(No Model.)

M. STOTHART.

WINDOW STRUCTURE.

No. 583,004. Patented May 18, 1897.

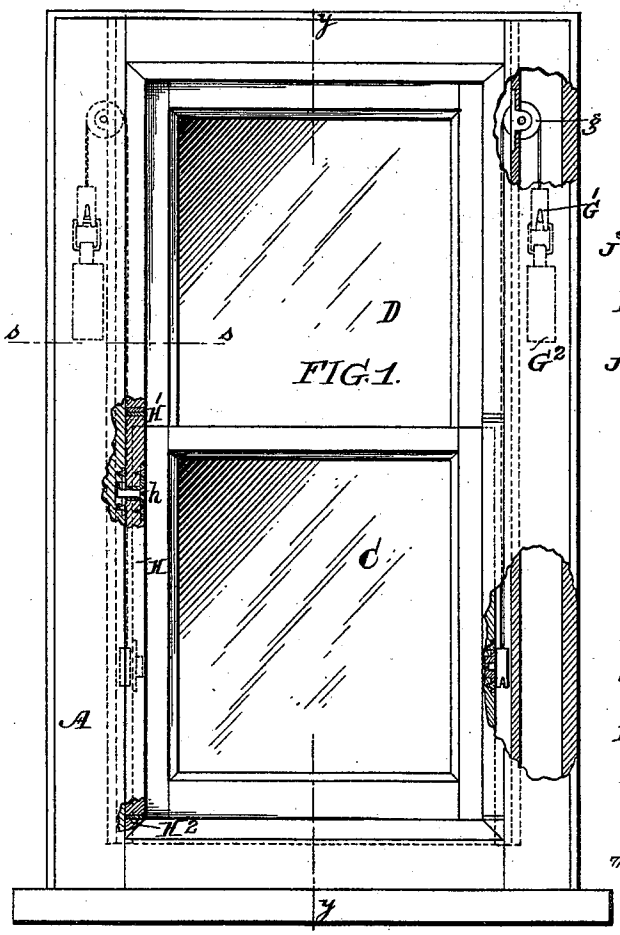

FIG. 1.

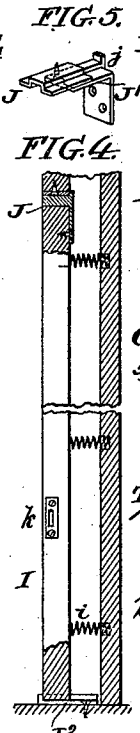

FIG. 4.

FIG. 5.

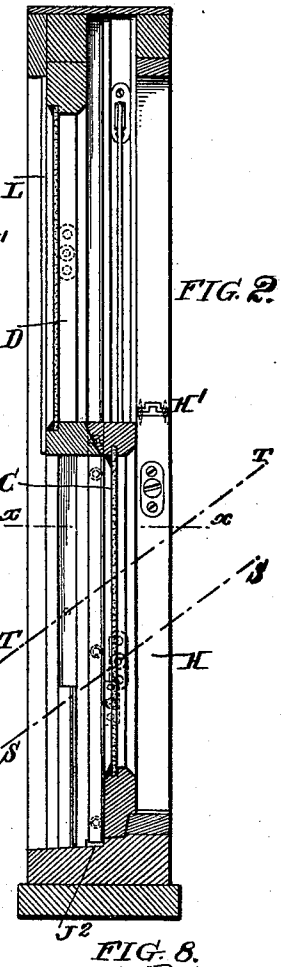

FIG. 2.

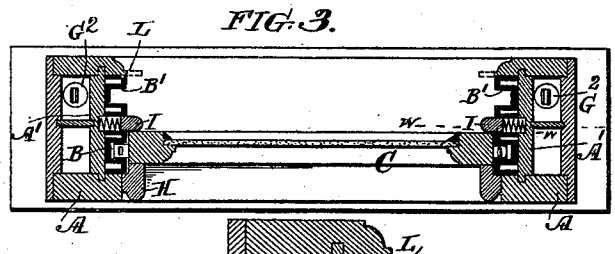

FIG. 3.

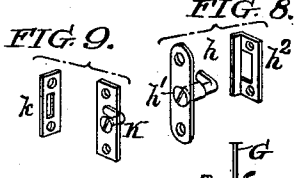

FIG. 8.

FIG. 9.

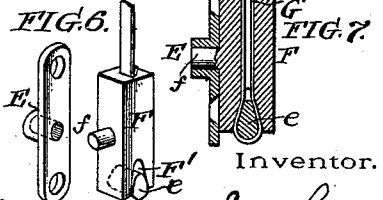

FIG. 6.

