

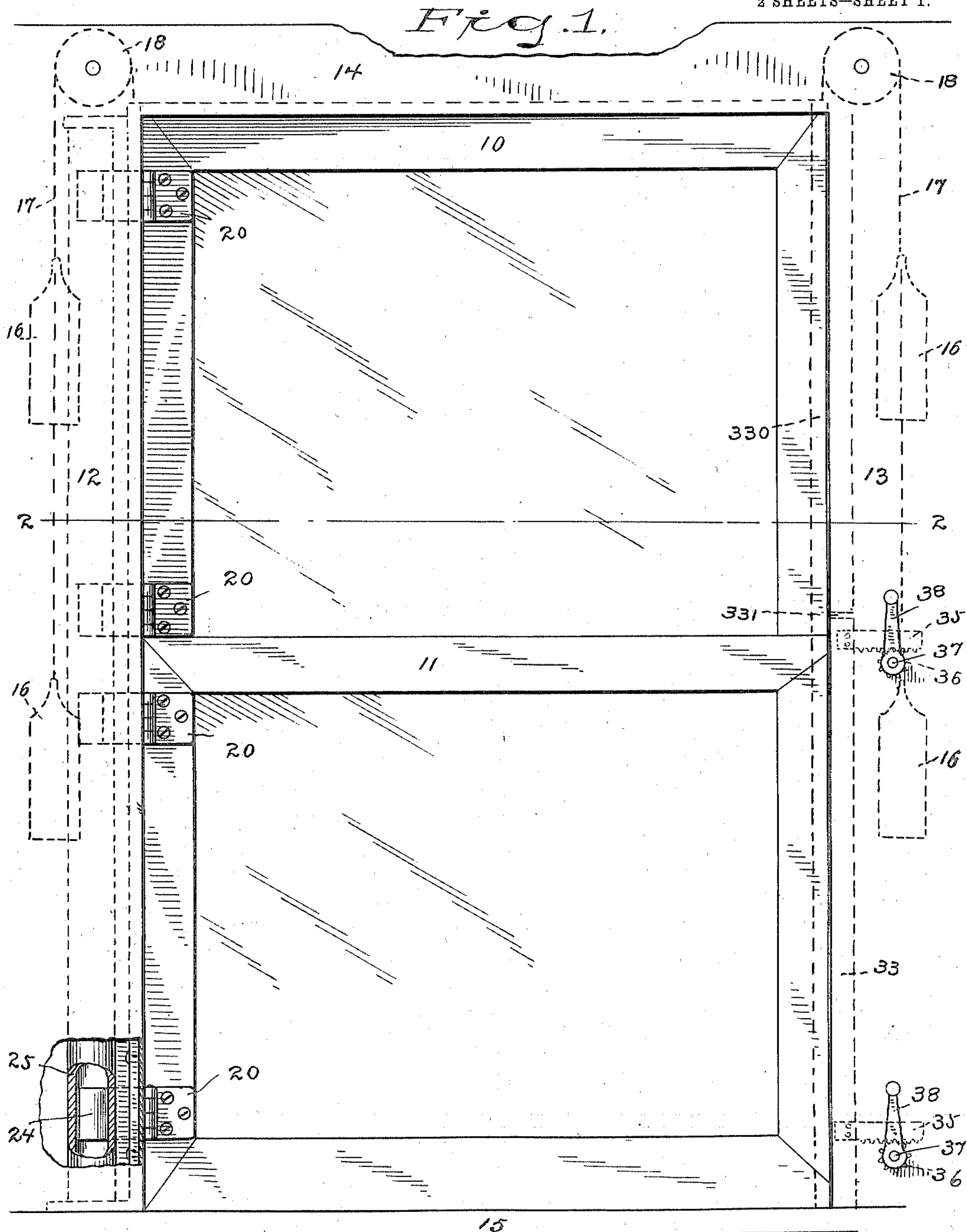
No. 816,862.

PATENTED APR. 3, 1906.

W. P. KIRK.  
FIREPROOF WINDOW FRAME AND SASH.

APPLICATION FILED JULY 14, 1905.

2 SHEETS—SHEET 1.



WITNESSES

H. A. Lamb.  
S. W. Atherton

INVENTOR

William P. Kirk

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2 SHEETS—SHEET 2.

