(No Model.)

4 Sheets—Sheet 1.

M. S. MILLARD.

WINDOW.

No. 311,252. Patented Jan. 27, 1885.

Fig. 2.

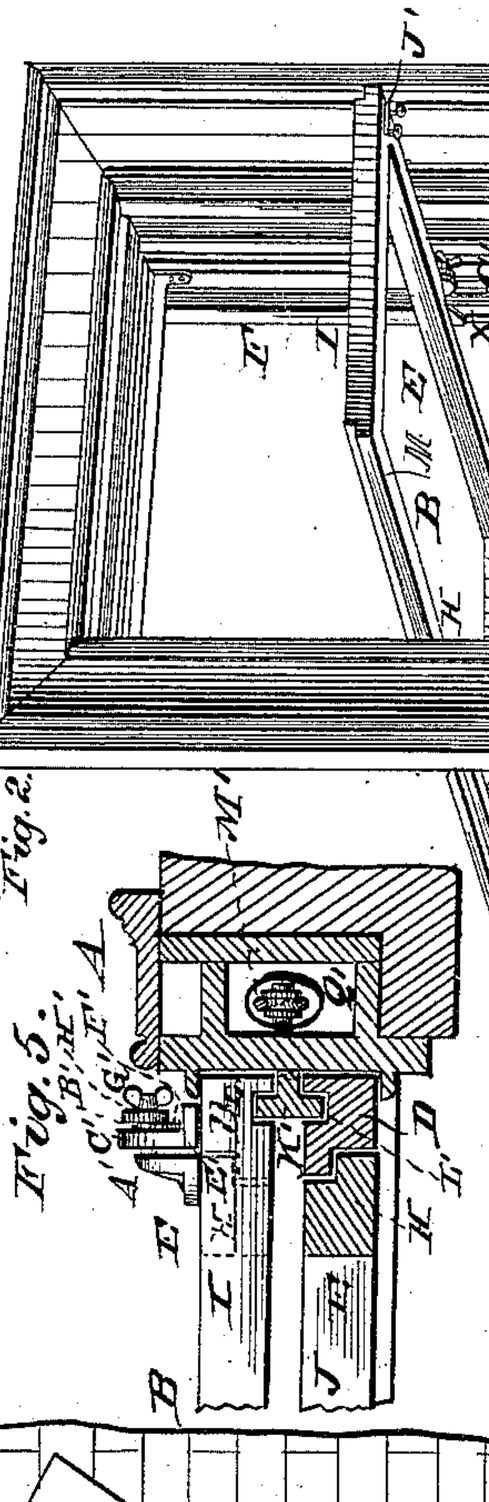


Fig. 5.

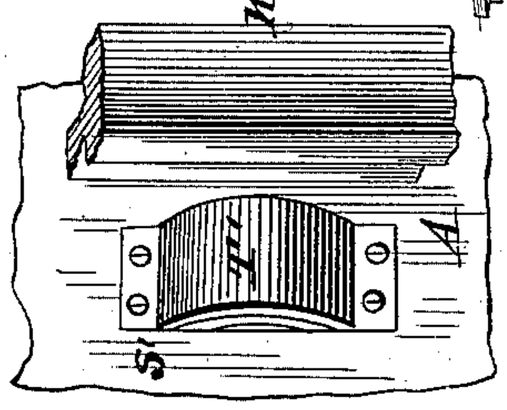


Fig. 6.

