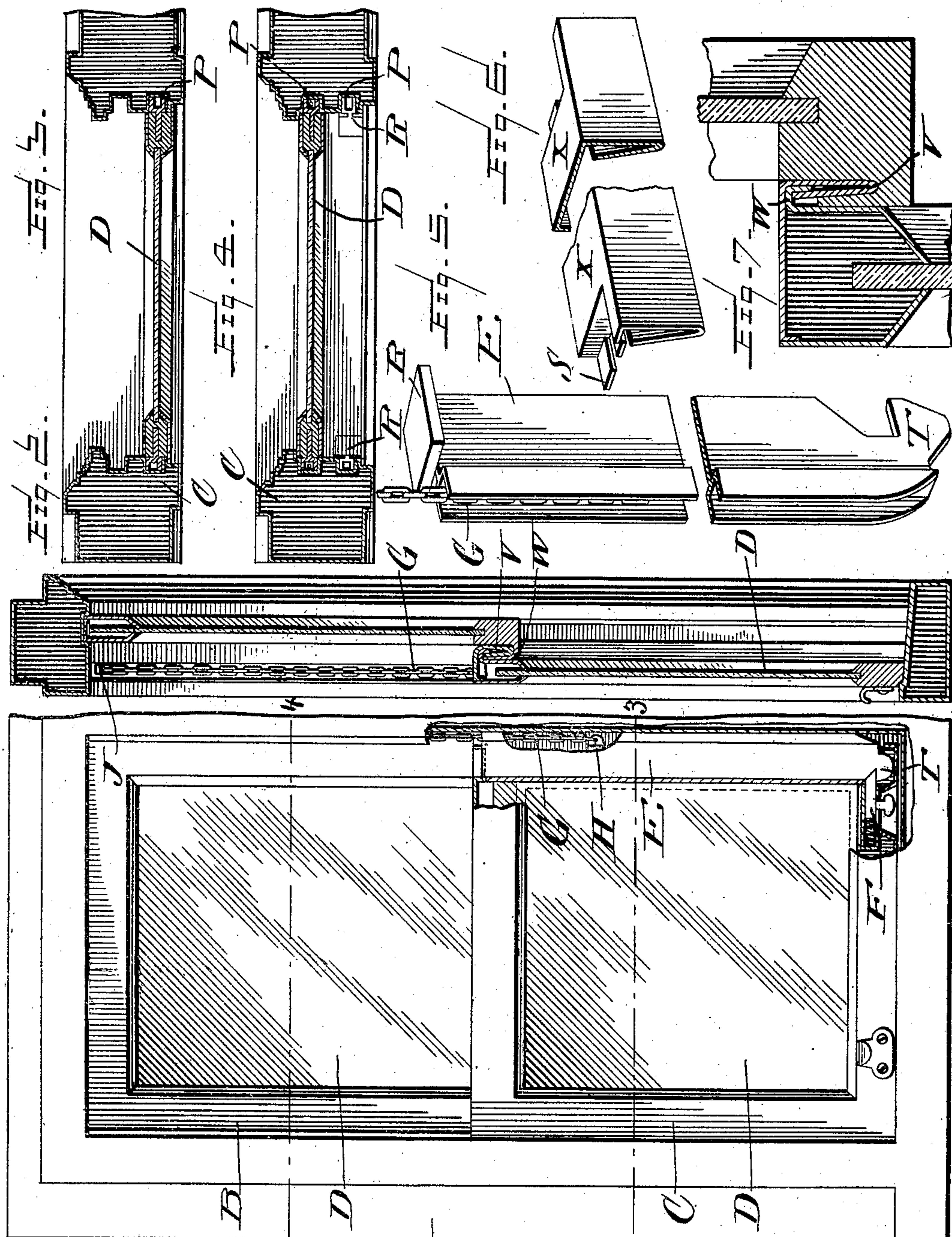


No. 833,727.

PATENTED OCT. 23, 1906.

M. BERWANGER.
METALLIC WINDOW FRAME AND SASH.

APPLICATION FILED FEB. 4, 1905.