Fig. 2.

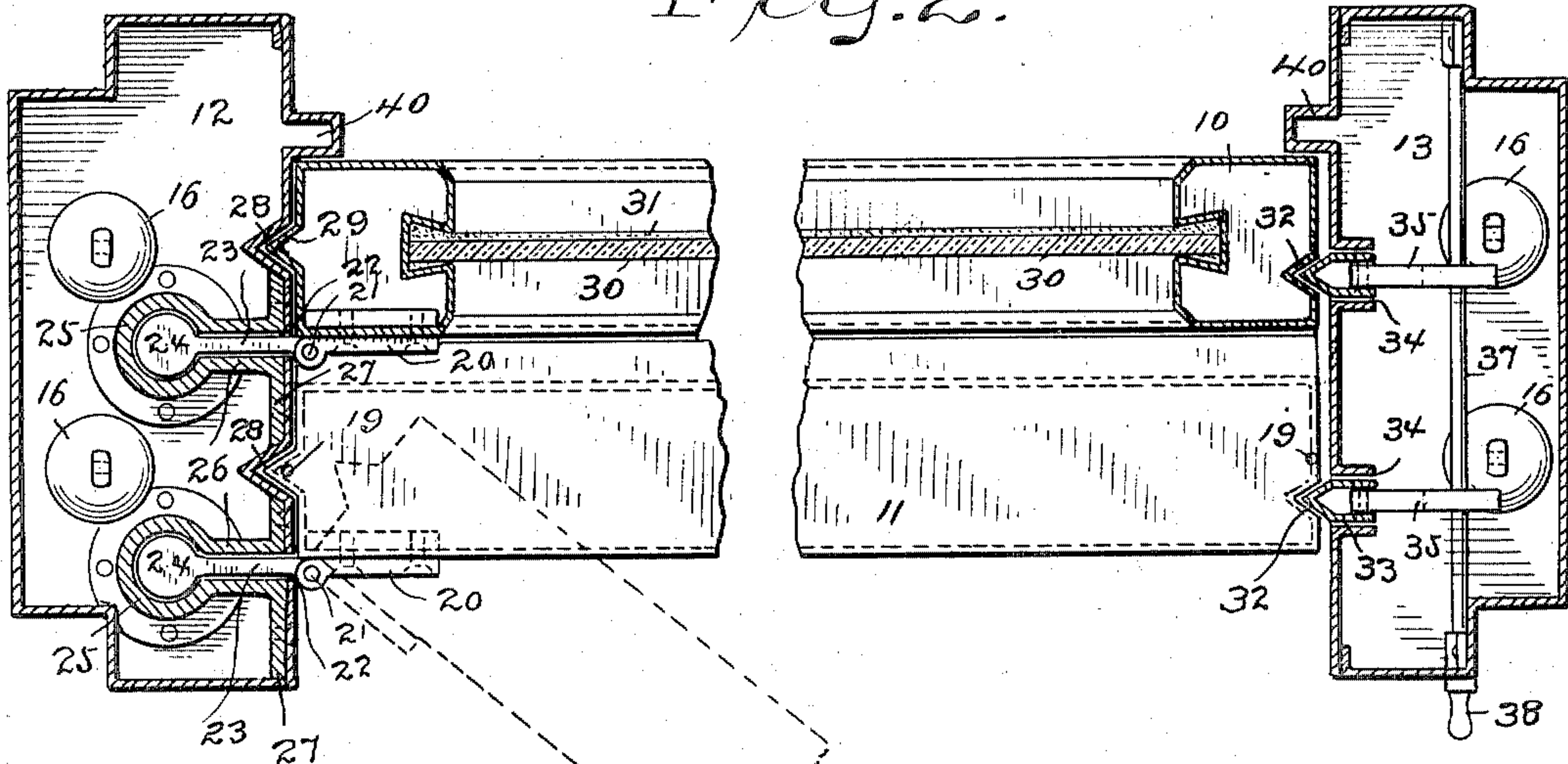