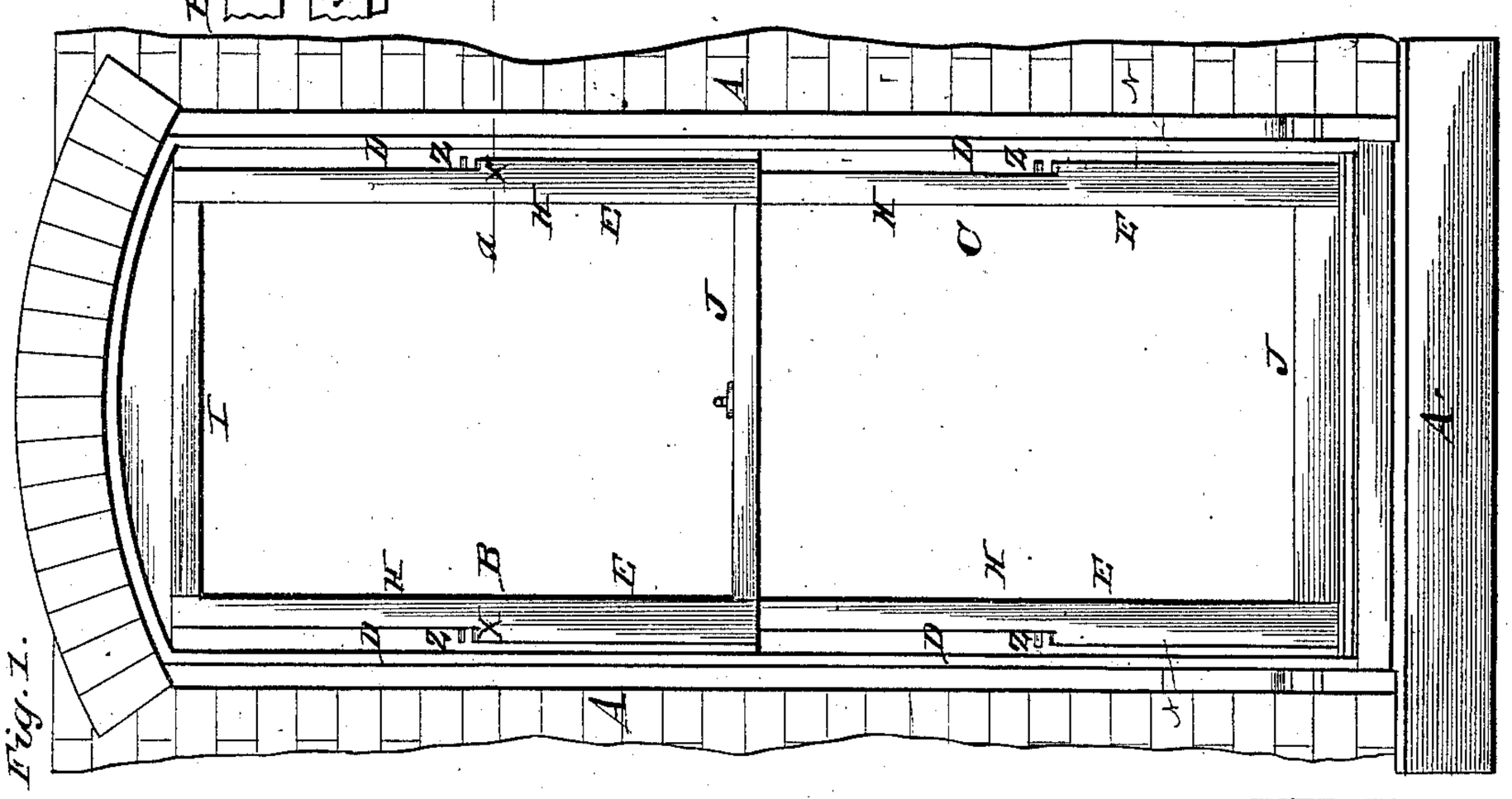


Fig. 7.

WITNESSES:

Fred. L. Dieterich,

P. C. Dieterich.

INVENTOR.

Martin S. Millard,

by C. A. Snow & Co

ATTORNEYS.

(No Model.) 4 Sheets—Sheet 2.

M. S. MILLARD.

WINDOW.

No. 311,252. Patented Jan. 27, 1885.

