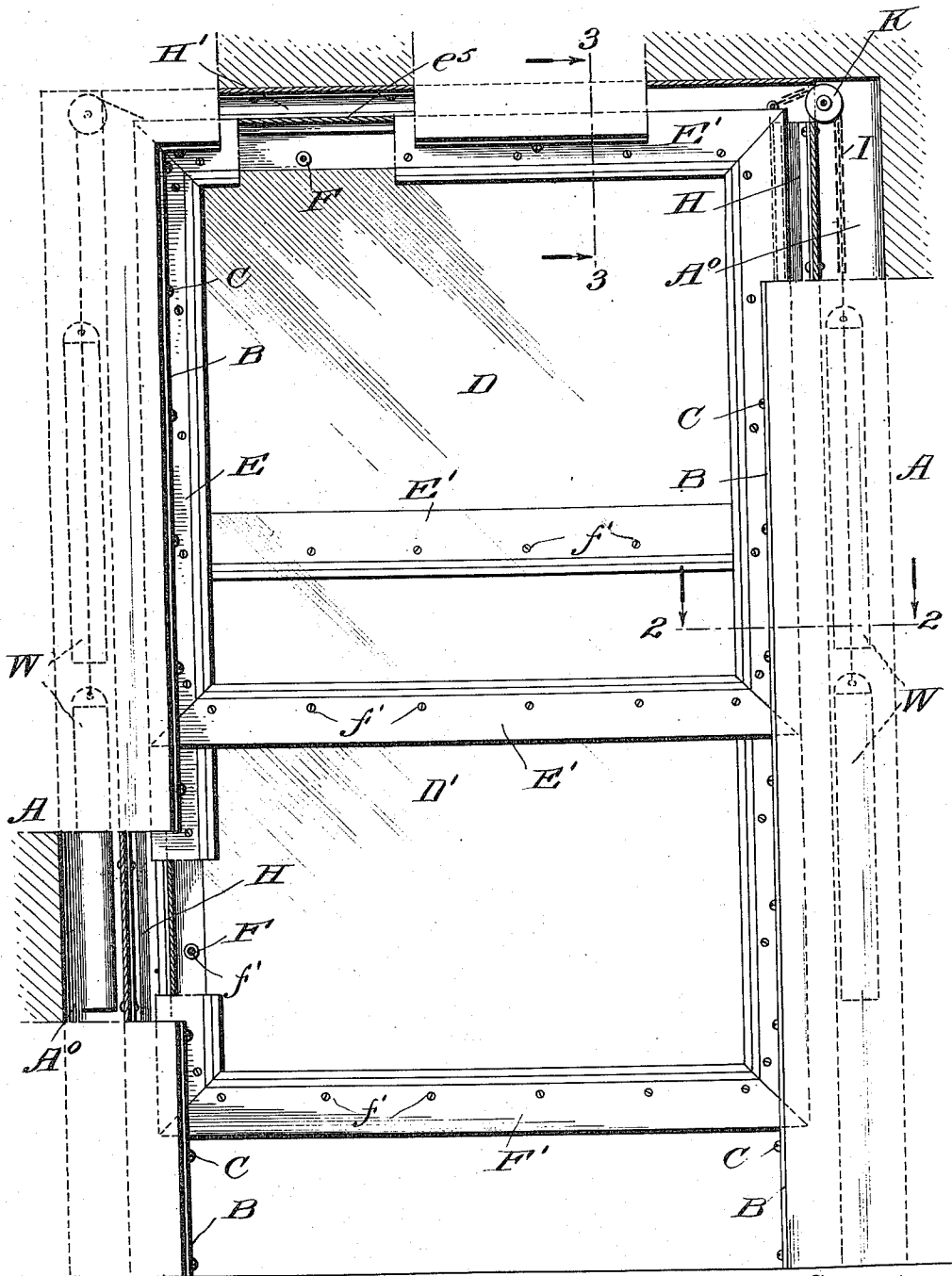


J. J. SMITH.  
WINDOW CONSTRUCTION.  
APPLICATION FILED DEC. 21, 1909.

Patented Feb. 21, 1911.