FIG. 7.

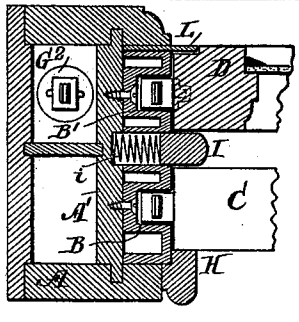

FIG. 10.

Witnesses.

Henry Drury

R. M. Kelly.

Inventor.

Matthew Stothart

By

Attorney.

UNITED STATES PATENT OFFICE.

MATTHEW STOTHART, OF PHILADELPHIA, PENNSYLVANIA.

WINDOW STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 583,004, dated May 18, 1897.

Application filed December 10, 1896. Serial No. 615,207. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW STOTHART, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Window Structures, of which the following is a specification.

My invention has reference to window structures for buildings; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide an improved construction adapted to window-frames, whereby the upper end and lower sashes thereof may be capable of operating in the ordinary well-known manner and at the same time have capacity for permitting the lower sash to revolve in trunnions independently of the upper sash, or in which the upper sash may be lowered approximately into line with the lower sash and both sashes revolve upon trunnions, so as in effect to open the entire window space for ventilating or other purposes. By my improved construction it is possible to secure ventilation in the room at three points of elevation at the same time, since by turning the lower sash at an angle and somewhat lowering the upper sash we will have the lower, middle, and upper portions of the window structure open for the circulation of air. Furthermore, by arranging the lower sash at an angle ventilation may be secured, and at the same time rain is prevented from entering, since the oblique window-sash forms in effect a watershed.

In carrying out my invention I pivot both the upper and lower window-sashes by trunnions to vertically-movable sash-hangers connected to the counterweights, which may be of any suitable construction. The sash-hangers are guided in vertical auxiliary guides in the window-frame, and the lower portion, at least, of the inside beads of the window-frame are made detachable or adjustable, so that they are readily removed when it is desired to revolve the window sash or sashes. Furthermore, the parting-bead is made adjustable, so that it may be moved into the window-frame or its boxes and out of the path of the revolving window-sashes. Normally the several parts of the frame operate very similarly to any ordinary double-sash-window structure.

My invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is an elevation of a window embodying my improvements, with portions broken away to show the interior. Fig. 2 is a vertical sectional elevation thereof on line *y y*. Fig. 3 is a cross-sectional view of same on line *x x*. Fig. 4 is a vertical sectional elevation on line *w w* of Fig. 3. Fig. 5 is a perspective view of the upper guide of the parting-bead. Fig. 6 is a perspective view of the sash-hanger and trunnions detached. Fig. 7 is a vertical section through the sash-hanger trunnions. Fig. 8 is a perspective view of the inside bead-lock. Fig. 9 is a perspective view of the parting-bead lock, and Fig. 10 is an enlarged view of a portion of Fig. 3.

A is the window-frame structure, and may be made of any suitable construction adapted to my improvements. It is provided with the usual counterweight-boxes for the sash-weights G^2. The pulley-stile A′ is provided on its face with two parallel supplemental guide-strips B B′, the former for the lower sash and the latter for the upper sash. Preferably these supplemental guides are formed of stamped metal secured in position by screws passing into the pulley-stile, but may, if desired, be formed of wood. Intermediate of them is the recess *b*, into which the parting-bead I is fitted. Working in the grooved guides are the sash-hangers F, which are rectangular in shape and provided with trunnions *f*, working in bearings E, secured to the side and central portion of the sashes. The sashes, when not obstructed by the parting-bead and inside bead, are free to revolve upon the trunnions *f*, taking the position indicated at dotted lines S S and T T in Fig. 2. The sash-hangers are connected in any suitable manner to the sash cords or chains, to the free ends of which are connected the counterweights G^2. In practice I prefer to employ a sash ribbon or cord G, of flat steel, which passes through an aperture in the sash-hanger and is looped at the bottom about a wooden

block *e*, which fits into a wedge-shaped groove F′ at the base of the hanger. With this construction the harder the pull upon the sash cord or ribbon the tighter will be its connection with the sash-hanger. This sash-ribbon passes over a pulley *g* at the top of the pulley-stile and connects to a block G′, similar in all material respects to the sash-hanger, and from which block G′ the weight G^2 is hung, as shown in Fig. 1. Both sides of the window-frame and the sashes being made alike the same description applies thereto. The inside bead H of the window-frame, on each side of the sash, is made adjustable and preferably detachable or removable for the lower half or that corresponding to the lower sash. As shown, the lower portion of the detachable part of the inside bead is provided with a pin H^2, which fits into a hole at the bottom of the window-frame, and the upper end thereof is guided in a suitable guide H′. (Shown in Figs. 1 and 2.) When in position, the upper portion may be locked to the main frame by a suitable lock *h* of any description.