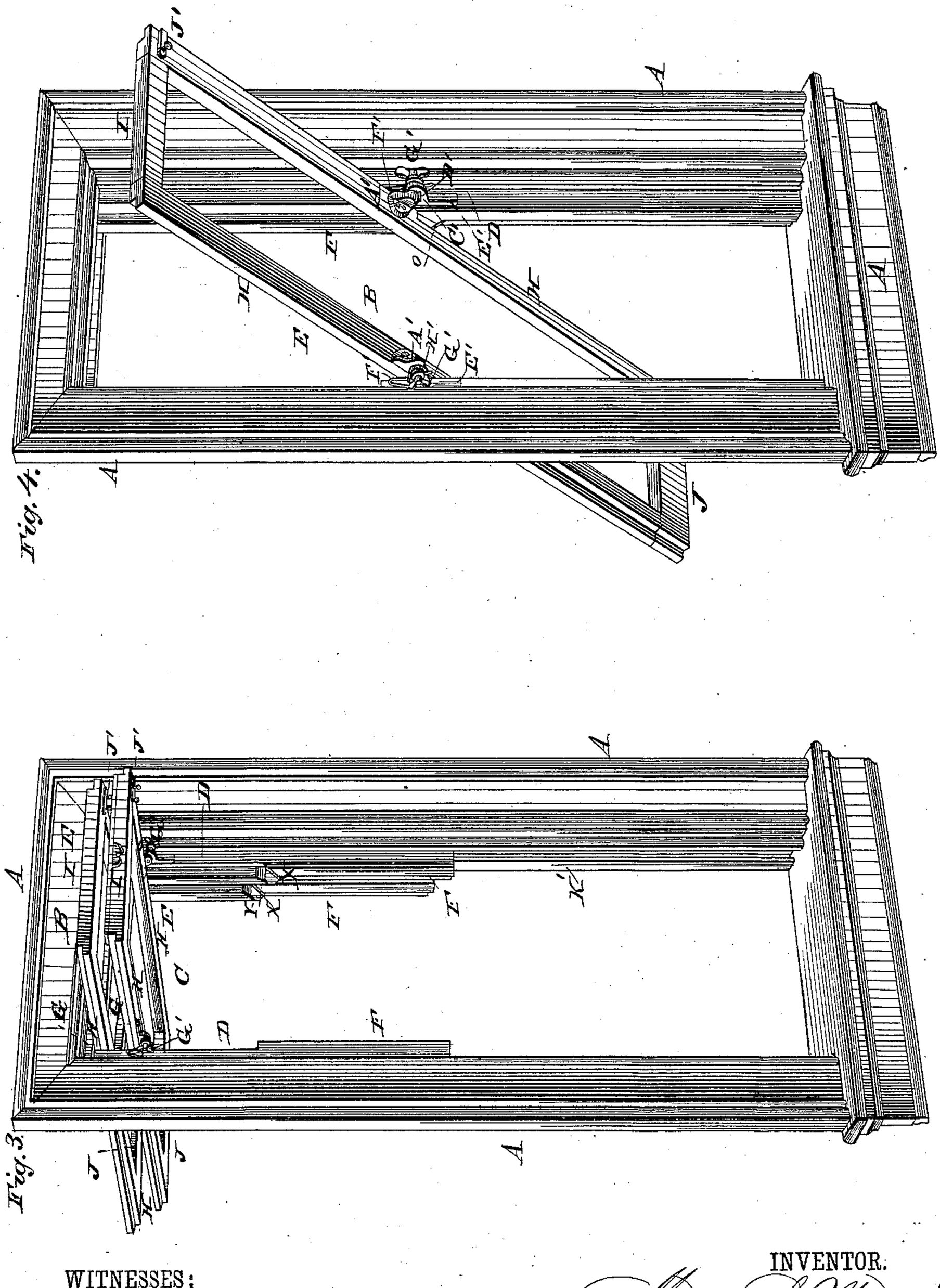


Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES:

Fred. L. Dieterich.

P. C. Dieterich.

INVENTOR.

Martin S. Millard,

by C. A. Snow & Co.

ATTORNEYS.

(No Model.)

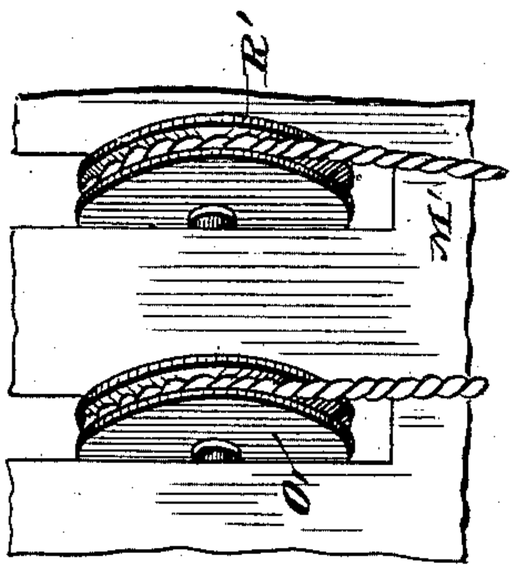
4 Sheets—Sheet 3.

M. S. MILLARD.

WINDOW.

No. 311,252. Patented Jan. 27, 1885.

Fig. 12.



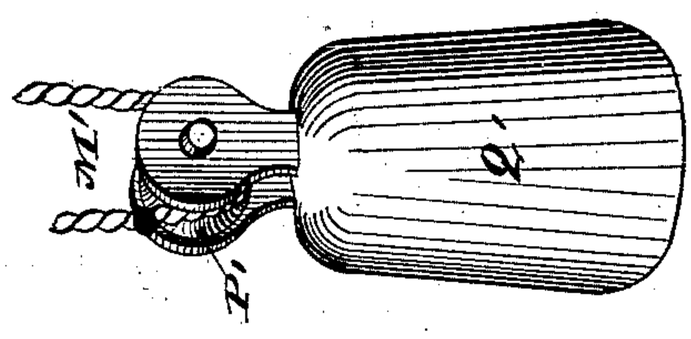


Fig. 10.

