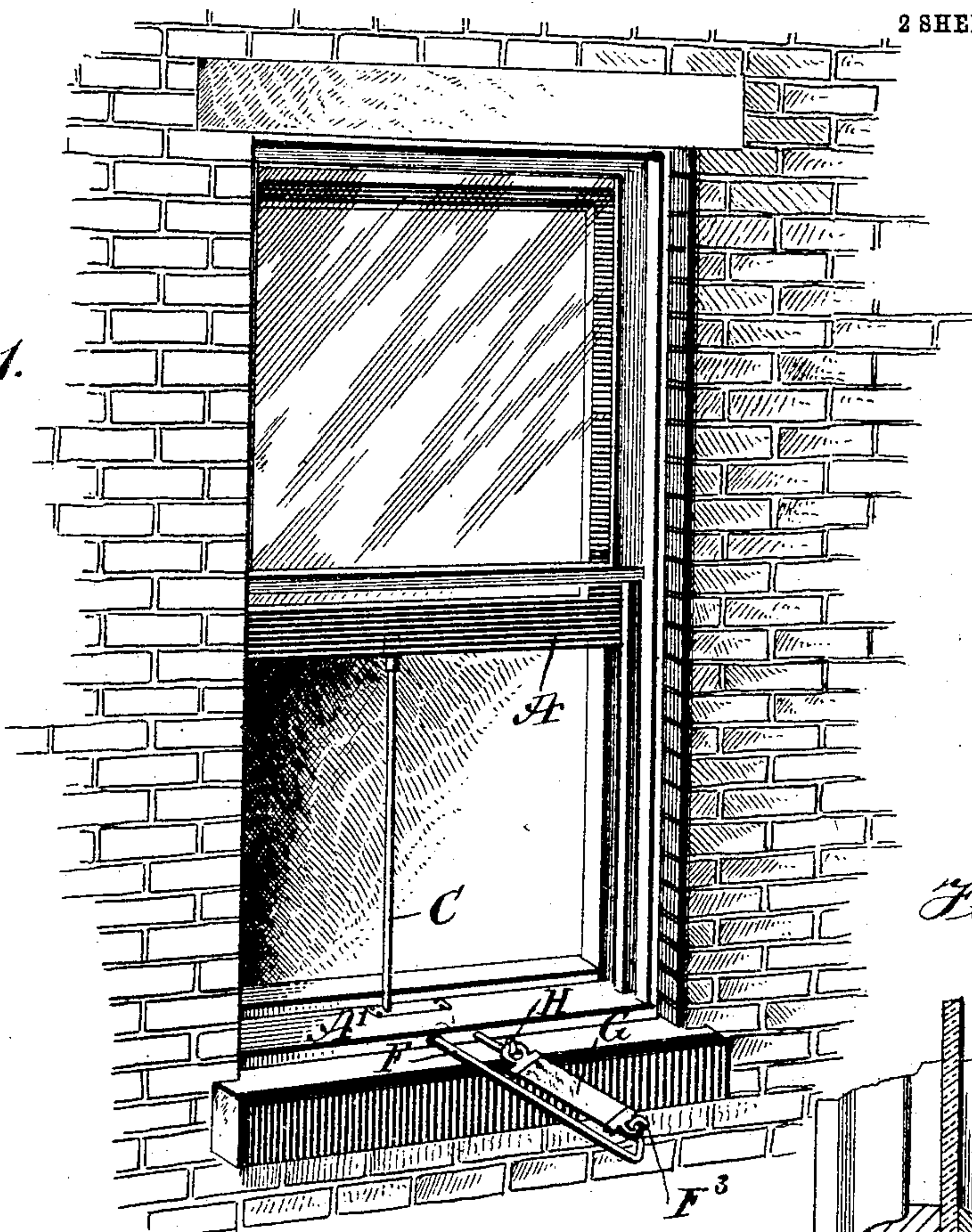


Fig. 5.

