

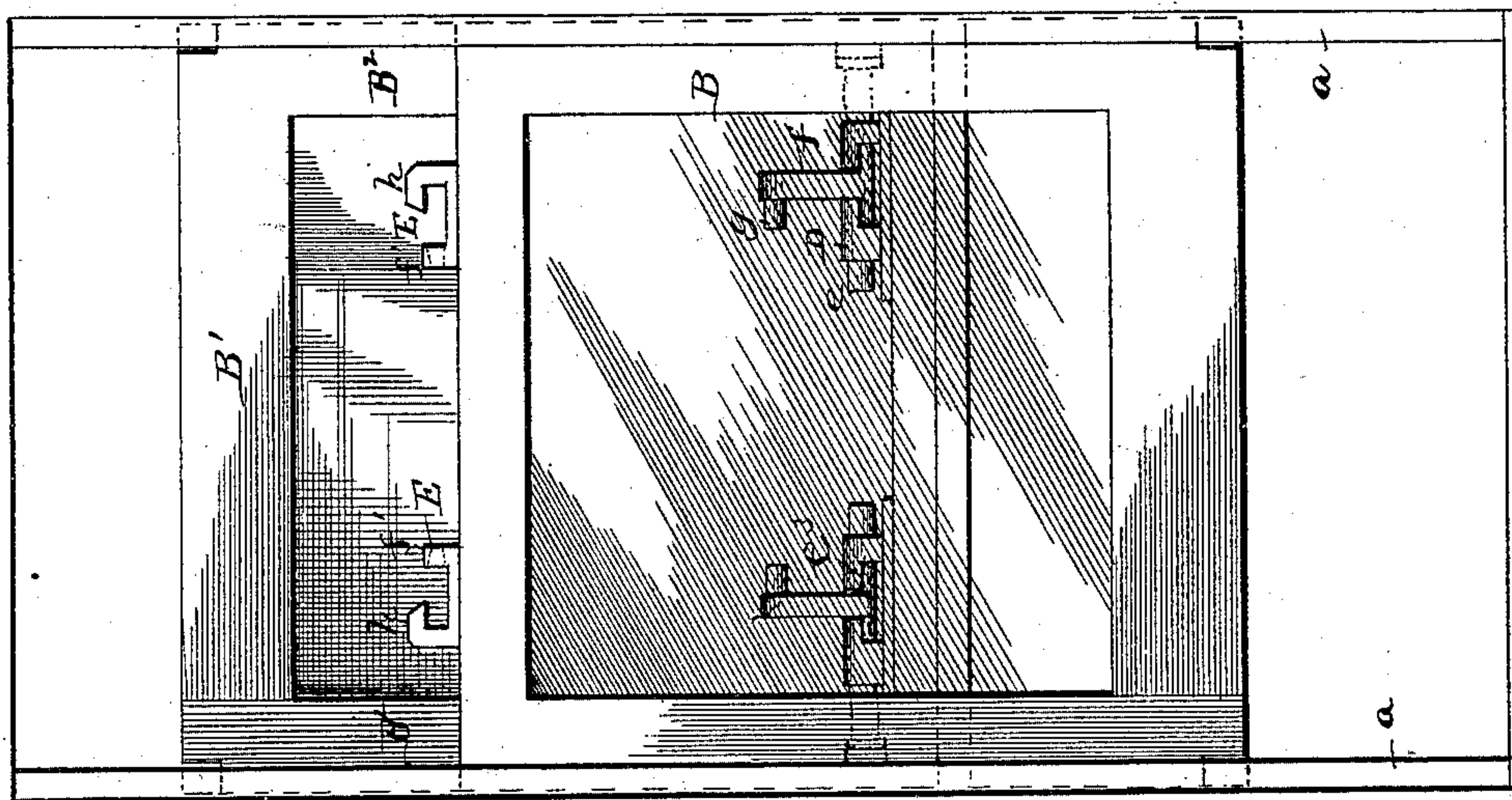