The form of lock which I prefer is shown in Figs. 1, 2, and 8, and consists of a slotted plate h^2, fitted to the main frame, and a rotary bolt *h*′, carried by the inside bead. The bolt is turned by a screw-driver or in any suitable manner for locking and unlocking the bead in position. While I prefer this construction as being excellently adapted for the purpose, it is to be understood that any means for removing the inside bead from its obstructing position for the lower sash may be employed in lieu of that shown. It is also clear that while I have only shown the lower half of the bead detachable the entire bead might be detached.

The parting-bead is likewise formed of an upper stationary part and a lower adjustable part I, which is pressed outward into normal position by springs *i*, arranged in the grooves *b* and between the parting-bead and the pulley-stile.

The upper end of the adjustable parting-bead I is guided in a suitable guide J. (More fully shown in Figs. 4 and 5.) It consists of the guide proper, J, fixed to the under part of the stationary portion of the parting-bead, and a guide cap-piece J′, secured upon the upper part of the adjustable portion of the parting-bead I. The rear end of this cap-piece J′ is provided with a stop projection *j*, which limits the outward movement of the bead I under the action of the springs *i*.

Any other form of guide may be employed in lieu of that shown. The lower part of the bead I is guided by a suitable guide J^2. Normally this parting-bead extends outwardly sufficient to form a guide for the lower and upper sashes, as is customary, but when it is desired to rotate the said sashes upon their trunnions the said parting-bead is pushed inward against the springs and locked in said position by means of lock K, which is similar to the locking-bolt *h*′ and is adapted to lock into a bolt-plate *k* on the side of the parting-bead. This lock is illustrated in Figs. 4 and 9. Any means of holding the parting-bead out of normal position may be employed in lieu of this lock. If desired, the lock may be similar in all material respects to the lock *h*.

The upper sash is guided vertically, as in the case of the lower sash, and cannot rotate upon its trunnions except when said adjustment is arranged for the lower sash; but to prevent the passage of air and rain between the sides of the upper sash and the grooved guide B′, I arrange an outside or weather strip L, which extends from the main frame part way out upon the sash and closes the space formed between the said parts.

When it is desired to remove a window-sash for repairing or other purposes, the sash is revolved upon its trunnions, as before described, and then one side raised or lowered sufficient to withdraw the sash-hanger and its trunnion from the bearing-plate E on the side of the window-sash, after which the sash may be withdrawn. In this manner it is evident that the sash may be quickly removed and the slow, tedious, and laborious work heretofore necessary entirely avoided.

While I prefer the construction shown, the details thereof may be modified without departing from the spirit of my invention.

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

1. In a window structure, the combination of the main frame formed on each side with the weight-boxes having the pulley-stile provided with two vertical supplemental grooved guide-strips forming a vertical space between them, adjustable parting-strips adapted to the vertical spaces between the guides so as normally to project beyond the said strips, removable inside beads upon the inside of the main frame to project beyond the grooved guides, sash-hangers guided in the grooves of the guide-strips, sash cords or bands connected to the sash-hangers and counterweighted by weights in the weight-boxes, and sashes journaled or pivoted to said sash-hangers.

2. In a window structure, the combination of the main frame formed on each side with the weight-boxes having the pulley-stile provided with two vertical supplemental grooved guide-strips forming a vertical space between them, adjustable parting-strips adapted to the vertical spaces between the guides so as normally to project beyond the said strips, permanent or fixed weather-strips upon the upper portion of each side of the main frame outside of the guide-strips, sash-hangers guided in the grooves of the guide-strips, sash cords or bands connected to the sash-hangers and counterweighted by weights in the weight-boxes, and sashes journaled or pivoted to said sash-hangers.

3. In a window structure, the combination

of the main frame formed on each side with the weight-boxes having the pulley-stile provided with two vertical supplemental grooved guide-strips forming a vertical space between them, adjustable parting-strips adapted to the vertical spaces between the guide-strips so as normally to project beyond the said guide-strips, springs to force the parting-strips out into normal position, removable inside beads upon the inside of the main frame to project beyond the supplemental grooved guide-strips, permanent or fixed weather-strips upon the upper portions of each side of the main frame outside of the supplemental grooved guide-strips, means independent of the inside beads for holding the parting-strips out of normal position, sash-hangers guided in the grooves of the guide-strips, sash cords or bands connected to the sash-hangers and counterweighted by weights in the weight-boxes, and sashes journaled or pivoted to said sash-hangers.