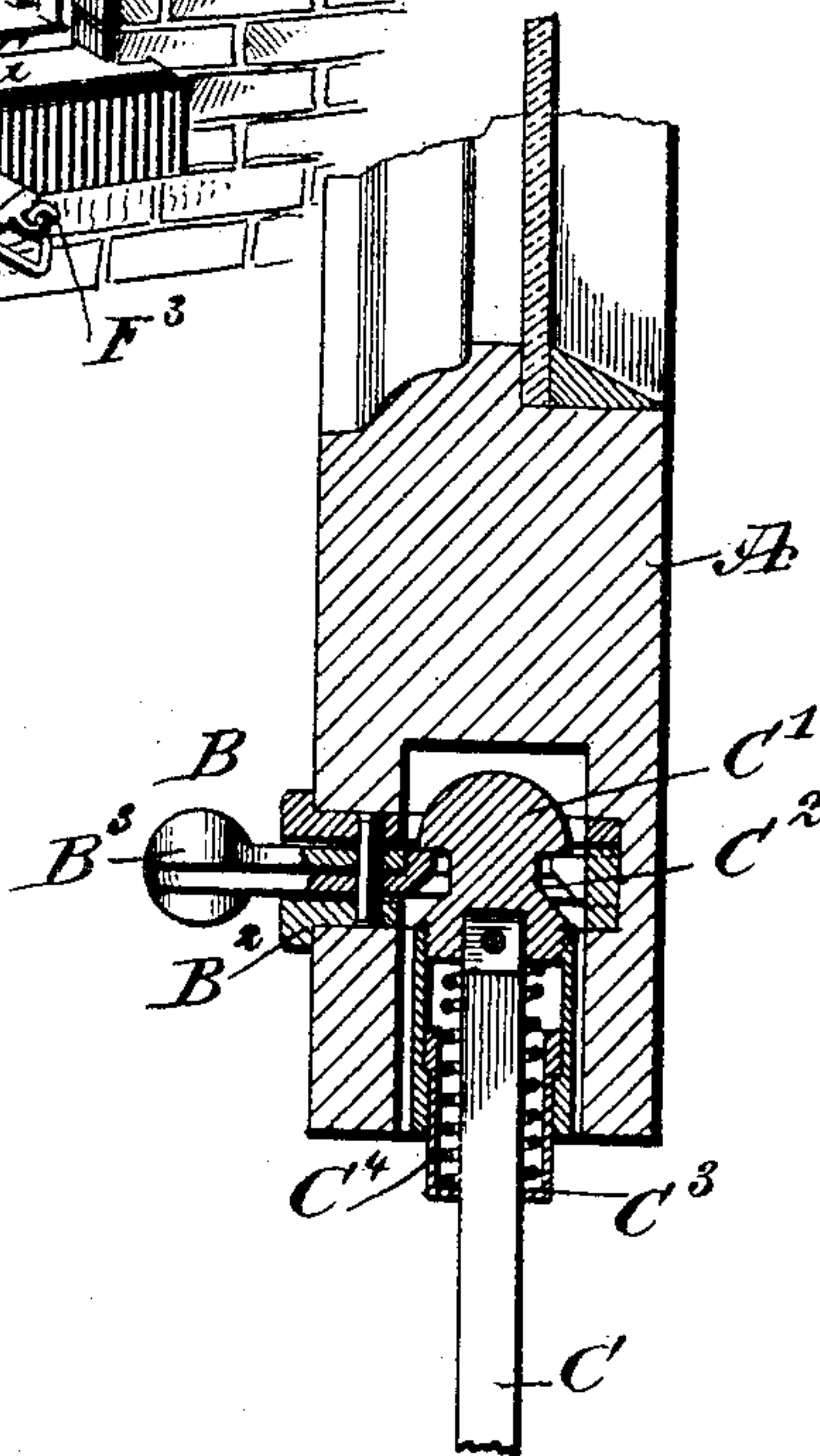