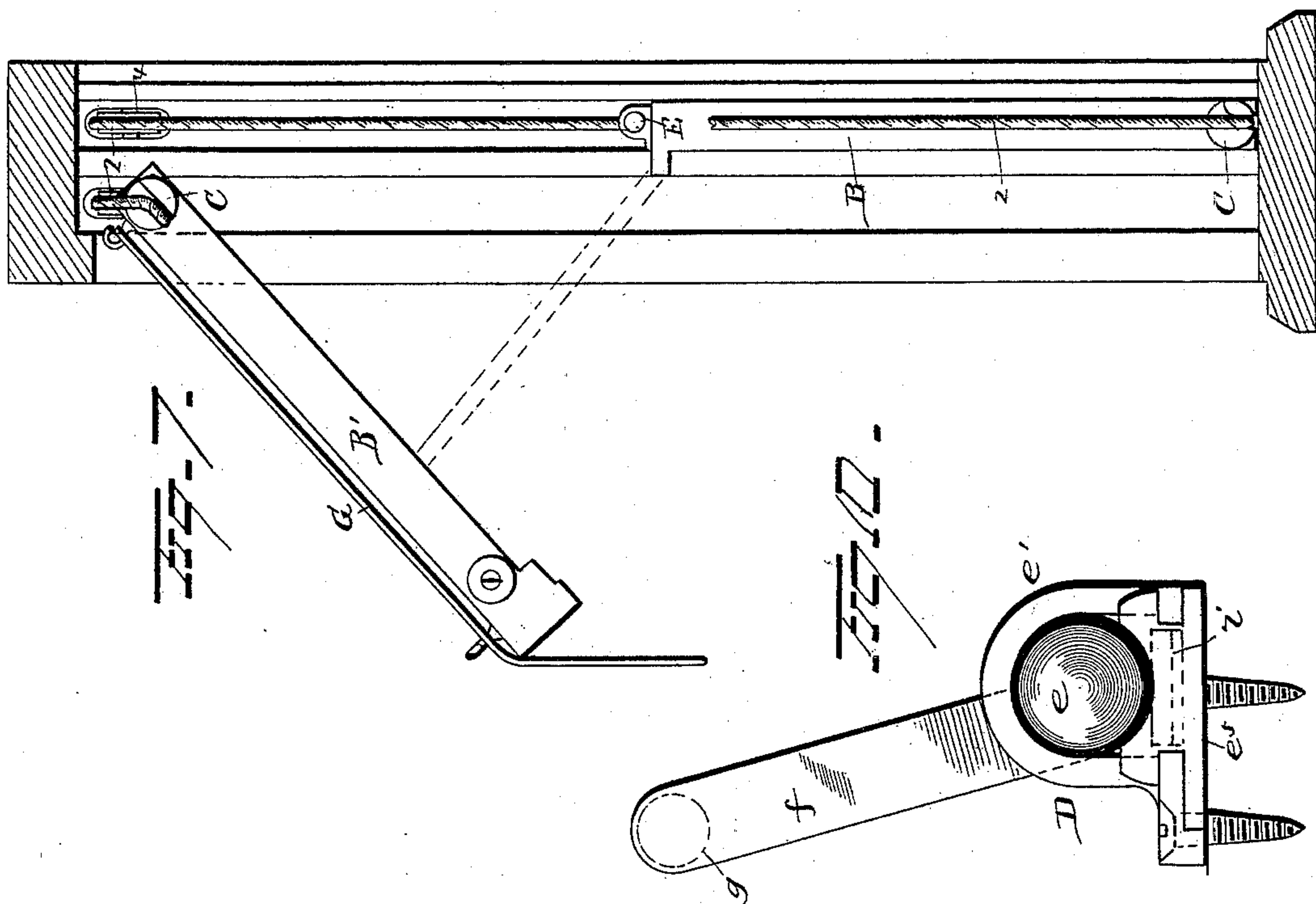
(No Model.)