984,611.

2 SHEETS—SHEET 1.



Witnesses

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FIG. 1.

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# UNITED STATES PATENT OFFICE.

JUSTUS JESSE SMITH, OF NEW YORK, N. Y.

## WINDOW CONSTRUCTION.

984,611.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed December 21, 1909. Serial No. 534,351.

*To all whom it may concern:*

Be it known that I, JUSTUS JESSE SMITH, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Window Construction; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to improvements in window construction and it consists in providing a metallic sash frame and window frame which is fire-proof, compact, substantially air-tight in the joints, simple and cheap in construction, easily assembled, and efficient in operation.

My invention will be understood by reference to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 shows the interior of a window looking out, parts being broken away. Fig. 2 shows a section along the line 2—2 of Fig. 1 on a larger scale, and looking down. Fig. 3 shows a section along the line 3—3 of Fig. 1, and looking in the direction of the arrows. Fig. 4 is a similar view to Fig. 2, but shows a section through the weight box just above the pulleys. Fig. 5 is a detail showing the accordion spring plate used as a combined spring and weather strip in the window frame, and Fig. 6 shows in cross section a modified form of sash generally similar to that shown in Fig. 2.

A represents a masonry or concrete wall, in which the weight box A<sup>0</sup> is formed. The side of this weight box is closed by a plate B, bent inward to form two guide grooves B<sup>0</sup> for the sash, which grooves are preferably separated by the bent channel rib or parting rail B', formed in said plate, as shown in Fig. 2. This plate B is attached to the masonry A by screws C and sockets C', which sockets are preferably embedded in said masonry when the skeleton frames are in place and the masonry is constructed. Above the sashes a similar plate B is provided with a single guide groove B<sup>0</sup>, as shown in Fig. 3. The panes D and D' are held in a sash, comprising the side rails E and the top rail E'. The side rails are preferably composed of two plates detachably

connected together as shown in Fig. 2, in which the plate e is hooked over as at e' to engage the rib e<sup>2</sup> of the opposite plate, which is recessed as at e<sup>3</sup> and is bent on itself as at e<sup>4</sup>, the inner ends e<sup>5</sup> engaging strips of rubber, or other suitable material. The two plates may be connected together by any suitable clamps, such as F, which consist of screws f' connected by spring washers f<sup>2</sup> to rivets f<sup>3</sup>, or instead of this arrangement a simple rivet such as F', shown in Fig. 6, may be adopted. Accordion spring plates H are riveted as at H<sup>0</sup> in the side and top grooves of the window frame, and bear on their inner edges against the surface e<sup>3</sup> of the sash, as shown in Fig. 2.

To assemble the sash in the window frame, it will only be necessary to press the sash against this spring plate H, compressing same until the opposite side of the sash can be swung into the corresponding groove on the other side of the window, when, if the sash be released, the resiliency of the two springs will center the sash and the said spring plates will serve not only to steady the sash in the window frame, but will also serve as weather-strips to prevent drafts of air from passing around the edges of the sash, between it and the window frame. By using such resilient plates the necessity for a snug fit is obviated, and a self fitting sash is secured, thus insuring a great saving in workmanship. By having the sides of the sash recessed, a wider spring plate may be used, and a larger opening secured. These accordion spring plates are shown in detail in Fig. 5, where h represents the corrugations and h<sup>0</sup> represent the rivet holes.

At the top of the window, the sash should preferably be flat, as at e<sup>5</sup>, to prevent the accumulation of dust, which would occur if it were recessed as shown at e<sup>3</sup> in Fig. 2. In this case, the accordion spring H' need not have as much resiliency as at the sides of the windows, since it will only operate when the sash is in the closed position and has no function in centering the sash in the window frame; but it provides a tight joint both at the window head and the meeting rails without necessitating exact workmanship. It is very difficult and expensive to make snug fits in light metal constructions.

Mounted at the head of the weight box are the pulleys K, over which pass the chains

I, connected to the weights W. These pulleys are preferably set at an angle, so that the weights may not interfere with each other in passing, and thus a narrower sash may be used with standard size weights.