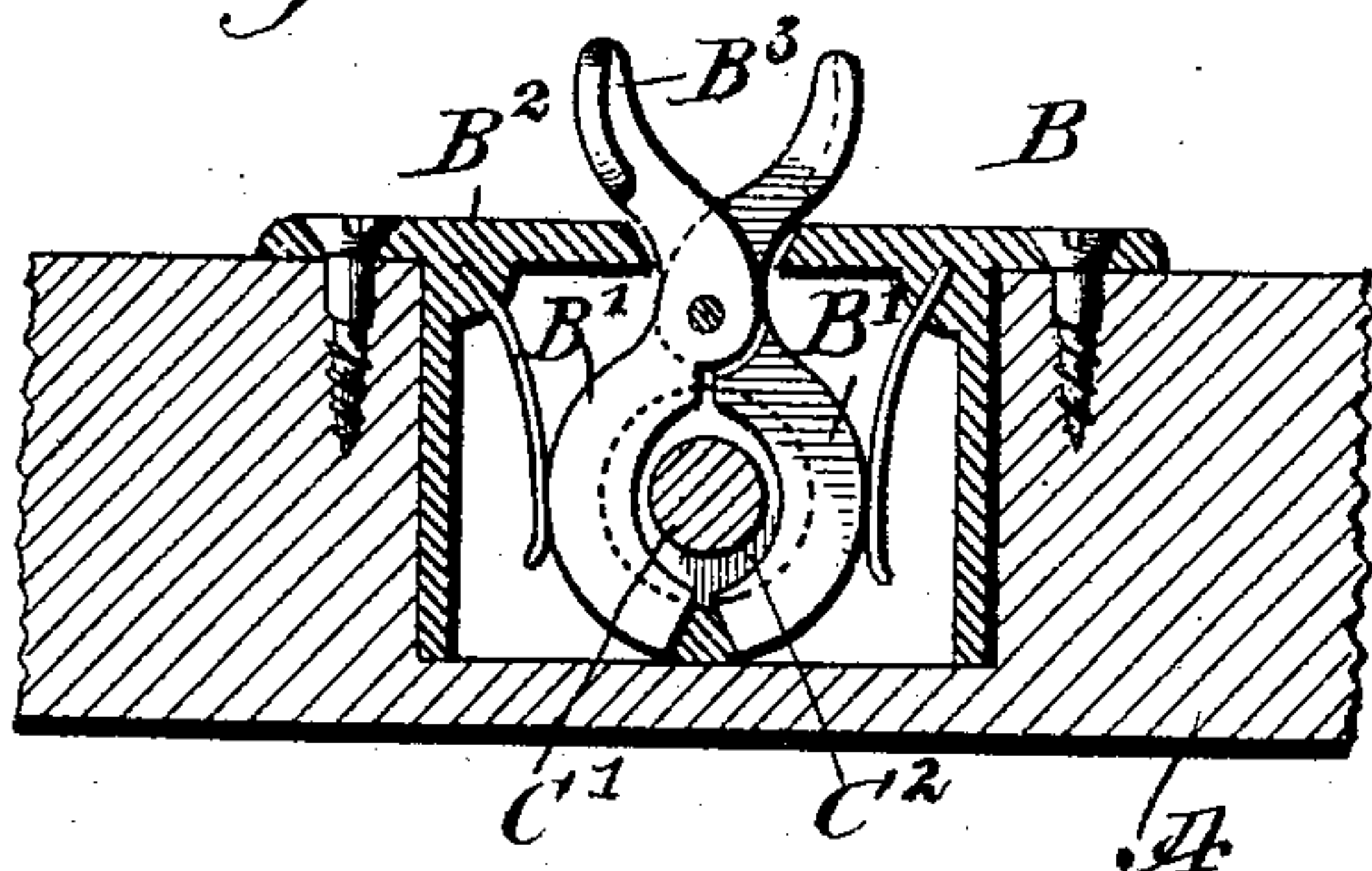