4. In a window structure, the main frame having its sides made of the box-frame A having the pulley-stile A′, supplemental grooved guides B B′ fitted to the pulley-stile and forming a groove between them, and adjustable parting-strips I movable between the grooved guides, in combination with sash-hangers fitted to the grooved guides and movable therein, and sashes pivoted in the sash-hangers.

5. In a window structure, the main frame having its sides made of the box-frame A having the pulley-stile A′, supplemental grooved guides B B′ fitted to the pulley-stile and forming a groove between them, adjustable parting-strips I movable between the grooved guides, means to hold the parting-strips out of normal position, and removable inside beads H detachably secured to the box-frame, in combination with sash-hangers fitted to the grooved guides and movable therein, and sashes pivoted in the sash-hangers.

6. In a window structure, the combination of the main frame having upon each side removable inside beads and adjustable parting-strips and further having vertical supplemental grooved guides upon each side of the parting-strips, and outside weather-strips upon its outer and upper half, with sash-hangers guided in said grooved guides, counterweights for lifting the sash-hangers, and window-sashes journaled or hinged to said sash-hangers and sustained by the counterweights.

7. In a window structure, the main frame having each of its upright sides formed of a box-frame upon the pulley-stile of which are secured vertical supplemental grooved guide-strips extending slightly beyond the box-frame upon the inside, and an adjustable parting-strip arranged between the supplemental grooved guide-strips and guided thereby, in combination with sash-hangers guided in said supplemental grooved guide-strips, sashes pivoted or journaled in said sash-hangers, and removable inside beads secured to the box-frame and extending inward beyond the inner faces of the grooved guides so as to prevent passage of dust and air between the guides and sash into the room.

8. In a window structure, the combination of the main frame having adjustable inside beads and parting-strips and vertical guides upon each side of the parting-strips, with sash-hangers guided in said guides, window-sashes journaled or hinged to said sash-hangers, and thin outside weather-strips carried by the main frame and fitting into a recess in the outer face of the frame of the upper sash when in normal position.

9. In a window structure, the combination of the main frame provided with adjustable parting-strips and inside beads, with a vertically-adjustable upper window-sash journaled at its sides exterior to the parting-strips and beads, counterweights for said sash, and thin outside weather-strips carried by the main frame and fitting into a recess in the outer face of the frame of the upper sash when in normal position.

10. In a window structure, the combination of the main frame having upon each side vertical guides B, B′, with intermediate adjustable parting-strips I, springs *i* to force the parting-strips outward into normal position, removable inside beads H, means to normally hold the said beads in position, vertically-moving window-sashes, counterweighted or sash-supporting devices, and trunnion connections between the sash-weight-supporting devices and the window-sashes arranged in the vertical grooves of the main frame.

11. In a window structure, the combination of the main frame having upon each side vertical guides B, B′, with intermediate adjustable parting-strips I, springs *i* to force the parting-strips outward into normal position, removable inside beads H, means to normally hold the said beads in position, vertically-moving window-sashes, counterweighted or sash-supporting devices, trunnion connections between the sash-weight-supporting devices and the window-sashes arranged in the vertical grooves of the main frame, and outside weather-strips L secured to the main frame and projecting over the upper sash when in normal closed position.

12. In a window structure, the combination of the main frame having upon each side adjustable spring-actuated parting-strips and detachable inside beads and vertical fixed supplemental grooved guide-strips between them, means for holding the adjustable parting-strips out of normal position against the action of the springs, independent means for holding the inside bead in normal position, sash-hangers fitted to and movable in said grooved guides and counterweighted, and a sash hinged or journaled upon the said sash-hangers whereby it is guided vertically independent of the parting-strips or inside beads.

13. In a window structure, the combination

of the main frame having removable inside beads and adjustable parting-strips upon each side of the window-frame partly rigid and partly adjustable, and vertical supplemental grooved guide-strips upon each side of the adjustable parting-strips, means for holding the adjustable parting-beads out of normal position, independent means for holding the inside beads in normal position, sash-hangers guided in said supplemental grooved guide-strips, and upper and lower window-sashes journaled or hinged upon said sash-hangers.

In testimony of which invention I have hereunto set my hand.

MATTHEW STOTHART.

Witnesses:
R. M. HUNTER,
R. M. KELLY.