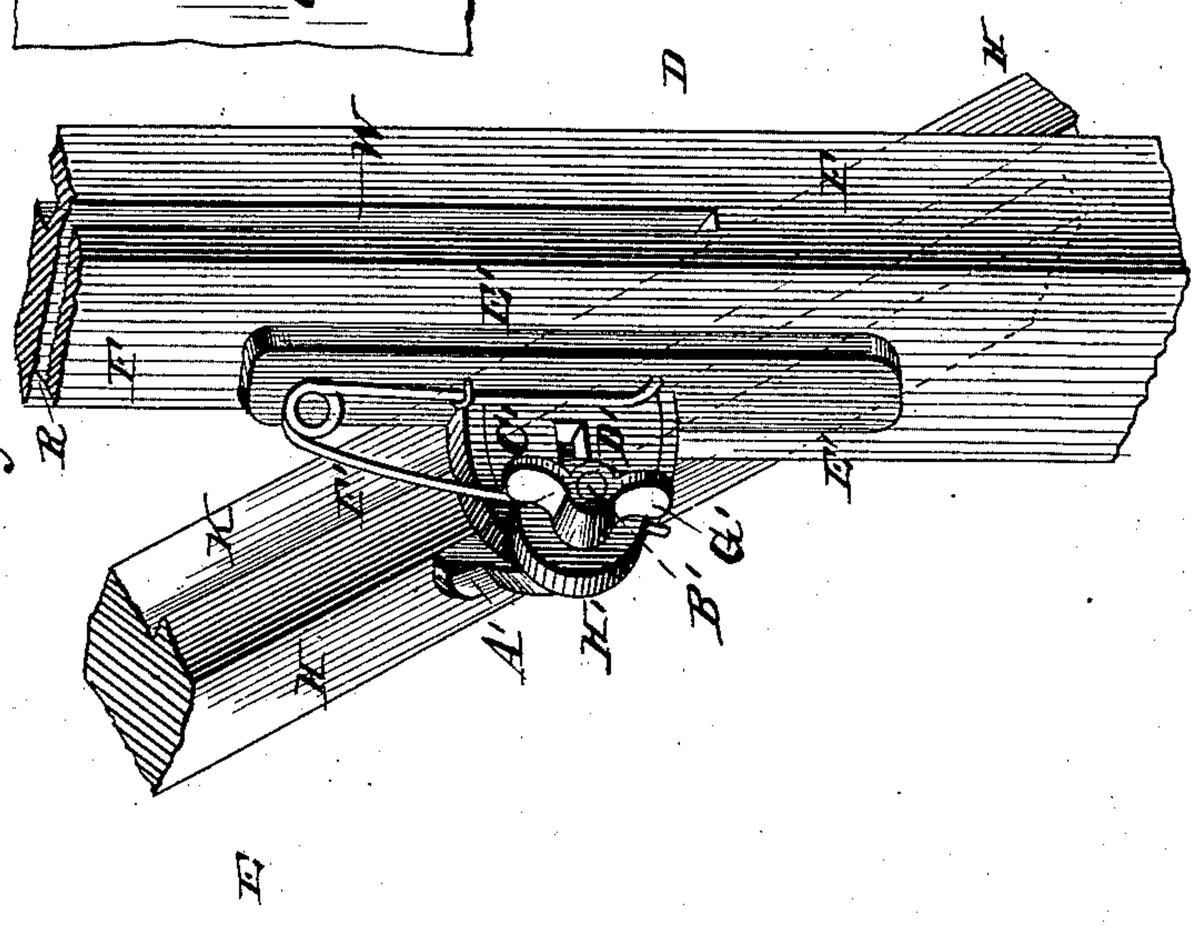


Fig. 11.

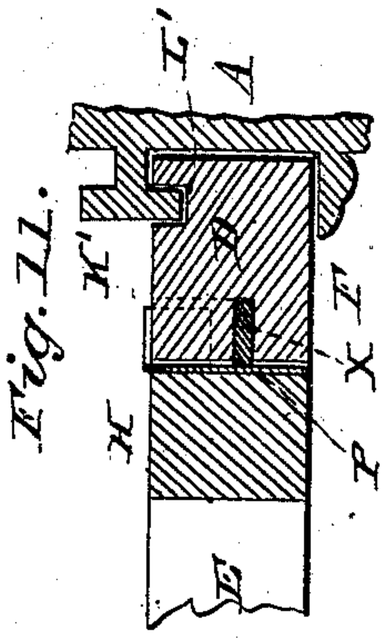


Fig. 7.