Fig. 4.



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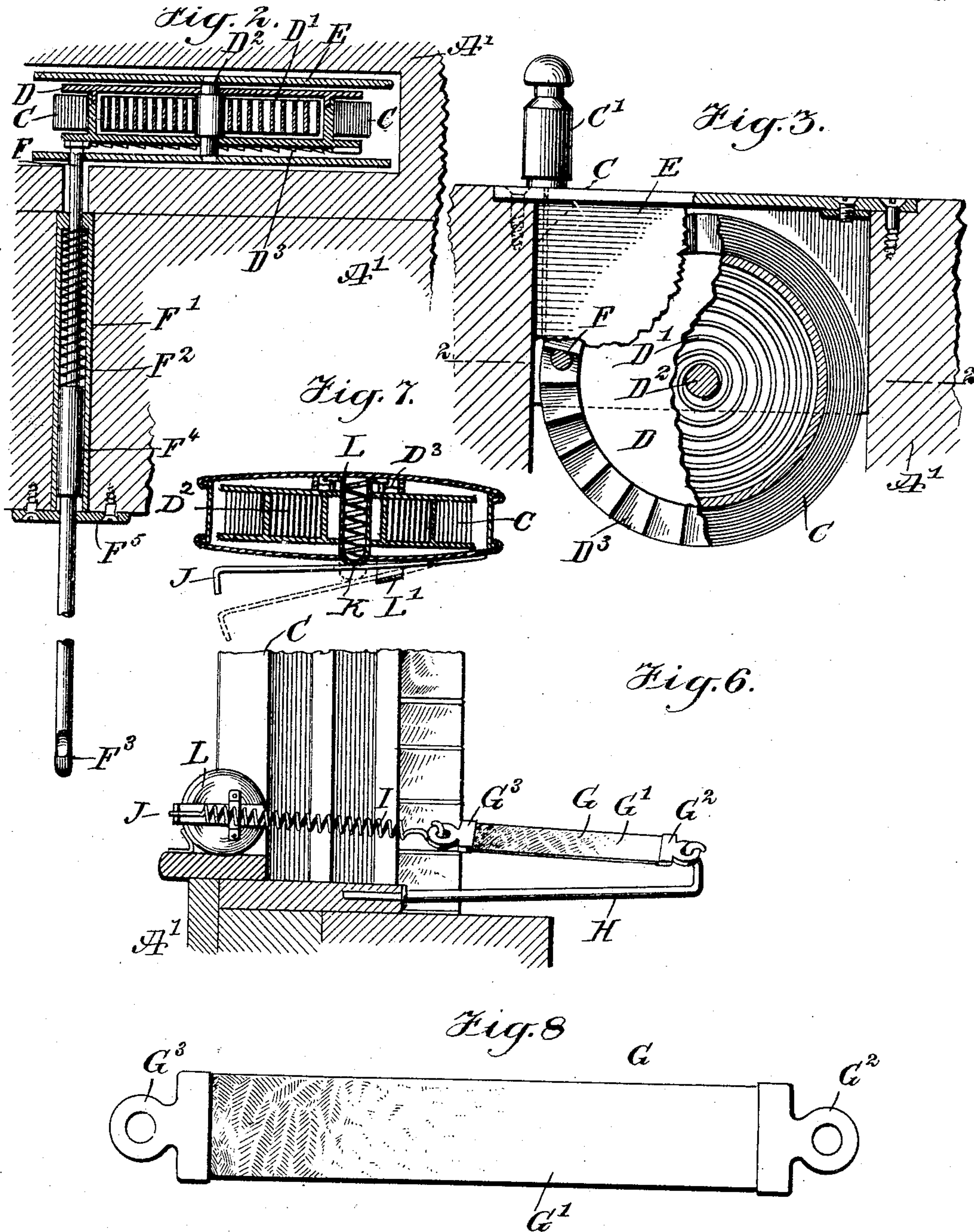
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WALTER SCOTT DOE, OF JERSEY CITY, NEW JERSEY, ASSIGNOR OF ONE-HALF TO DAVID PERRY, OF JERSEY CITY, NEW JERSEY.

CLOSING DEVICE FOR WINDOWS.

SPECIFICATION forming part of Letters Patent No. 782,729, dated February 14, 1905.

Application filed October 29, 1904. Serial No. 230,500.