3 Sheets—Sheet 1.

B. F. DETTRA & G. R. ROTH.
WINDOW.

No. 398,239,

Patented Feb. 19, 1889.



Witnesses,
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Le. Downing,

Inventors,
Benjamin F. Dettra
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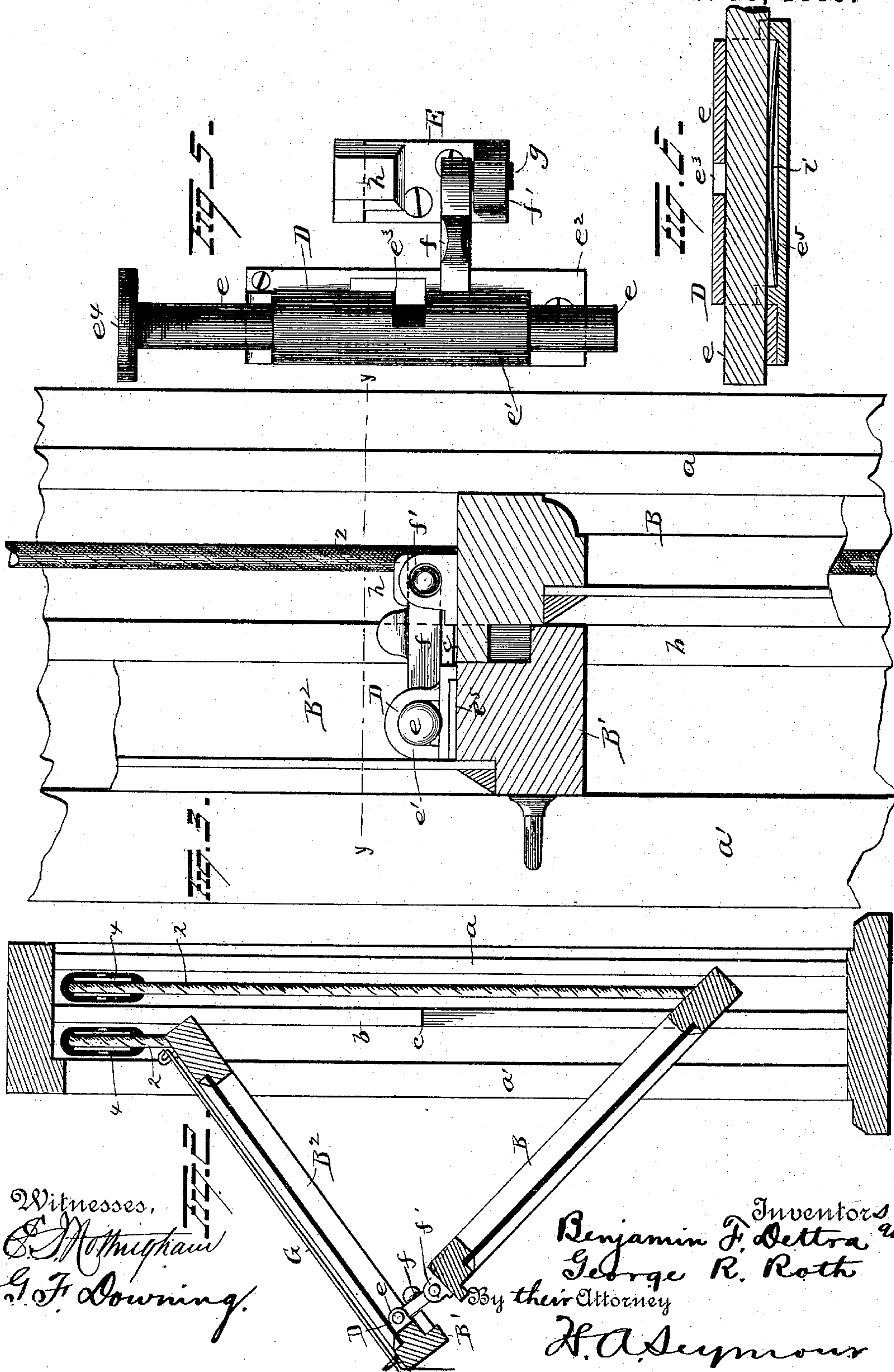
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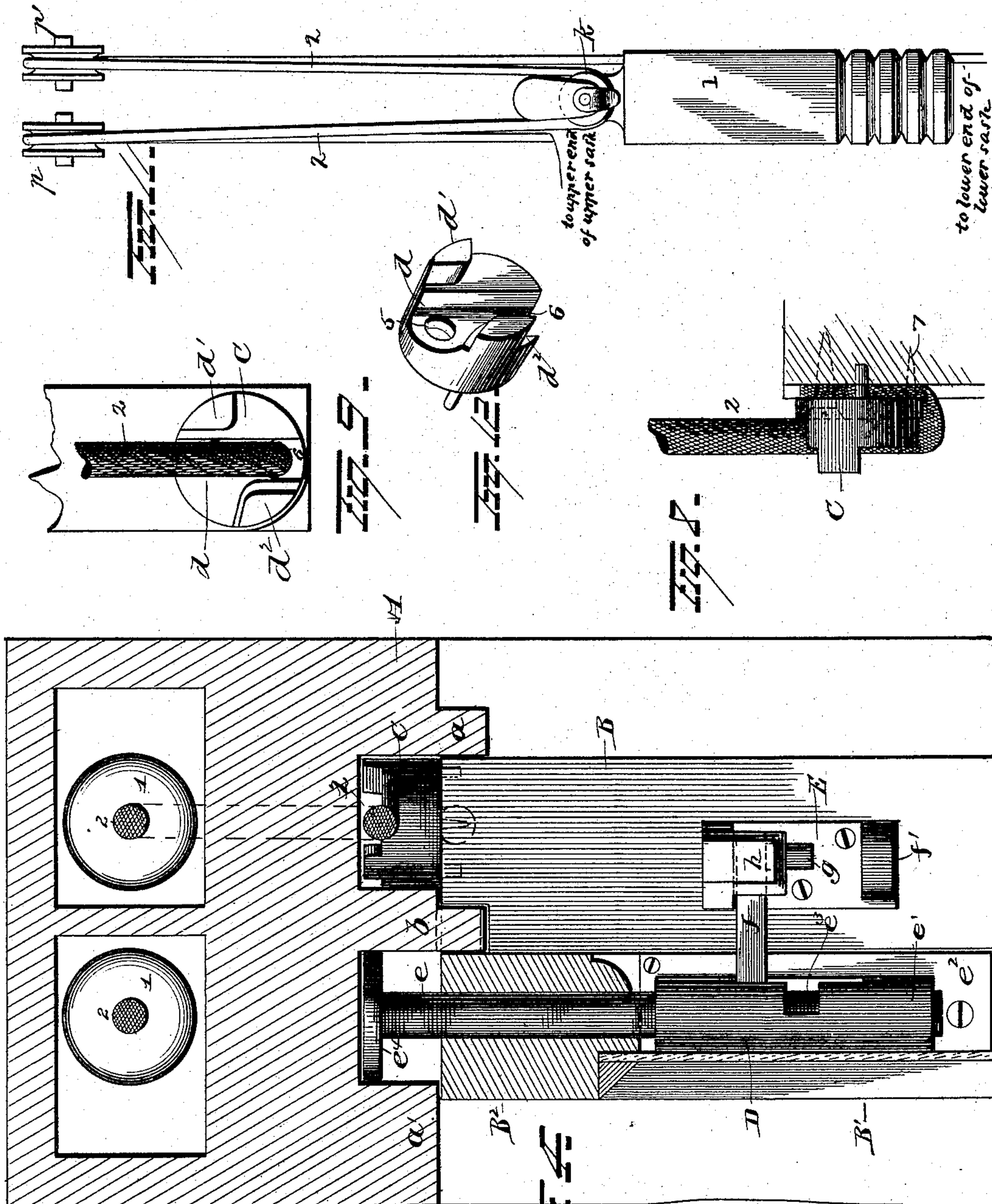
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3 Sheets—Sheet 3.