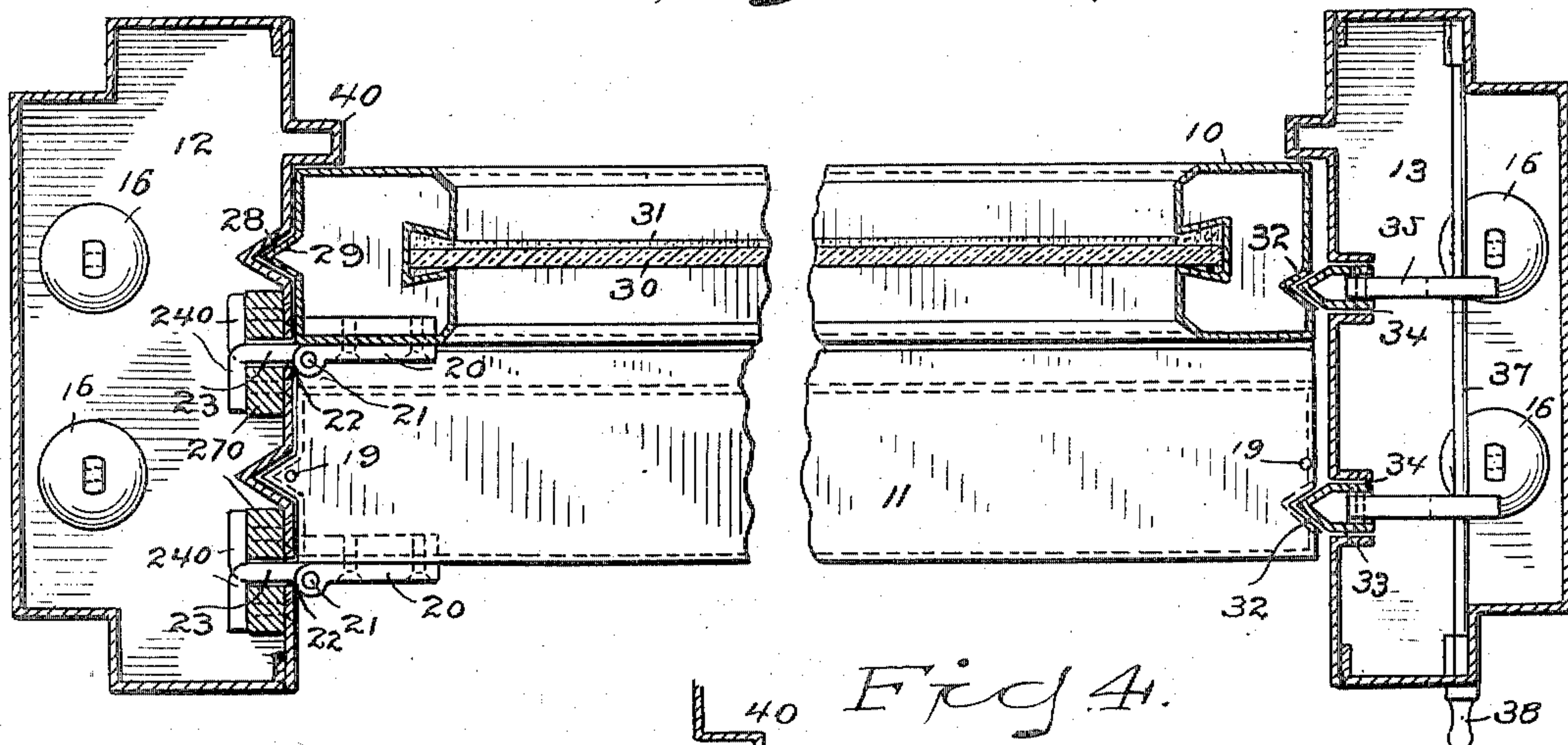