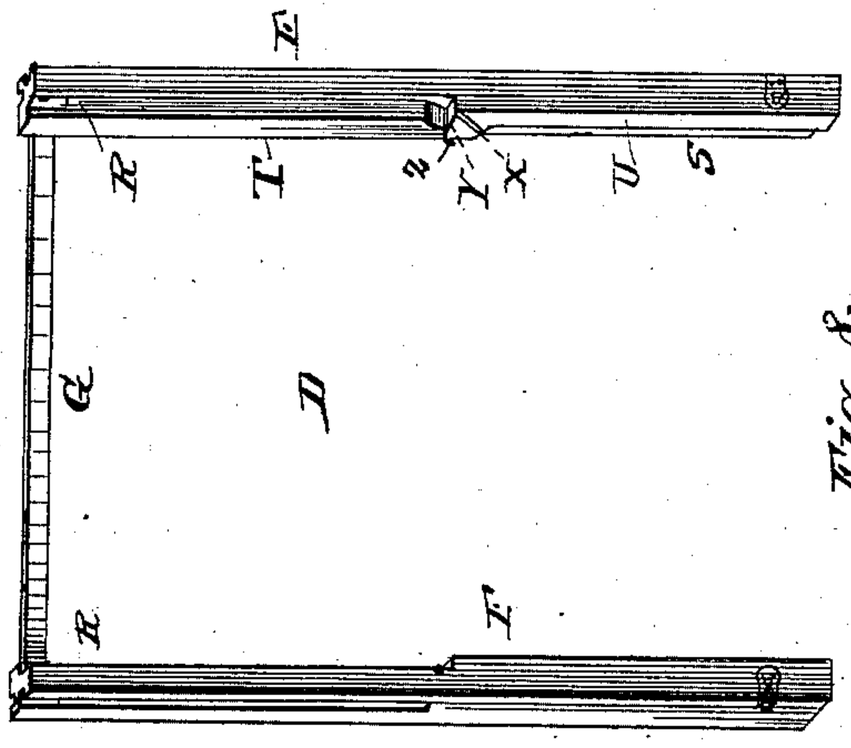
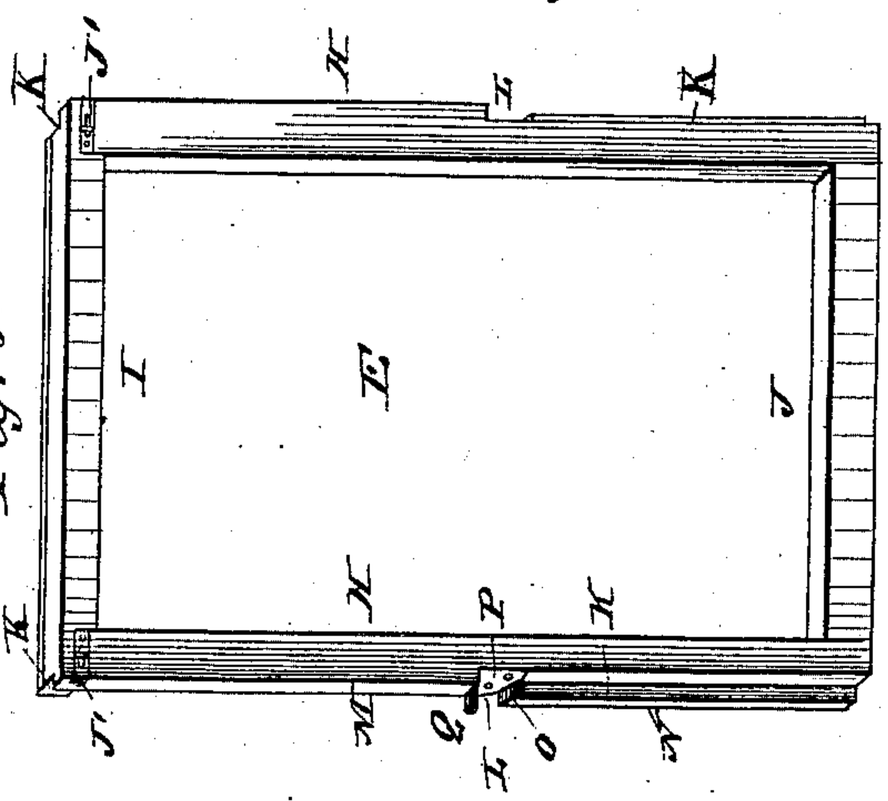


Fig. 8.



WITNESSES:

Fred. L. Dieterich.

P. C. Dieterich

INVENTOR.

Martin S. Millard,

by C. A. Snow & Co.

ATTORNEYS.

(No Model.)

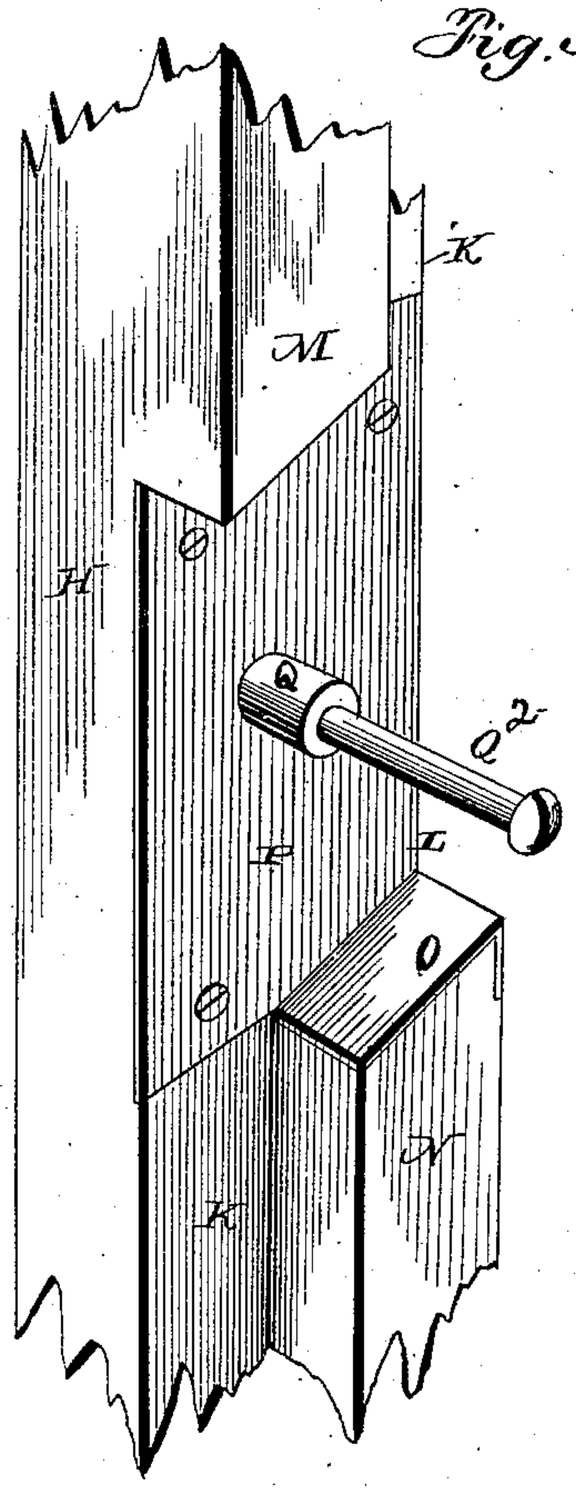
4 Sheets—Sheet 4.