B. F. DETTRA & G. R. ROTH.
WINDOW.

No. 398,239.

Patented Feb. 19, 1889.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. DETTRA AND GEORGE R. ROTH, OF READING, ASSIGNORS TO
WILLIAM W. LESHER, OF MOSSERVILLE, PENNSYLVANIA.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 398,239, dated February 19, 1889.

Application filed August 8, 1888. Serial No. 282,213. (No model.)

To all whom it may concern:

Be it known that we, BENJAMIN F. DETTRA and GEORGE R. ROTH, of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Windows; and we 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 ap-
10 pertains to make and use the same.

Our invention relates to an improvement in windows, and more particularly to a type in which the upper and lower sash are supported by weights to hold them counterbalanced at
15 any point of elevation or lowered adjustment of the same.

The primary object of our invention is to construct the frame and sash of a window so that the sash will each be counterbalanced to
20 maintain them at any point of sliding vertical adjustment, and also permit them to be swung outwardly while they are held in hinged contact at their meeting-rails, and be adjusted at any desired angle with regard to
25 each other and the window-frame for purpose of ventilation.

A further object is to provide a window with sash-locks which will secure the upper and lower sashes to the frame as well as together
30 at their meeting-rails, and thus afford a secure lock to the sash.

A further object is to so connect the upper and lower sashes to two counterbalance-weights that one pair of such weights of
35 proper heft will answer for the counterpoise of both the upper and lower sashes.

A further object is to provide a window with sash so constructed and arranged that the upper sash may be projected outwardly
40 at an angle to the frame, and, being covered with a removable fabric, answer as an awning or screen to protect the window from the rays of the sun, while the lower sash is free to be raised or lowered, as occasion may require.

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

50 In the accompanying drawings, Figure 1 is

a front elevation of a window frame and sash embodying our invention. Fig. 2 is a side elevation in section of a window frame and sash. Fig. 3 is a side elevation in section of the window frame and sash with the latter in
55 closed and locked position. Fig. 4 is a plan view in section of the window frame and sash, taken on the broken line *y y*, Fig. 3, or above the sash-locks, showing the locks in perspective and the ends of their locking-bolts in section where they pass through the sash-frame.
60 Fig. 5 is an enlarged plan view of one of the sash-locks. Fig. 6 is longitudinal elevation in section of the portion of the sash-lock which is secured to the meeting-rail of the upper
65 sash. Fig. 7 is a side elevation of the window-frame with the window-sash adjusted to project the upper sash as an awning, the lower sash being in closed adjustment. Fig. 8 is a side view of an upper corner of the upper
70 sash broken away to expose the cord-clamp, which is shown in section with a sash-cord in clamped position. Fig. 9 is a side view of a lower corner of the lower sash in section as well as a cord-clamp with sash-cord in clamped
75 position. Fig. 10 is an end view of the lock. Fig. 11 is a view of a portion of a window-frame with portions of the sash in place therein, showing a plan of arrangement for counterbalancing the upper and lower sash with a single pair of weights. Fig. 12 is a detached enlarged front perspective view of the sash-cord clamp.

