

F. E. DUERING.
METAL WINDOW SASH.
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941,629.

Patented Nov. 30, 1909.

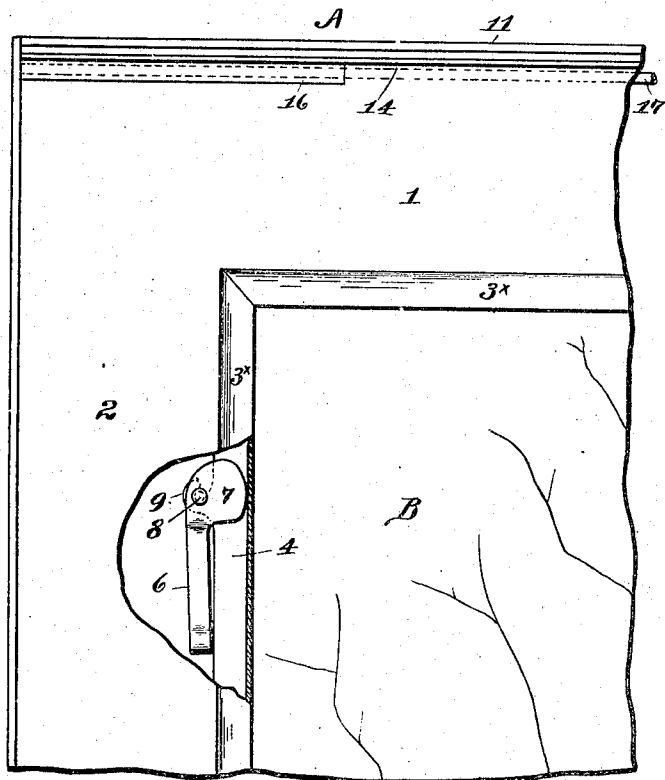


Fig. 1

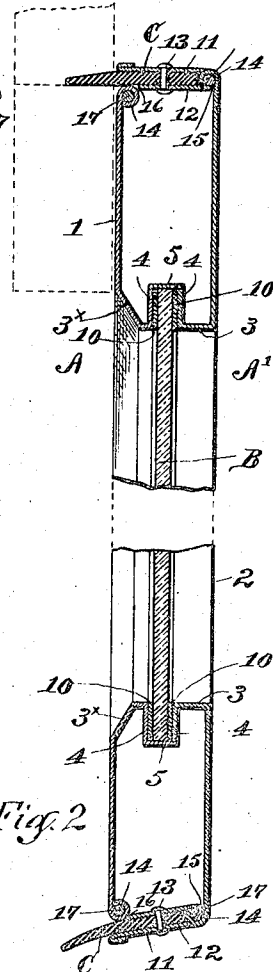


Fig. 2

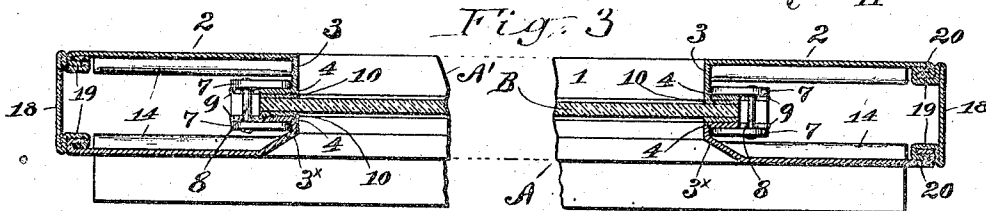


Fig. 3

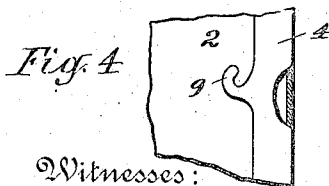


Fig. 4

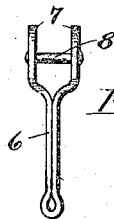


Fig. 5

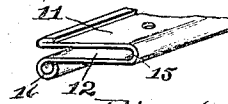


Fig. 6

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UNITED STATES PATENT OFFICE.

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METAL WINDOW-SASH.

941,629.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK E. DUERING, a citizen of the United States, and resident of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Metal Window-Sash, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of window-sashes which are composed of sheet metal.

The main object of the invention is to produce a simple, strong and durable sash which shall permit the window-pane to be easily and conveniently placed therein so as to securely hold said pane without the use of putty, or rivets, screws or other fastening devices, and shall permit the pane to be readily removed when required.

To that end the invention resides in the novel construction and combination of metallic plates comprised in the sash, and in the simple and effectual means for clamping the pane in the sash as will be hereinafter fully described and set forth in the claims.

In the accompanying drawings Figure 1 is an outer face view of a portion of the window-sash embodying my invention; Fig. 2 is a vertical sectional view, a portion being broken away; Fig. 3 is a horizontal sectional view with a portion broken away; Fig. 4 is a fragmentary view of the stile-portion of one of the sheet metal frames showing the hook formed thereon for the engagement of the cam-lever which serves to clamp the pane of glass between flanged portions of the frames; Fig. 5 is a detached front view of the cam-lever; and, Fig. 6 is a perspective view of an end portion of the longitudinally folded plate which unites the outer marginal portions of the top and bottom members of the frame.