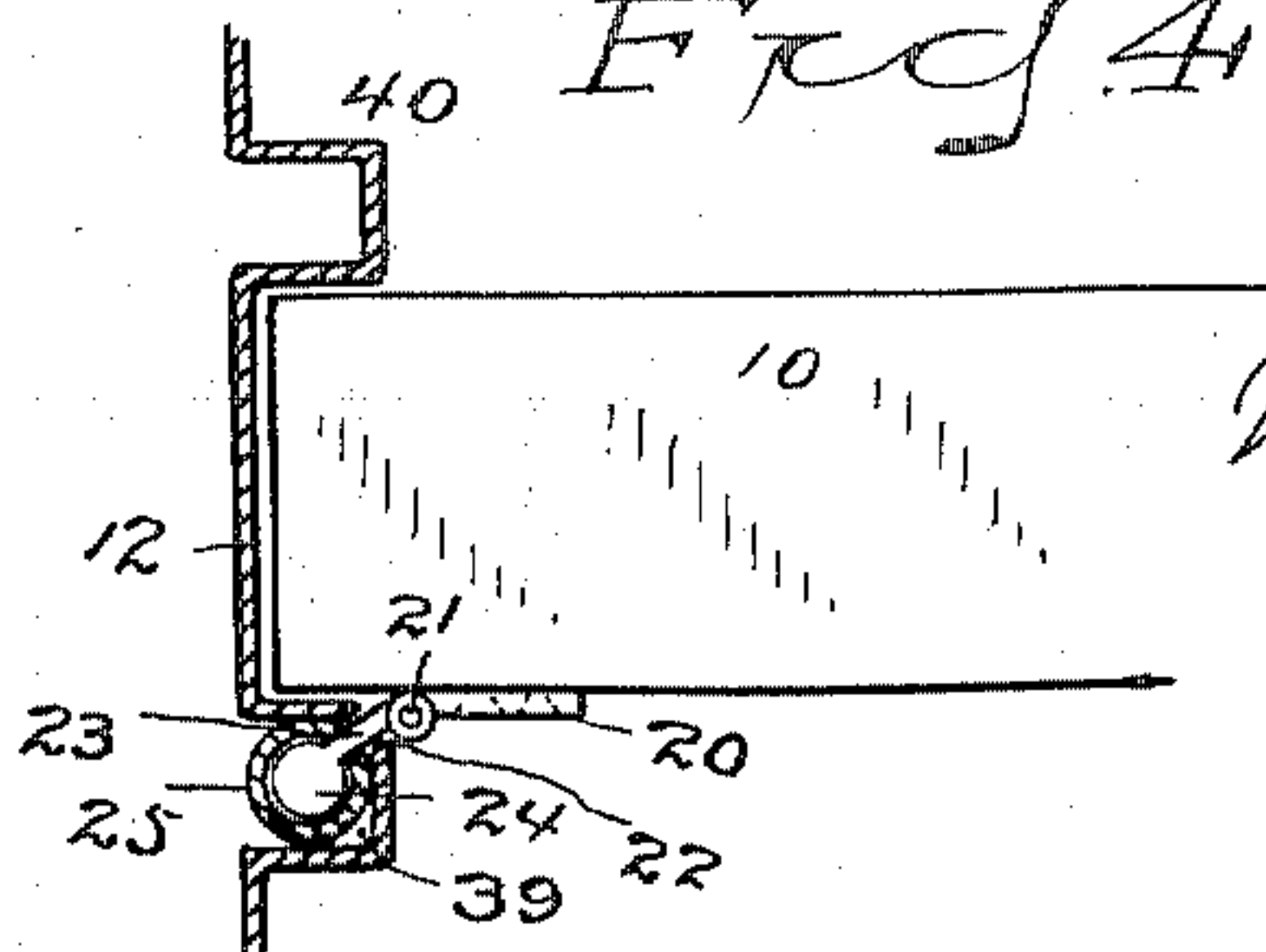
Fig. 3.