A indicates a window-frame provided with boxes on the sides for the reception of the
85 sash-weights 1, constructed in the usual manner. The frame is further constructed with parallel stiles *a a'* and intervening bead-strips *b*, which forms channels in which the sash-cord 2 may travel as well as the side
90 edges of the sash. The inner stiles, *a*, project sufficiently to form abutments for the lower sash, B. The upper half of the bead-strips *b* are also inwardly extended to engage the upper sash, B', when these sashes are adjusted
95 to slide vertically, as will be further explained.

From the point *c* the bead-strips *b* are cut away to align their faces with the outer stiles, *a'*, for a purpose that will be shown.

Near the lower edge of the lower sash, B, the cord-clamps C are secured on the side faces of the same, the ends of the cord 2 being held firmly connected to the lower sash by the clamps. Thence they are upwardly extended to engage the pulleys 4, and have their other extremities fastened to the weights 1 by any suitable means.

The cord-clamps C (shown in Figs. 10, 11, and 12) are alike, so that a description of one will serve for the two pairs employed to secure the cords to the upper and lower sash.

It will be seen that the clamp C is a circular block of metal, and is cut away on the face to produce a channel, d , in it for the accommodation of the cord 2, leaving the guard-shoulders d' d^2 stand, these latter serving to retain the cord in the channel. A screw-hole, 5, is formed in the body of the clamp-block C, near the circular edge of said block below the notch 6, that is cut in the upper edge of the same to receive the sash-cord, and a slim sharpened pin, 7, projected from the rear face of the block C is adapted to penetrate the sash-cord when it is adjusted in place on the sash.

The attachment of the cord 2 to the sash B is effected by boring holes the size of the cord in the side faces of the sash near the lower edge a sufficient depth to receive the ends of the cords, which are covered by the clamps C, so that the pins 7 penetrate through the body of the cord. Screws are now inserted in the sash through the holes 5, which will bind the cords securely in connection with the sash.

As the cords 2 are extended into the vertical grooves formed for them between the strips a and the bead-strips b , thence upwardly to engage the pulleys and be connected to the sash-weights 1, as previously explained, it is evident that the lower sash, B, may be reciprocated vertically, and be supported by the counterbalancing-weights at any desired point, and, as the cord-clamps C are round on their edge surface and are of proper diameter to slide neatly within the sash-cord grooves formed by the beading-strips and the stiles a , these clamps form trunnions on which the sash may rock outwardly to project its upper edge beyond the bead-strips b when the upper edge of the sash B is below the offset-shoulder c on said strips.

The upper sash, B', is provided with cord-clamps C of a form identically the same as those on the lower sash, said clamp-blocks being affixed to the side faces of the upper sash at opposite points near the upper rail of the sash, so that the sash-cord may extend and engage the grooved top surface of the cord-supporting pulleys and be attached by opposite ends to the sash-weights, which are thus adapted to afford movable support to the upper sash, which may slide downwardly in rubbing-contact with the adjacent faces of the bead-strips b , or be swung outwardly, if desired, as the relative width of the sash to the space between the faces of the stiles a will

permit it to have an outward rocking movement on the rounded sash-cord-clamping plates C as trunnions or pivotal centers.

Two duplicate sash-locks, D, are employed and placed on the meeting transverse rails of the upper and lower sash, as shown, the locks each having a slide-bolt, e , which is held in a frame, e' , that is provided with a flanged base-plate, e^2 , to permit the frame to be secured upon the meeting-rail of the upper sash, B', the frames with the slide-bolts being located near the opposite side pieces, B², of the sash, which pieces are perforated at a proper point to allow the bolts e to move freely in said perforations.

On the sides of the sash-lock frames e^2 which are adjacent to the meeting rail of the lower sash, B, the inverted-T slots e^3 are cut through the walls of the frame to receive laterally-projected levers f , which latter are made of a proper length, and have rounded pintles g formed at their ends that project at a right angle to the bodies of the levers, and are adapted to enter holes made for their reception in ears f' , formed on the ends of locking-plates E, secured to the upper surface of the top rail of the lower sash, B, so that the pintles g will be in alignment with the perforations in the ears f' . These holes are preferably made sufficiently conical to admit the rounded ends of the pintles g freely, and yet cause the rails of the upper and lower sash to be drawn together when the pintles are shoved completely in these slightly cone-shaped holes.