M. S. MILLARD.

WINDOW.

No. 311,252. Patented Jan. 27, 1885.

Fig. 9.



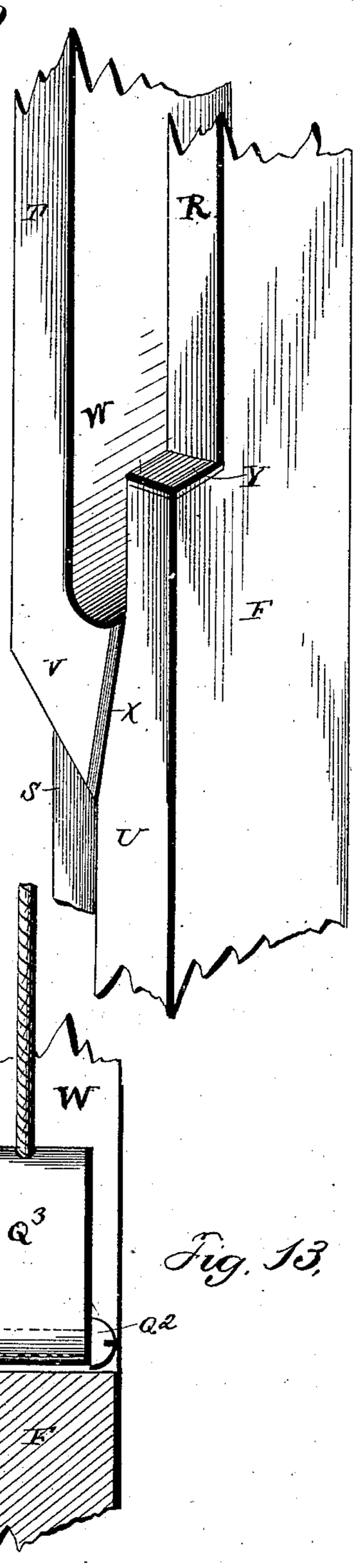


Fig. 13.

WITNESSES
George F. Downing.
S. G. Nottingham

INVENTOR
M S Millard.
By Munn & Co
Attorney

UNITED STATES PATENT OFFICE.

MARTIN SANFORD MILLARD, OF KANSAS CITY, MISSOURI, ASSIGNOR OF TWO-THIRDS TO WM. H. H. TAINTER, OF SAME PLACE, AND GEORGE H. KING, OF SALISBURY, MISSOURI.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 311,252, dated January 27, 1885.

Application filed May 12, 1882. (No model.)

To all whom it may concern:

Be it known that I, MARTIN S. MILLARD, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Windows; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is an outside view of a window to which my invention has been applied. Fig. 2 is a perspective inside view of the same, showing the sashes tilted. Fig. 3 is a perspective view showing the sashes tilted and raised to the top of the window-frame. Fig. 4 is a perspective view showing my invention applied to a window having a single sash. Fig. 5 is a horizontal sectional view on the line *x x*, Fig. 1. Fig. 6 is a detail view of the friction-stop of the upper sash. Fig. 7 is a detail view of the outer sash-frame. Fig. 8 is a detail view of the inner sash-frame. Fig 9 is a detail view in perspective of the lap-joint of the inner and outer sash-frames. Fig. 10 is a detail view in perspective showing the angle-latch. Fig. 11 is a horizontal sectional view taken through the joint of the sash-frames. Fig. 12 is a perspective view showing the arrangement of the balance-weight, cords, and pulleys; and Fig. 13 is a vertical sectional view through the frames, showing the cord attached to the lug.

Corresponding parts in the several figures are denoted by like letters of reference.

This invention relates to windows; and it consists in certain improvements in the construction of the same, whereby the sash or sashes may be tilted to a nearly-horizontal position, and while thus tilted raised to the top of the window-frame.

It further consists in certain improvements in the construction and arrangement of details, which will be hereinafter fully described, and particularly pointed out in the claims.