It will be noted that I provide a fire-proof window construction, in which the sash does not project materially from the window jamb of masonry, thus enabling a pane of almost the full size of the masonry opening to be used, thus greatly increasing the light admitted, and in which the panes may be readily assembled in the sash and the sashes may be readily assembled in the window frames without the necessity for close workmanship, in which the springs will prevent rattling, and the accordion plates will obviate the necessity for weather-strips. It will also be seen that I provide a single bent plate which serves both to close the outer side of the weight box, and to provide guide grooves and a partition rail for the sashes, that the face of this plate projects into the window opening only the thickness of the plate itself and the sides of the sashes project into the inwardly extending grooves in said plates, thus increasing the light area in the window opening. The weight box is preferably molded in the masonry and requires no metal lining. The construction is extremely simple, compact, cheap and effective for the purposes stated.

It will be obvious that various modifications might be made in the herein described structure which could be used without departing from the spirit of my invention.

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

1. A fire proof window construction comprising a weight box, a plate closing one side of said weight box, and bent to form grooves projecting into said weight box, an accordion spring plate mounted in each of said grooves, and sashes projecting into said grooves and normally compressing said accordion spring plates, substantially as described.

2. A fire proof window construction comprising a weight box, a plate closing one side of said weight box and bent to form grooves projecting into said weight box, an accordion spring plate secured in each of said grooves, and sashes projecting into said grooves and themselves provided with grooves, normally engaging and compressing said accordion spring plates, substantially as described.

3. A fire proof window construction comprising a weight box, a plate closing one side of said weight box, and bent to form grooves projecting into said weight box, an accordion spring plate secured in each of said grooves, sashes projecting into said

grooves and themselves provided with grooves, normally engaging and compressing said accordion spring plates, pulleys set at a divergent angle above the sides of said sashes, chains secured to said sashes and passing over said pulleys, and weights suspended from said chains, and passing clear of each other in said weight boxes, substantially as described.

4. A fire proof window construction comprising a weight box, a plate closing one side of said weight box and bent to form grooves projecting into said weight box, an accordion spring plate mounted in each of said grooves, and sashes projecting into said grooves and normally compressing said accordion spring plates, pulleys set at a divergent angle above the sides of said sashes, chains secured to said sashes and passing over said pulleys, and weights suspended from said chains, and passing clear of each other in said weight boxes, substantially as described.

5. A fire proof window construction comprising a weight box, a plate closing one side of said weight box and bent to form grooves projecting into said weight box, an accordion spring plate mounted in each of said grooves, and sashes projecting into said grooves and normally compressing said accordion spring plates, said sashes comprising two interlocking metal plates projecting at one side into said grooves and at the other side gripping the pane, with means for clamping said plates together, substantially as described.

6. A sash rail comprising two resilient interlocking metal plates, adapted to project into the groove at one side, and to grip the pane at the other, with means for clamping said plates together, comprising a resilient washer fastened to one plate, and a screw passing through the other plate and connected to said washer, substantially as described.

7. The combination with a window sash and a window frame, of a resilient plate corrugated in V-shaped folds extending transversely of the sash to form a spring held edgewise between the sash and the window frame, and serving both as a yielding centering device for the sash, and as a weather strip to prevent the passage of air, substantially as and for the purposes described.

8. The combination with a vertically grooved window frame and a sash grooved vertically on its sides of a resilient plate corrugated in V-shaped folds extending transversely of the sash and projecting into both of said grooves and held edgewise under compression therein, the said plate serving both as a yielding centering device for the sash and as a weather strip to prevent the

passage of air, substantially as and for the purposes described.

9. The combination with a window frame and sash, of a resilient plate bent to form an accordion spring, said plate being held edge-wise between the sash and the window frame, and serving both as a centering device for the sash, and as a weather strip to

prevent the passage of air, substantially as and for the purposes described.

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

JUSTUS JESSE SMITH.

Witnesses:

MOSES ELY,

JOSEPH S. HUNT.