The locking-plates E are further provided with inverted-L-shaped lugs h , under the overhanging limbs of which the bodies of the bolt-levers f will slide and be held when the bolts are thrown to lock the upper and lower sash from being pushed outwardly, and it should be here explained that round flat plates e^4 are loosely secured to revolve on the ends of the bolts e , said round disks e^4 sliding neatly in the groove between the outer stiles and the bead-strips of the window-frame, and being seated in recesses cut in the sash when the bolts are inwardly drawn.

In order to hold the slide-bolts e of the sash-locks D from rattling and prevent them from improper longitudinal movement in their retaining-cases, an arched plate-spring, i , is introduced below each slide-bolt, which springs are bowed upwardly and have yielding contact with the lower surface of the slide-bolts, so that these bolts will be held at any desired point of longitudinal adjustment by the tension of the springs i .

It may be here explained that in order to facilitate manufacture the frames e' are made in two parts, the upper portion being cut away near its center of length upon the lower side, so as to form an aperture below the inverted-T slots e^3 , and thus allow the levers f to be introduced into said slots. A bottom plate, e^5 , is secured to the flanges of each base-plate e^2 . These close up the holes in the bolt-frames e'

and form a seat for the springs *i*, previously mentioned.

In operation the pintles *g* of the levers *f*, when shoved into the holes in the ears *f'*, produce a hinged connection on the adjacent rails of the upper and lower sash, and it is evident that these sash-frames *B B'* may be adjusted to project outwardly at any desired angle by the joint action of the counterbalance-weights 1, cords 2, clamps *C*, and sash-locks *D* when the latter are hinged together, as just described. When the window-sash are drawn inwardly by the cord 2, which is attached by its ends to the side rails of the upper and lower sash, they will both assume their proper relative positions to close the window, which may be securely locked by an outward sliding movement of the locking-bolts *e*, that will cause the disks on the ends of these bolts to engage the sides of the center bead, *b*, and stiles *a a'*, as has already been explained. Should it be desired to utilize the upper sash, *B'*, as a sun-shield or awning, there may be a removable curtain, *G*, secured on the outer surface of said upper sash-frame, as shown in Fig. 2, and the two sashes that are held in hinged connection be sufficiently projected at an angle so as to properly incline the upper sash outwardly, thus affording free ventilation to an apartment, while it is protected from the direct rays of the sun. In case it is preferred to project the upper sash independently of the lower sash, this may be effected by a disconnection of their hinged attachment after they have been pushed outward. Then the upper sash may be propped or otherwise secured outwardly at any desired angle and the lower sash be free to slide and be made to assume any position in its retaining-grooves. It is obvious that as soon as the upper edge of the lower sash, *B*, passes the offset-shoulders *c* on the bead-strips *b* said sash-frame will be engaged by the bead-strips and stile *a*, thus holding it from lateral displacement when the lower sash is elevated.

In Fig. 11 a plan of construction is shown in which the upper and lower sash may be suspended and counterbalanced by a single pair of weights. In this view the weight 1 is provided with a grooved pulley, *k*, that is attached to a bracket-arm on the upper edge of the weight, said pulley engaging a bight in the cord 2, one of the doubled strands of which cord extends upwardly to pass over a pulley, *p*, and be attached to the upper portion of the top sash, *B'*, on its side edge. The other strand passes over a similar pulley, *p'*, and thence downwardly, and is secured by its terminal end to the lower sash. Both sides of the window-sash are provided with a single weight, 1, and cord rigged as just described, the attachment of the ends of the cord to the upper and lower sash being made with trunnion clamp-blocks of the same construction as has been previously described, so that the sashes, when fitted with the improved sash-

locks, as hereinbefore explained, can be rocked outwardly and be held at any desired point of sliding adjustment by the two counterbalance-weights equally as well as if four weights were used.