To all whom it may concern:

Be it known that I, WALTER SCOTT DOE, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Closing Device for Windows, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved device for automatically closing a window when it begins to rain.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the improvement as applied. Fig. 2 is an enlarged sectional plan view of the same on the line 2 2 of Fig. 3. Fig. 3 is a sectional side elevation of the same. Fig. 4 is an enlarged sectional plan view of the fastening device for the flexible connection. Fig. 5 is a transverse section of the same. Fig. 6 is a transverse section of a window provided with a modified form of the improvement. Fig. 7 is an enlarged sectional plan view of the drum-casing shown in Fig. 6, and Fig. 8 is an enlarged plan view of the hygroscopic link.

On the lower cross-bar of the window-sash A to be closed is secured a retaining device B for the head C' of a flexible connection C, preferably in the form of a steel band, tape, or the like winding on a spring-controlled drum D, journaled in a suitable casing E, let into the window-sill A', as plainly indicated in Figs. 2 and 3. The drum D is pressed on by a spring D', fastened at one end to the rim of the drum and secured at its other end to a fixed shaft D², on which the drum D is mounted to turn, the said shaft D² being securely held in the sides of the casing E. On one of the flanges of the drum D is secured or formed a ratchet-wheel D³, adapted to be engaged by a rod F, forming part of a locking device for

the drum D, so as to hold the same against rotation when the spring D' is wound up on pulling at the flexible connection C—that is, when raising the window-sash A and drawing the flexible connection along, as indicated in Fig. 1. The rod F is mounted to slide transversely in a casing F', secured to the window-sill A', and the said rod is pressed on by a spring F² to normally hold the inner end of the rod out of engagement with the teeth of the ratchet-wheel D³, the said rod when in engagement with one of the teeth of the ratchet-wheel D³ serving to lock the drum D against rotation, thus allowing the window-sash to stay in an open position for the time being.

The outer end of the rod F is provided with a hook F³, connected by a hygroscopic link G with a rod H, attached to the window-sill, as plainly indicated in Fig. 1, the said hygroscopic link G being formed of a body G', made of a fabric material, the fibers of which are capable of dissociating when the link is under tension and when subjected to the action of water. The ends of the body G' are provided with strong non-tearable eyes G² and G³, of which one is hooked onto the hook F³ and the other on the rod H. The link G when in position, as shown in Fig. 1, serves to hold the rod F in an innermost position—that is, in engagement with the ratchet-wheel D³—to prevent the latter from rotating and to hold the spring F² under tension.

In case it begins to rain the rain-water in coming in contact with the body G' of the link G causes the fibers of the said body to immediately dissociate, whereby the link is torn apart, especially as the link is under tension exerted by the spring-pressed rod F, connected with the outer end of the link G. As soon as the link G breaks or begins to tear apart the rod F moves outward, and its inner end now moves out of engagement with the corresponding tooth of the ratchet-wheel D³ to un-wind spring D' to rotate the drum D to wind up the flexible connection C, whereby the latter pulls the sash A down into a closed position. The rod F is provided with an enlargement F⁴, serving as an abutment for the outer end

of the spring F^2 and also serving to limit the outward-sliding movement of the rod by the abutment abutting against a closing-plate F^5 for the casing F' .

5 The flexible connection C extends through a slot in the top of the casing E, as plainly indicated in Fig. 3, and the head C' of the flexible connection is provided with a neck or annular recess C^2 , adapted to be engaged by the clamp-
10 ing-arms B' of the retaining device B, the said clamping-arms being fitted in a casing B^2 , let into the lower cross-bar of the window-sash A. The clamping-arms B' are spring-pressed and provided with finger-pieces B^3 , extending
15 beyond the inner face of the window-sash to allow the operator to take hold of the finger-pieces with a view to opening the clamping-arms whenever it is desired to release the head C' , and consequently the flexible connec-
20 tion C.

The head C' of the flexible connection C is provided with a tubular extension C^3 , pressed on by a spring C^4 , projecting beyond the bot-
25 tom of the lower rail of the window-sash A, so that when the sash A moves into a closed position the extension C^3 first comes in contact with the window-sill to cause the exten-
30 sion to slide upward against the tension of its spring C^4 , thus relieving the window-sash of undue jar when moving into a closed position.

