No. 825,001. PATENTED JULY 3, 1906.

W. H. MULLINS & W. C. HARE.

SASH CORD PULLEY HANGER AND WINDOW FRAME HEAD.

APPLICATION FILED DEC. 28, 1904.

2 SHEETS—SHEET 1.

FIG. 1

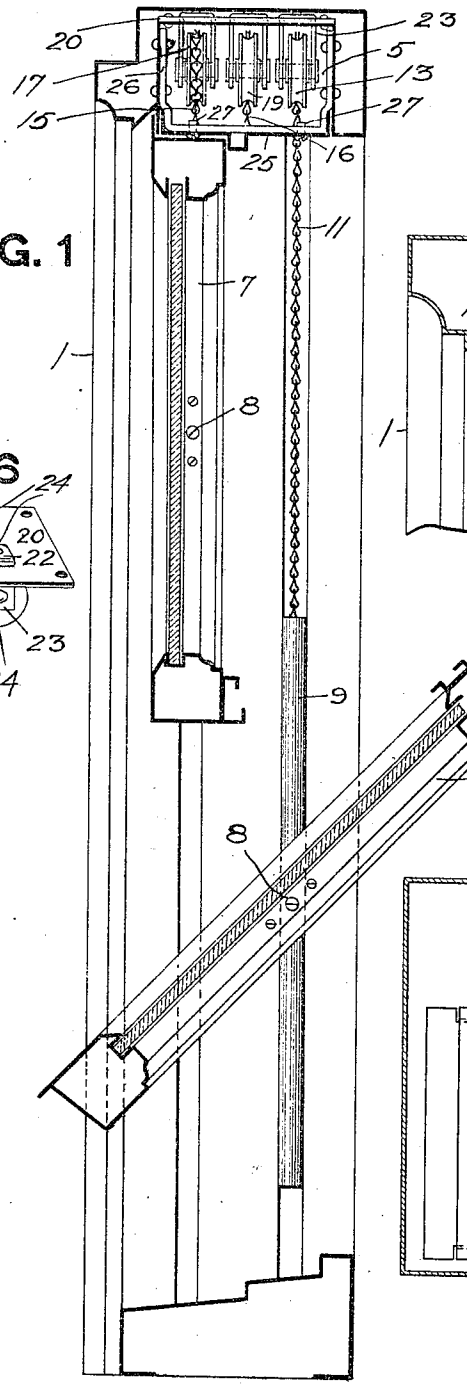


FIG. 4

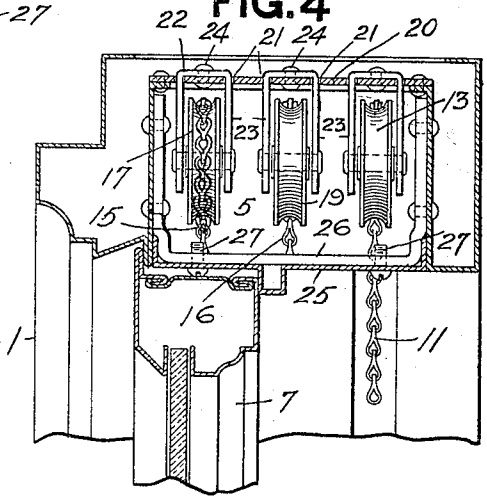


FIG. 6

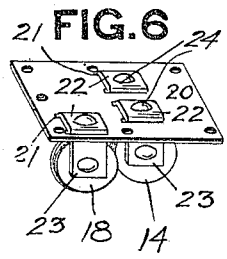
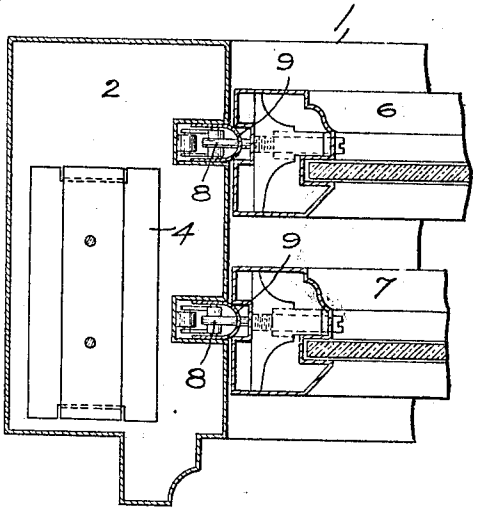


FIG. 5



WITNESSES.

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2 SHEETS—SHEET 2.