Many slight changes might be made in the details of construction of this improvement within the scope of our invention. Hence we do not wish to limit ourselves to the exact forms herein shown; but,

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

1. The combination, with a window-frame, of sashes mounted therein to slide past each other, and a detachable hinge-connection secured to the meeting-rails of the sashes, substantially as set forth.

2. The combination, with a window-frame, of sashes mounted therein to slide past each other, a weighted cord attached to each sash, and a detachable hinge-connection between the meeting-rails of the sashes, substantially as set forth.

3. The combination, with a window-frame, of sashes mounted therein to have a swinging movement and also to slide past each other, and a detachable hinge connecting the meeting-rails of said sashes, and consisting of a locking-plate secured to the meeting-rail of one sash and a sliding lug mounted in bearings secured to the meeting-rail of the other sash and adapted to be interlocked with said locking-plate, substantially as set forth.

4. The combination, with a window-frame, of sashes mounted therein to have a sliding movement past each other, a detachable hinge-connection between the meeting-rails of said sashes, a cord attached at its ends to said sashes, and a weight supported by said cord at a point between its ends, substantially as set forth.

5. The combination, with a window-frame, of upper and lower sashes mounted therein to have a swinging movement and also to slide past each other, and a detachable hinge connected to the meeting-rails of the sashes, and consisting of a sliding bolt mounted on the meeting-rail of one sash, a locking-plate secured to the meeting-rail of the other sash, and a locking-lug carried by the bolt to engage the locking-plate, substantially as set forth.

6. The combination, with a window-frame, of upper and lower sashes mounted therein to have a swinging movement and also a sliding movement past each other, and a detachable hinge connected to the meeting-rails of the sashes, and consisting of bolts mounted on the meeting-rail of one sash and provided with locking-lugs, springs bearing against said bolts, and locking-plates secured to the meeting-rail of the other sash and adapted to be engaged by the locking-lugs on the bolts, substantially as set forth.

7. The combination, with a window-frame and upper and lower sashes mounted therein

to have a sliding movement past each other, of detachable hinge-connections between the meeting-rails of the sashes, each hinge-connection consisting of a sliding lug, a spring
5 for holding the lug against accidental displacement, and a locking-plate secured to the meeting-rail of the other sash and adapted to be engaged by the locking-lug, substantially as set forth.

10 8. In a window, the combination, with a frame, of an upper sash, a lower sash, weights flexibly connected to these sash to balance them, sash-cord clamps secured to the sash to produce pivotal centers therefor, and two du-
15 plicate sash-locks which are adapted to secure the sash from lateral and vertical movement, and also afford a hinged connection to the meeting-rails of the sash, substantially as set forth.

20 9. In a window, two duplicate sash-locks secured to the lower rail of the upper sash, having sliding bolts projecting beyond the side surfaces of the sash-frame, levers projecting from said bolts and furnished with
25 locking-lugs, and two locking-plates attached to the top rail of the lower sash and provided

with perforated ears for the reception of the locking-lugs of said levers, thus affording a hinged connection to the meeting edges of the upper and lower sash, as well as a means of
30 securing the sash from vertical and lateral movement, substantially as set forth.

10. The combination, with a window-frame, sashes mounted therein to have sliding movement past each other, cord-clamps secured,
35 respectively, to the upper side edges of the upper sash and lower side edges of the lower sash and forming trunnions on which the sashes can be swung outwardly, cords secured to said clamps, and weights attached to the
40 cords, of a detachable hinge-connection secured to the meeting-rails of the sashes, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscrib-
45 ing witnesses.

BENJAMIN F. DETTRA.
GEORGE R. ROTH.

Witnesses:

ANTHONY P. GANSTER,
H. A. ZIEBER.