WITNESSES:

E. R. Ruppert
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Fig. 1.

A

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By

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UNITED STATES PATENT OFFICE.

MICHAEL BERWANGER, OF PHILADELPHIA, PENNSYLVANIA.

METALLIC WINDOW FRAME AND SASH.

No. 833,727.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed February 4, 1905. Serial No. 244,115.

To all whom it may concern:

Be it known that I, MICHAEL BERWANGER, a subject of the Emperor of Austria-Hungary, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Window Frames and Sashes, of which the following is a specification.

The invention which forms the subject of the present application for Letters Patent, which is more particularly hereinafter described, relates to an improvement in metallic window frames and sashes.

One object of the invention is to provide a non-combustible frame and sash of simple design and inexpensive construction.

Another object is to provide a frame and sash of such design and construction that liability to the impeding of operation by expansion, contraction, or warping shall be minimized.

A further object is to provide a sash and frame of such design and construction that the sash may be easily and quickly removed or replaced.

My invention consists in the improvements in metallic window frames and sashes hereinafter described.

It consists, further, in certain hereinafter-described new combinations.

The following is a description of my invention and of the mechanism embodying it and of the operation thereof such that any one skilled in the art may be able, therefore, to make and operate the same, reference being had to the accompanying drawings, in which the same letters designate the same or corresponding parts in the different figures.

The frame and sash, except the parts otherwise described, are made almost entirely of sheet metal riveted or soldered together, as may be found most convenient and as intended to be reinforced by such rods and braces as may be found advantageous, not herein shown or specifically claimed.

Figure 1 shows the frame and sash, portions of the lower sash and adjacent wall being broken away to show underlying parts more particularly described subsequently. Fig. 2 is a vertical section through the frame and sash. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 is a transverse section on line 4 4 of Fig. 1. Fig. 5 shows

the suspension bearing-bar and chain. Fig. 6 shows in perspective the top plate of lower bar. Fig. 7 is a vertical section through the upper bar of the lower sash and the lower bar of the upper sash, showing them in their respective relations when the window is closed.

In Fig. 1, A represents the frame; B and C, respectively, the upper and lower sash; D, the glass; E, the suspension-bar; F, the spring retaining-bolt which secures the sash to the suspension-bar.

In Fig. 2, G represents the chain, which is attached to suspension-bar E by means of eye-lug H. (Shown in Fig. 1.) Chain G passes over pulley J and is attached at its other extremity to a counterbalance-weight (not shown) of ordinary design and construction, which moves in its chamber located in the usual portion within the frame.

Figs. 3 and 4 show more particularly the double bearings of suspension-bar E in the groove P.

Fig. 5 shows more particularly suspension-bar E, the cap R of which rests on stops S of the top bar of the sash. (Shown in Fig. 6.) T indicates in Fig. 5 a lug on the lower extremity of suspension-bar E.

Fig. 7 shows interlocking extensions V and W, respectively, of the lower bar of the upper sash and of the upper bar of the lower sash. The sash moves in the usual manner. To remove the lower sash, spring retaining-bolt F is withdrawn. Upon its withdrawal suspension-bar E, relieved of the weight of the sash, is drawn upward by the counterbalance-weight acting upon it by means of chain G, when the sash may be withdrawn from the frame. The upper sash, being first lowered, may be released and removed in a similar manner.

What I claim as new, and desire to secure by Letters Patent, is set forth in the following claims:

1. In a device of the kind described, the combination, with a window-sash provided with a removable upper bar, of suspension-bars detachably secured to said sash and adapted to retain said removable upper bar in position, substantially as described.

2. In a device of the kind described, the combination, with an upper sash having its lower bar provided with a longitudinally-extending groove, of a lower sash provided with a removable upper bar, a downwardly-ex-

tending projection on said removable bar adapted to fit into said groove in said upper sash, and suspension-bars detachably secured to said lower sash and adapted to retain said removable upper bar in position, substantially as described.

3. In a metal window-sash, a removable cover for the top bar, having supports for a

removable suspension-bar substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL BERWANGER.

Witnesses:

S. A. JOHNSON,
M. H. HOOD.