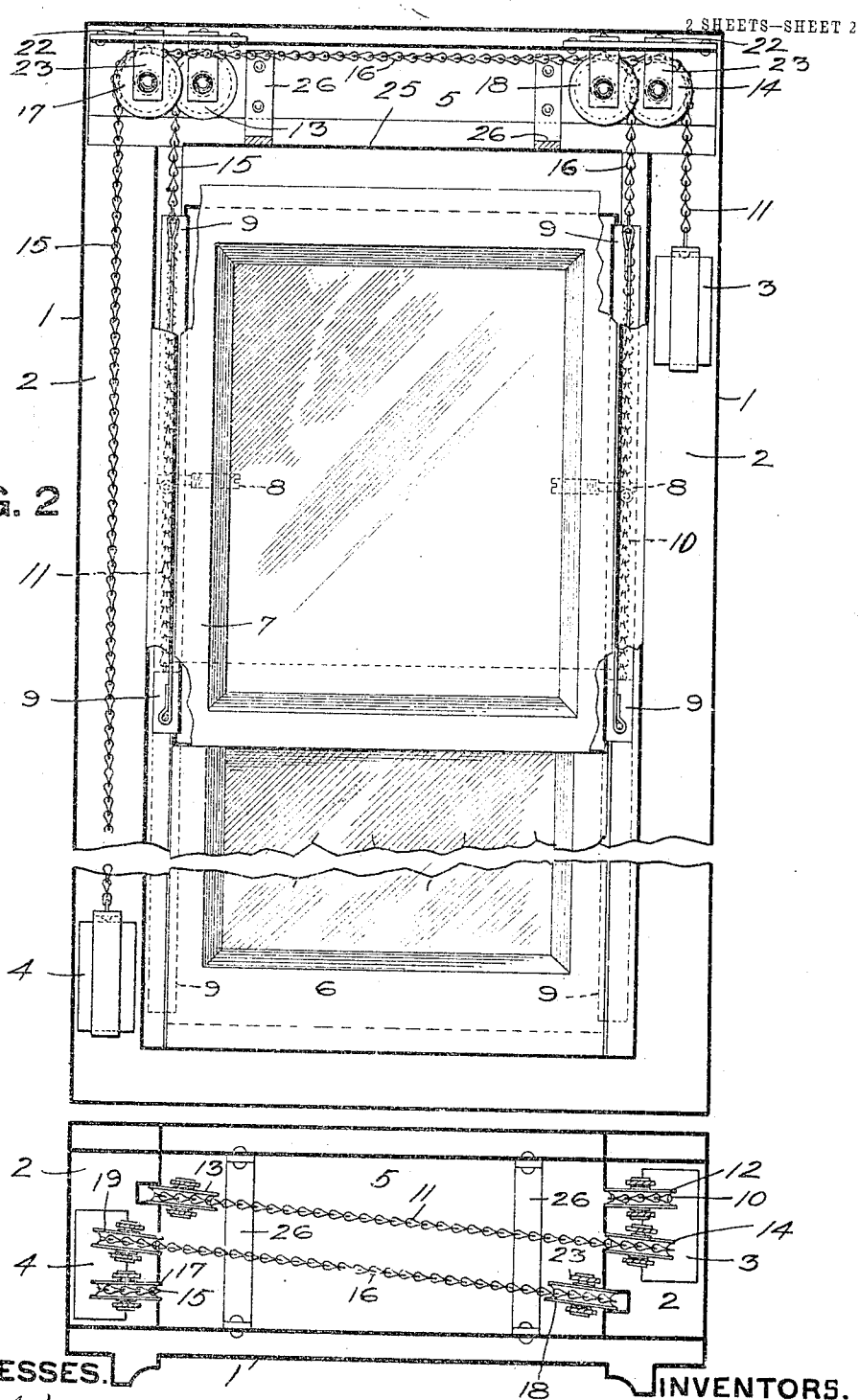


FIG. 2

FIG. 3

WITNESSES.

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SASH-CORD-PULLEY HANGER AND WINDOW-FRAME HEAD.

No. 825,001. Specification of Letters Patent. Patented July 3, 1906.

Application filed December 28, 1904. Serial No. 238,621.

To all whom it may concern:

Be it known that we, WILLIAM H. MULLINS and WILL C. HARE, residents of Salem, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Sash-Cord-Pulley Hangers and Window-Frame Heads; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to hangers for sash-chain pulleys and a window-head construction for metal fireproof windows.

The object of our invention is to provide a strong and cheap construction of the same.

In fireproof buildings the window frames and sashes are usually constructed of metal. Usually the sashes are suspended by means of sash chains or cords attached to balancing-weights, each sash usually being hung on two sash-chains attached to separate weights which move in the jamb-boxes at the sides of the window.