Referring to the drawings hereto annexed, A represents the window-frame, which may be of any suitable construction. B is the upper and C the lower sash. The sashes being identical in construction, the description of one of them will be sufficient, and is as follows: Each sash consists of an outer and an inner frame, D E, the outer frame consisting merely of two side rails, F F, connected at the top by a cross-bar, G. The inner frame consists of side rails, H H, and top and bottom rails, I J, and in it the glass is secured in the usual manner. The side rails, H, of the frame E are provided with rabbets K in their outer edges, part of said rabbets being in the upper outer and part in the lower inner sides of said rails, as clearly shown in Fig. 9 of the drawings. About midway of the rail the rabbets K K are connected by a transverse recess, L, dividing the side of the rail into flanges M N, the lower one of which, N, has its upper end beveled, as at O. The recess L and the adjacent edges of the flanges M N are covered by a metallic cap-plate, P, having a hollow stud or lug, Q, for the attachment of the sash-cord. This lug Q is preferably formed integral with the plate P, and is adapted to receive the screw or pin Q^2, which latter is removably secured within said lug, as shown in Fig. 13. This screw is adapted to receive the metallic loop Q^3, which latter is secured to the end of the sash-cord. The side rails, F, of the outer frame, D, are provided with rabbets R in the upper inner and with rabbets S in the lower outer sides of their inner edges, the flanges T U (shown in Fig. 7, thus formed) being connected by a bridge-piece, V. Groove R has a longitudinal slot or mortise, W, to accommodate the sash-cord and the stud or lug Q.

By the construction just described the rails F H may be fitted together, as shown, the flanges of one filling the grooves of the other, and the bridge-piece of one being accommodated in the recess L of the other. To make a weather-tight joint, the bridge-piece V is provided with an elastic strip, X, fitted in a diagonal recess in the same. Y is a metallic strip, fitted transversely in said bridge-piece, over the upper end of the lower flange, U, and projecting on the rear side of the rail F, where it is bent downward, as at Z, Fig. 7, thus

forming a cap which prevents rain-water from entering the joint.

Secured to the inside of one of the rails H is a plate, A′, having a laterally-projecting screw, B′. C′ is a plate having a slot, D′, by which it is adjusted upon screw B′, and a flange, E′, bearing upon the side rail of the outer sash-frame. A spring, F′, attached to the said flange, is arranged to press against the screw B′, so that the flange E′ shall be forced against the rail F, as stated. A thumb-nut, G′, adjusted upon screw B′, forces a washer, H′, against the plate C′, which may thus be retained in any position to which it may be adjusted. Washer H′ may be provided with a groove or recess, to accommodate the inner arm of the bent spring F′.

Slide-bolts or fastenings J′ of any suitable well-known construction may be used at the upper and lower ends of the rails H F, to connect the inner and outer sash-frames securely together.

The window-frame is to be provided in the usual manner with guides for the sashes to slide up and down; but the sashes should be separated by a T-rail, K′, engaging grooves L′ in the side rails of the outer sash-frames. This is desirable in order to hold said outer sash-frames properly in position when the inner sash-frames are tilted.

The sash-cords M′, which, as previously stated, are attached to the pivoted lugs Q of the inner sash-frames through the intervention of the metallic loop Q^3, are preferably arranged in the following manner, as illustrated in the drawings: From the lug Q of the lower sash the cord passes through the slot or mortise W in the outer sash-frame, as shown in Fig. 13, over a pulley, O′, at the upper end of the window-frame, under a pulley, P′, at the upper end of the weight Q′, back over a pulley, R′, at the upper end of the window-frame, as shown in Fig. 12, and thence through the slot or mortise W and to the lug Q of the upper sash. In this manner it will be seen that both sashes are balanced by a single cord and weight on each side. I would have it understood, however, that the ordinary weights may be employed, one on each side of each sash, or balance-weights may be entirely dispensed with, if so desired, without changing the nature and scope of my invention.

The side of the window-frame is provided with a suitably-located recess, S′, in which is secured an elastic strip, T′, bulging outward, as shown, and forming a friction-stop the object of which is to retain the upper sash in position when partly lowered. This is for the purpose of preventing the outer frame of said sash from dropping down while the inner frame is being manipulated.

The outer sash-frame of each sash may be provided with a suitable spring catch or fastener to engage notches in the window-frame.

When, as in Fig. 4, my invention is applied to a window having a single sash, the construction is to be modified, mainly, by dispensing with the outer sash-frame and embodying the construction thereof in the window-frame proper. The necessary changes of construction will readily suggest themselves to any skilled mechanic, and need not be detailed here.

The operation of my invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed.

The inner sash-frame is, it will be seen, capable of being tilted to any desired position in the outer sash-frame, which remains stationary. By tightening the thumb-nut G′ the inner sash-frame is, by the mechanism described, securely retained in the position to which adjusted. The inner sash-frames may be, while tilted, raised or slid up in the outer ones, the flanges T of which serve as guides for the recesses L. The inner frames, while thus being raised, are constantly kept balanced by the weights, the cords of which are attached to said inner frames. The sashes may also be adjusted by sliding the upper frames to any desired position.