WITNESSES

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Fig. 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM P. KIRK, OF BRIDGEPORT, CONNECTICUT.

## FIREPROOF WINDOW FRAME AND SASH.

No. 816,862.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed July 14, 1905. Serial No. 269,636.

*To all whom it may concern:*

Be it known that I, WILLIAM P. KIRK, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Fireproof Window Frame and Sash, of which the following is a specification.

This invention relates to fireproof windows having metallic casing and sash constructions and in which the sashes are arranged to be raised and lowered in the usual manner and also to be swung inward on vertical axes for the purpose either of ventilation or to facilitate access to the outer surfaces of the panes for cleaning them.

One of the objects of this invention is to provide a structure in which the vertically-sliding hinge parts are entirely concealed from view and protected from liability of interference or damage from external objects.

Another object is the provision of combined guides and weather-strips for the sashes.

Another object is to facilitate the inward swinging or removal of the sashes by mounting the guides and weather-strips on one side, so that they can be conveniently shifted or moved bodily away from the sashes or into the casings.

To these ends the invention consists in the construction and combination of parts, substantially as hereinafter described and claimed.

Of the accompanying drawings, Figure 1 is an elevation of a window casing and sashes embodying my invention, parts being indicated by dotted lines and a portion of one side of the casing being broken away. Fig. 2 represents a section, enlarged, on line 2-2 of Fig. 1 looking down and indicating by dotted lines a partially-open position of the lower sash. Fig. 3 is a view similar to Fig. 2, but illustrating a modification of the sliding base members of the hinges. Fig. 4 is a detail view similar to a portion of Fig. 2, but illustrating another modification in the form of and support for the sliding base members of the hinges.

Similar reference characters indicate the same or similar parts throughout the several views.

The upper and lower sash-frames are represented at 10 and 11, respectively; said frames being made of sheet metal in a well-known or preferred manner, as are also the casing 12 for the hinged side of the sashes, the casing 13

for the free side of the sashes, the top casing 14, and the sill 15. Portions of these frames are casings, however, and are given a novel shape to guide the sashes in their vertical movements, as will be described hereinafter.

Suitable counterweights (indicated at 16) are connected by cords or chains 17, running over pulleys 18, (see dotted lines in Fig. 1,) with the sash-frames in any suitable manner. In Fig. 2 the top rail of the lower sash-frame is shown as formed with holes 19, into which may be fitted the shanks of eyebolts attached to the ends of the counterweight cords or chains. The other sash-frames may be connected with their cords or chains in the same manner. As the counterbalancing of the sashes forms no part of my present invention, I have not attempted to illustrate or describe the same in detail.

In the preferred form of my invention (shown in Figs. 1 and 2) the hinges are constructed as follows: Each hinge comprises a leaf 20, suitably secured to the face of the left-hand side of the sash-frame, the ears of said leaf which carry the pintle 21 extending close to the inner wall of the casing 12, which is vertically slotted, as at 22. The inner leaf 23 of the hinge extends through said slot and is formed with a head 24, said head being in the form of a short vertical cylinder. Within the casing 12 are secured two vertical cylindrical guides 25, one for the heads 24 of the hinges of each sash. Each guide 25 has wings 26, terminating in foot-flanges 27, suitably secured to and against the inner wall of the casing 12. The two leaves of each hinge are flat—that is, they are in a uniform plane—when the sashes are in the position shown by full lines in Fig. 2. Therefore there is no liability of any torsional movement that might tend to bind the inner leaves and their heads in the guides. Moreover, the joined ears of the hinges are close to slotted wall of the casing 12, and the leaves 20 are so located as to be readily and conveniently secured to or separated from the sash-frame. The guides for the headed leaves are entirely concealed within the casing 12 and protected thereby from risk of being dented or bent out of true, and therefore they may be practically made of comparatively thin sheet metal. Furthermore, the flanges 27 of the guides extending the full height of the casing 12 and secured to the inner wall thereof strengthen and reinforce the latter. To relieve the hinges from



the duty of guiding the sashes in their vertical movements, the inner wall of the casing 12 is bent to form vertical grooves or channels 28, which are V-shaped in cross-section, and the outer wall of each sash-frame at the hinged side thereof is bent to form vertical ribs 29, corresponding in shape to the channels 28 and fitting therein. Said ribs and channels also serve the function of weather-strips at that side of the sash-frame.

The glass panes of the sashes are indicated at 30, the edges of said panes resting in grooves in the frames and secured by putty or cement 31. The said panes may be set in place or if broken replaced by new ones by removing one of the sash-rails in any well-known manner. The special structure of the sash-frames to permit this need not be illustrated or described herein, as it forms no part of this invention.

The outer face of each sash-frame at the right or free side is bent to form a vertical groove or channel 32, which is V-shaped in cross-section. The window-casing 13 is provided with combined weather-strips and guides, which are preferably composed of strips of sheet metal bent to a shape corresponding with the grooves 32, as indicated in Figs. 2 and 3, and fitting said grooves sufficiently closely to serve the purpose of weather-strips and also to form guides at the right for the vertical movements of the sashes. These angular weather-strips are indicated at 33, and they are mounted in vertical slots or guides 34, formed in the inner or front wall of the casing 13, so as to be projected more or less from said casing or to be withdrawn into the casing when a sash is to be swung inward to the dotted-line position shown in Fig. 2.