Our invention applies especially to any form of window in which the sash is mounted so as to slide both vertically and revolve on horizontal pivots to open the same, which type of window is largely used in metal fireproof constructions. If windows of this character were hung on chains attached to two separate weights, one on each side of the jamb, there would be constant liability that the window would not move vertically when swung on its pivots to partially or wholly open the same. If one of the weights were even slightly heavier than the other, when the window was swung on its pivots there would be nothing to prevent one side from going up much farther than the other, and thus throw the sash out of its pivot-sockets and cause damage.

Our invention is applied to windows of the character specified and provides a construction whereby both sides of the sash are compelled to travel parallel, even if the sash stands open on its pivots. To this end we provide a construction of frame-head and pulleys therein such as will permit each sash to be hung from a single balancing-weight, the chains or cords from both sides of each sash being attached to the one weight, this being possible by passing one of the chains or cords through the frame-head and over suitably-mounted guiding or hanging pulleys or sheaves.

The invention also comprises details of construction, such as the frame-head box provided with a removable bottom plate in order that the suspending pulleys and chains may be readily accessible and also in a form of hanger for the pulleys or sheaves which is strong and cheap of construction.

In the accompanying drawings, Figure 1 is a vertical section taken transversely through the glass, showing a window constructed according to our invention. Fig. 2 is a vertical section taken parallel with the glass. Fig. 3 is a diagrammatic plan view showing the arrangement of the hanging pulleys and chains. Fig. 4 is a vertical transverse section through the frame-head box, on an enlarged scale. Fig. 5 is a horizontal section, on an enlarged scale, through one side of the frame and sash; and Fig. 6 is a perspective view of one of the hangers.

The window-frame is shown at 1 and is provided on both sides with the jamb-boxes 2, in which move the suspending weights 3 and 4. The upper portion or head of the window-frame is formed as a hollow box 5, in which are mounted the pulleys for the sash cords or chains. The lower sash is shown at 6 and the upper sash at 7. These sashes instead of sliding directly in the jambs of the window are mounted on horizontal pivots or trunnions 8, secured to weather-bars 9, which slide in the usual jambs of the window, and to which bars the suspending cords or chains are fastened.

All of the parts so far described will preferably be formed of metal, as shown in the drawings, and may be of the usual or any desired form of metal-window construction having sashes so mounted as to both slide vertically and revolve on horizontal pivots in order to open. The specific form of weather-bar and pivot construction shown is the same as shown and claimed in the patent to Henry C. Nelson, No. 751,747, dated February 9, 1904. This, however, has been selected for purposes of illustration largely, as the invention is applicable to any other construction of weather-bar and sash pivoted thereto.

To the lower sash are connected the chains 10 and 11, the former of which passes over an overhead pulley 12 and is connected to the weight 3, while the chain 11 passes over the pulley 13, thence across through the box 5 and over a guide-pulley 14 and is attached to the same weight 3. The upper sash likewise has connected thereto two chains 15 and 16, the former of which passes over the pulley 17 and is attached to the weight 4, while the chain

16 passes over a pulley 18, thence across through the box 5 and over a guide-pulley 19 and is attached to the same weight 4. By this arrangement both chains from each sash are connected to a single weight, and as a consequence both sides of the sashes are compelled to travel exactly parallel even though the window should stand partially or entirely open. This arrangement of chains and pulleys necessitates the placing of the pulleys 13, 14, 18, and 19 at an angle, as shown in Fig. 3, to correspond with the direction of the chains through the box 5.

The several suspending and guide pulleys described are hung from overhead from suitable head-plates 20, which are secured to the top of the head-box 5. Each of these head-plates is provided with three pairs of slots 21. The hangers comprise straps 22, bent into U shape and having their legs 23 passing down through the slots 21 and their bases resting upon the upper face of the head-plates. If desired, they may be secured to the plates by means of rivets 24 or like fastening means.

The bottom plate 25 of the head-box is so attached that it is readily removable in order that the overhead pulleys and chains may be accessible when desired. This may be accomplished in various ways. As shown in the drawings, the head-box is provided with a pair of transverse bars or brackets 26, secured to the sides thereof, and to which transverse bars the bottom plate 25 is secured by suitable means, such as the tap-screws 27. By removing these screws the bottom plate 25 of the head-box may be removed and access had to the interior of said box.

It will be observed that by our construction both weather-bars, to which the sash is attached, are compelled to move in unison and in exact parallelism, so that even when the window stands open both trunnions will be at exactly the same height. As a consequence the trunnions cannot be thrown out of their sockets or otherwise damaged. The head-box and hangers are so constructed as to permit of the attachment of both chains of each sash to a single weight, and the construction thereof is simple and strong. All parts are readily accessible for inspection and repair. The hangers are supported directly by a portion of metal of the head-plates in width corresponding to the distance between the legs of the U-shaped hangers, thus giving a firm and strong support therefor.