My invention may be applied to all kinds of windows, and permits them to be tilted to any desired degree, either for ventilating purposes, in which case they will shed rain and prevent it from entering the room, or for cleaning or other purposes. They are convenient in case of fire, when they may be tilted horizontally and raised to the top of the window-frame, thus making convenient access to the room, and enabling furniture to be removed as easily as through an ordinary door.

I would have it understood that I do not confine myself to the exact construction shown and described for securing the cord to the lug, but consider myself at liberty to make such changes as fairly fall within the spirit and scope of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination, with a window-frame, of a window-sash and a frame partly embracing the sash, the said sash being adapted to be turned to a horizontal position within its frame, and to be adjusted vertically independently of its frame while in a horizontal position.

2. The combination, with a window-frame, of a window-sash and a vertically-movable frame partly embracing the sash, the said sash adapted to be turned to a horizontal position, and to be vertically adjusted while in this horizontal position independently of its frame.

3. The combination, with a window-frame, of a window-sash, a vertically-movable frame partly embracing the sash, and weights and cords the ends of which are connected to the sashes, whereby the latter can be adjusted independently of their frames, substantially as set forth.

4. The combination, with a window-frame, of a sash provided centrally with laterally-

projecting lugs, a frame partly embracing the sash, and provided with elongated slots in which the lugs rest, and sash-cords the ends of which are connected to the lugs.

5. The combination, with a window-frame, of a window-sash provided with shoulders and laterally-projecting lugs, a frame partly embracing the sash, and provided with shoulders against which the shoulders of the sash abut when the latter is in a vertical position, and with elongated slots in which the lugs rest and move, and sash-cords connected to said lugs, substantially as set forth.

6. The frames D E, constructed as described, the latter having side rails, H, with recesses L, in combination with the cap-plates P, lining said recesses, and having pivoted lugs or studs Q for the attachment thereto of pins C^2 and the sash-cords, as set forth.

7. The combination of the frame D, having side rails, F, provided with grooves R, having slots or mortises W, with the frame E, having side rails, H, provided with recesses L, the plates P, having pivoted studs Q, pins Q^2, and the sash-cords M′, all arranged substantially as set forth.

8. The combination, with the frames D E, jointed together, as herein described, of the elastic packing-strip X, fitted in a diagonal recess in the bridge-piece V of frame D, as and for the purpose set forth.

9. The combination, with the frames D E, of the plate A′, secured to a side rail of the latter, and having laterally-projecting screw B′, the plate C′, having slot D′, flange E′, and spring F′, the washer H′, and thumb-nut G′, all arranged and operating substantially as set forth.

10. The combination, with the frames D E, jointed together, as shown, the latter pivoted and vertically adjustable in the former, of mechanism for retaining said frame E at any position to which it may be adjusted in frame D, as set forth.

11. The combination of the plate A′, having screw B′, and plate C′, having slot D′, flange E′, and spring F′, with the washer H′, having a groove to accommodate said spring, and the thumb-nut G′, as set forth.

12. In a window, the combination, with the sashes consisting of vertically-sliding frames D, in which auxiliary frames E are pivoted and vertically adjustable, of the T-rail K′, secured vertically to the sides of the window-frame, between the sashes, and engaging grooves L′ in the side rails of the outer frames of said sashes, as and for the purpose set forth.

13. In a window, the combination of the window-frame, the sashes consisting of the vertically-sliding outer frames in which auxiliary frames are pivoted and vertically adjustable, and the sash-cords having their ends attached to pivoted lugs near the pivoting-points of the inner or auxiliary frames of the upper and lower sashes, respectively, with the sash-cord guide-pulleys at the top of the window-frame, and the weights suspended by pulleys upon said sash-cords, as set forth.

14. In a window constructed substantially as described, the combination, with the upper sash, consisting of an outer and a pivoted vertically-adjustable inner frame, of a bulging elastic strip sunk in a suitably-located recess in the window-frame, and forming a friction-stop for said upper sash, as and for the purpose set forth.

15. The combination, with a window-frame, of the sashes consisting, essentially, of an inner and outer frame, the said sashes being vertically adjustable, and the inner frames of said sashes adapted to be turned to horizontal positions, and adjusted vertically independently of their outer frames, whereby both sashes can be moved into close contact to the top of the window-frame, substantially as set forth.

16. The combination, with a window-frame, of a sash provided with laterally-projecting lugs, a frame partly embracing the sash, and provided with elongated slots in which the lugs rest, sash-cords, and loops secured to the ends of the sash-cord, and forming bearings for the lugs, substantially as set forth.

17. The combination, with a window-frame, of a sash provided with perforated lugs, a frame partly embracing the sash, and provided with elongated slots, screws secured within the lugs, loops attached to the screws, and sash-cords connected to the loops, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

MARTIN SANFORD MILLARD.

Witnesses:
SAMUEL T. WARREN,
JAMES N. BEARD.