My improved window-sash comprises two rectangular frames —A—A'— composed of sheet steel or other suitable metal and having substantially like dimensions and placed essentially face to face with an intervening space to produce hollow rails —1—1— and stiles —2—2—. Each frame is preferably formed from a single metal plate which is subjected to the action of suitably shaped dies of a press.

The horizontal members of the frame

—A— form the front walls of the hollow rails —1—1— and the vertical members of said frame form like walls of the hollow stiles —2—2—. while the corresponding members of the frame —A'— form the rear walls of said rails and stiles. By the action of properly shaped dies the inner edge portions of the respective walls of the rails and stiles are bent toward each other as indicated at —3— and —3'— and at the same time outwardly to form parallel flanges —4—4— extending entirely around the sash, between which flanges the margin of the window-pane —B— is designed to be clamped. The bend —3— of the frame —A'— is preferably at right angles, while the bend —3'— of the other frame —A'— is less than a right angle to produce the usual bevel effect on the front face of the sash. The flanges on the front wall of the lower rail and rear wall of the upper rail terminate in horizontally projecting lips —5—5— adapted to engage the corresponding edges of the pane —B— to prevent the pane from shifting vertically.

The clamping of the pane between the flanges —4—4— is effected by means of cam-levers detachably applied to the flanges. The lever may be of any suitable form, but preferably comprises a handle-portion —6— formed with a bifurcation —7— embracing the parallel flanges —4—4— and provided with a transverse pin —8— fulcrumed on a pair of hooks —9—9— or other suitable projections formed on the flanges of the stiles and disposed side by side, the two parts of the bifurcation —7— being cam-shaped and bearing against the bent portions —3—3'— as clearly shewn in Figs. 2, 3, 4 and 5. I prefer to provide strips —10—10— of rubber or other material between the flanges —4—4— and pane —B— to effect a tight joint and thus prevent rattling of the pane and at the same time guard against the entrance of water and dust.

The top and bottom members of the two frames —A—A'— are united by means of sheet metal plates —11—11— which are detachable and may be applied to the outer marginal edges in any suitable manner. However, I prefer to fold each plate longitudinally at the center of its width to provide a channel —12— extending the entire length of the rail for the insertion of a weather-strip —C— composed of rubber or

other suitable material and which is secured in said channel by means of rivets —13— or other fastening devices. The said plates —11—11— and frames —A—A'— are preferably provided with hinged connections effected by curving or rolling the outer marginal portion of each frame as indicated at —14— so as to correspond to the folded portion —15— of one of the plates and to correspond with like rolled portions —16— on one edge of the other plate, through which rolled and folded portions extend removable rods —17— as more clearly shown in Fig. 1. The sides or stile-portions of the two frames —A—A'— are united by means of vertical plates —18—18— applied to the edges and extending the entire depth of the sash. These plates —18—18— have their longitudinal edges formed with double folds to produce channels —19—19— receiving flanges —20—20— formed at the corresponding edges of the frames to provide interlocking connections between the parts as clearly illustrated in Fig. 3 of the drawings. It is obvious that the channels may be provided on the edges of the frames and the flanges formed on the said frame.

The attachment of the plates —18—18— in the manner described and shown imparts rigidity and strength to the sash, and at the same time permits the plates to be readily applied or removed. While I prefer to connect the plates —11—11— and —18—18— to the frames in the manner stated, still at the same time it will be understood that they may be otherwise applied.

What I claim is:—

1. The combination with a window-sash composed of sheet metal and formed with a pair of outwardly extending flanges adapted to embrace the marginal portion of the pane, of cams attached to the flanges for clamping the pane therebetween.

2. The combination with a window-sash composed of sheet metal and formed with flanged portions adapted to embrace the mar-

gin of the pane, of cam-levers detachably connected to said flanged portions for clamping the pane therebetween.

3. The combination with a hollow sheet metal window-sash formed with a pair of parallel outwardly projecting internal flanges embracing the margin of the pane and with hooks on the edges of said flanges arranged in pairs, of cam-levers fulcrumed on the pairs of hooks and engaging said flanges for clamping the pane as set forth.

4. The combination with a window-sash composed of two metal frames placed face to face and provided with flanged portions for embracing the margin of the pane, of clamping means pivotally connected to the said flanged portions as and for the purpose set forth.

5. A window-sash comprising two separable rectangular metal frames placed face to face with an intervening space to produce hollow rails and stiles and formed with outwardly extending flanges at their inner edge portions, said flanges being disposed parallel to embrace the margin of the pane, and levers combined with said flanges and provided with cam surfaces operative for clamping the flanges to the pane as set forth.

6. A window-sash comprising two rectangular sheet metal frames placed face to face with an intervening space to produce hollow rails and stiles and formed at their inner marginal portions with corresponding outwardly extending flanges between which the margin of the pane is clamped, the horizontal outer edges of the frame being united by plates folded longitudinally at the center of their width, and the vertical outer edges of said frames united by plates having an interlocking and detachable connection therewith, said folded plates being adapted to receive weather-strips as set forth.

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