In the modified form shown in Figs. 6 and 7 the locking device for the drum D is in the form of a pin K, slidable transversely in the drum-casing L, and the said pin K is adapted
35 to be pressed on by a flat spring J, connected with one end of a coil-spring I, engaged at its other end by one of the eyes of the hygroscopic link G, connected with its other eye to the fixed rod H. When the several parts are
40 in the position shown in Fig. 6, the spring-arm J is swung outward by the tension of the spring I to hold the pin K in engagement with the ratchet-wheel D^3 of the drum, and when the link G is torn by the action of the
45 rain-water and the tension of the spring I, as previously explained, then the arm J is released, and consequently presses on the pin K to move the same out of engagement with the ratchet-wheel D^3 to release the drum and al-
50 low the spring D' thereof to rotate the drum to wind up the flexible connection C, thus closing the window-sash.

The hygroscopic link G can be very cheaply manufactured of loose-fiber paper subjected
55 to a chemical bath, so as to render the link sufficiently strong when dry for holding the locking device in a locked position against the tension of the spring and to allow the fibers to readily dissociate on becoming wet and while
60 under the tension of the spring.

As the link G can be cheaply manufactured, a new one can be readily placed in position after one has been torn.

The device is very simple and durable in
65 construction, is not liable to get out of order,

and is always in proper position to immediately close the window when it begins to rain, so that the window is automatically closed and the rain shut out from the room.

Having thus described my invention, I claim 7c
as new and desire to secure by Letters Patent—

1. A window-closing device having closing means for the window and means for hold-
ing the said closing means locked under ten- 75
sion and for releasing the same automatic-
ally when the locking means is acted on by moisture.

2. A window-closing device comprising a flexible connection for attachment to a win-
dow-sash, a spring-drum for the said connec- 80
tion to wind on, and means for normally lock-
ing the said drum against rotation and for re-
leasing the drum when acted on by moisture.

3. A window-closing device comprising a flexible connection for attachment to a win-
dow-sash, a spring-drum on which winds the 85
said connection, a locking device for holding
the said drum against rotation in one direction,
and a hygroscopically-controlled releasing de-
vice for releasing the said locking device to 90
allow the drum to rotate and the flexible con-
nection to wind upon the drum to pull the
window-sash shut.

4. The combination with a window-sash and
a retaining device thereon, of a flexible con- 95
nection adapted to be engaged at one end by
the said retaining device, a spring-drum on
which winds the said flexible connection, a
locking device for holding the said drum
100 against rotation, and a hygroscopically-con-
trolled releasing device for the said locking
device.

5. A window-closing device comprising a flexible connection for attachment to a win-
dow-sash, a spring-drum on which winds the 105
said connection, a locking device for holding
the said drum against rotation in one direction,
a releasing device for releasing the said lock-
ing device, to allow the drum to rotate and the
flexible connection to wind upon the drum to 110
pull the window-sash shut, the said releasing
device being controlled by a spring-controlled
member for holding the drum against rotation,
and a link fixed at one end and connected at
115 the other end with the said member to hold
the link under tension, the link consisting of
fabric, the fibers of which are capable of dis-
sociating on wetting the material and while
the link is under tension.

6. As a new article of manufacture, a releas- 120
ing-link for window-closing devices, consist-
ing of a body of a fabric, the fibers of which
are capable of dissociating when the link is
under tension and subjected to the action of
water. 125

7. As a new article of manufacture, a releas-
ing-link for window-closing devices, consist-
ing of a body of a fabric, the fibers of which
are capable of dissociating when the link is
under tension and subjected to the action of 130

water, and eyes at the ends of the link and of a practically non-tearing material.

8. The combination with a window-closing device, of means controlling the said device,
5 the said means normally holding the closing device in an inactive position and being sensitive to hygroscopic changes for releasing the said closing device.

In testimony whereof I have signed my name to this specification in the presence of two sub- 10 scribing witnesses.

WALTER SCOTT DOE.

Witnesses:

GEORGE LESTER PERRY,
WALTER MUNFORD.