We are aware that heretofore sliding window-sashes have had both suspending chains or cords attached to a single weight. We do not, therefore, claim this construction broadly. As far as we are aware, however, it never has heretofore been proposed to attach a single suspending-weight to both chains or cords of windows having both a sliding and a pivotal or revolving movement, or, in other words, to attach a single weight to two chains or cords connected to the weather-bars of a revolving window-sash.

What we claim is—

1. The combination with a window-frame, of weather-bars slidably mounted therein, a sash pivotally mounted on said bars and arranged to swing out of the plane of said bars, a single balancing-weight for suspending said sash, and a cord or chain attached to each bar and both connected to said balancing-weight, whereby both weather-bars are caused to travel in unison and the pivoted sash prevented from binding or becoming disconnected from the bars.

2. The combination with a window-frame, of weather-bars slidably mounted therein, a sash pivotally mounted on said bars and arranged to swing out of the plane of said bars, a single balancing-weight moving in a box in one of the window-jambs, suspending pulleys or sheaves mounted in the frame-head, and a cord or chain attached to each bar and both connected to said balancing-weight and the pivoted sash prevented from binding or becoming disconnected from the bars, one of said chains or cords passing across from side to side through the frame-head.

3. The combination with a window-frame, of weather-bars slidably mounted therein, a sash pivotally mounted on said weather-bars and arranged to swing out of the plane of said bars, a single balancing-weight moving in a box in one of the window-jambs, suspending pulleys or sheaves mounted in the frame-head, two on the side on which the weight is located and one on the other side, and a cord or chain attached to each bar and both attached to the single balancing-weight and the pivoted sash prevented from binding or becoming disconnected from the bars, one of said chains passing up and over a suspending or hanging pulley on the same side of the frame-head and thence down to the balancing-weight, and the other guide-chain passing up over a pulley on the same side of the frame-head, thence across through said head from side to side and over a suitable guide-pulley on the opposite side of the frame-head, and thence down and attached to the balancing-weight.

4. The combination with a window-frame, of weather-bars slidably mounted therein, a sash pivotally mounted on said bars and arranged to swing out of the plane of said bars, a single balancing-weight moving in a box in one of the window-jambs, a cord or chain attached to each bar and both connected to said single weight, one of said cords passing across through the frame-head from side to side, and suspending and guide pulleys for said cords in said frame-head, two on the side on which the weight is located and one on the other side, the last-named pulley and one of the first-named pulleys being arranged at an angle.

5. The combination with a window-frame, a sash mounted therein, balancing means for said sash, a frame-head comprising a cross-box, suspending pulleys and chains mounted in said head-box, said chains being connected to the sash and to the balancing means, and a bottom closing-plate for said head-box removably secured to said box.

6. A metal window-frame head for weight-balanced sashes comprising a cross-box, head-plates in said box, suspending-pulleys hung from said head-plate, sash cords or chains passing over said pulleys, and a bottom closing-plate removably secured to said box.

7. A metal window-frame head for weight-balanced sashes comprising a cross-box, head-plates mounted in said box, suspending-pulleys mounted on said head-plates, sash cords or chains passing over said pulleys, bars or brackets extending across the lower side of said box, and a bottom closing-plate removably secured to said bars or brackets.

8. An overhead hanger for sash-cord pulleys and the like comprising a head-plate, slots cut therethrough, a U-shaped stirrup or hanger having its legs extending down through said slots, and a sheave or pulley mounted between said legs.

9. An overhead hanger for sash-cord pulleys and the like comprising a head-plate having a pair of slots cut therethrough, a hanger comprising a U-shaped stirrup having its legs extending through said slots and its base resting upon that portion of the plate between said slots, and a pulley or sheave mounted between said legs.

10. An overhead hanger for sash-cord pulleys and the like comprising a head-plate having a plurality of pairs of slots cut therethrough, some of said pairs of slots being at an angle to others thereof, U-shaped hangers having their legs passed through said pairs of slots and their bases resting upon the portions of the plate between said slots, and pulleys or sheaves mounted between said legs.

11. In a window, the combination of the frame, sashes mounted therein, weights moving in boxes in the frame-jambs, chains or cords connecting said sashes and weights, pulleys over which said chains pass, and hangers for said pulleys comprising U-shaped stirrups between the legs of which said pulleys are mounted, and head-plates provided with pairs of slots through which the legs of said U-shaped hangers pass with their bases resting upon the metal between said slots.

In testimony whereof we, the said WILLIAM H. MULLINS and WILL C. HARE have hereunto set our hands.

WILLIAM H. MULLINS.
WILL C. HARE.

Witnesses:
F. W. WINTER,
ROBT C. TOTTEN.