Any suitable means may be provided for moving or shifting said strips, and I do not limit myself to any specific mechanism or devices for this purpose. The means which I have preferred to illustrate however, comprise rack-bars 35, secured to and projecting from the strips into the casing 13 and engaging and partially supported by pinions 36, carried by shafts 37, mounted in the casing 13, said shafts having handles or crank-arms 38 outside of the casing. By means of said cranks the shafts and pinions may be actuated so as to retract the strips 33 from the position shown in Fig. 2 in a manner that will be readily understood to clear the strips from the angular channels 32 to enable the sash or sashes to be swung inward when desired. Since the upper sash can be and preferably is lowered before swinging it inward, it is not necessary to provide for the retraction of the entire guide and weather strips. In Fig. 1 the strip is indicated by dotted lines as composed of two sections in alinement with each other, the point of meeting of the two sections being preferably slightly above the top rail of the lower sash when the latter

is shut down. To distinguish the two sections, the upper one is indicated at 330 and the point of meeting of the two sections at 331. The upper section 330 may be fixed or held rigidly by any suitable means in position to closely fit in the vertical channel of the upper sash-frame. When it is desired to clean the outer surface of the upper sash, the lower sections 33 of both guide-strips for the two sashes are first retracted into the casing 13, the weight-chains detached from the free side of each sash, the lower sash then swung inward, and the upper sash lowered to clear the lower end of the upper fixed strip-sections 330 and then swing inward on its hinges. After reversing this operation and again projecting the lower strip-sections 33 into alinement with the upper sections 330 the two sashes may be moved vertically in the ordinary manner.

As represented in Fig. 3, the inner leaves 23 of the hinges may be provided with heads consisting of flanged portions 240, bent laterally from the leaves instead of comprising cylindrical members, as shown in Fig. 2. These flat heads ride vertically against the inner faces of strips 270, secured inside the wall of the casing 12, said strips serving to reinforce said wall in the same manner as the flanges 27 in Fig. 2. In both constructions the guides for the sliding members of the hinges act also to reinforce the front or exposed wall of the casing 12, and the same is true to some extent of the construction shown in Fig. 4, in which a single sash is partially represented. In this form the inner leaf of the hinge is formed substantially the same as represented in Figs. 1 and 2; but the cylindrical guide 25 is secured in a vertical recess 39, formed in an outwardly-bent portion of the wall of the casing 12. In each form shown the portion of the hinge-leaf which connects the sliding head with the pintle of the hinge is flat or straight, (no bends occurring therein,) and therefore there is no tendency to bind or cramp the sliding head relatively to its guide, whether the sash is swung on its hinges or not, and also in each form the ears of the two leaves which inclose the pintle slide close to the slots through which the leaves 23 extend and prevent any inward movement of the heads relatively to their guides.

The casings 12 and 13 are shown as formed with bent portions 40, which overlap the margins of the upper sash and form beads or stops which prevent said sash from passing outward beyond its proper position when returning it from an inwardly-swung position.

Having now described my invention, what I claim is—

1. A fireproof window comprising a casing, a swinging and vertically-movable sash fitted thereto, the free side of the sash having a vertical groove, and a combined guide and



weather strip fitted to said groove, means being provided for moving the strip to and from position of engagement with said groove.

2. A fireproof window comprising a casing, 5 a swinging and vertically-movable sash fitted thereto, the free side of the sash having a vertical groove V-shaped in cross-section, a combined guide and weather strip shaped to fit said groove, and means for moving said strip 10 to and from position of engagement with said groove.

3. A fireproof window comprising a casing having a vertical guideway, a counterbalanced sash, and hinges for said sash, each 15 hinge having one leaf connected to the sash and the other leaf extending into the casing and having a head fitted to said guideway, the leaf being flat or in one plane from its head to the pintle of the hinge.

4. A fireproof window comprising a casing 20 having a vertical guideway, a counterbalanced sash, and hinges for said sash, each hinge having one leaf connected to the sash and the other leaf extending into the casing 25 and having a head fitted to said guideway, the leaf being flat or in one plane from its head to the pintle of the hinge, and the portions of the leaves which inclose the pintle bearing against the said casing.

5. A fireproof window comprising a sheet-metal casing having a concealed sheet-metal 30 guideway inclosed within and protected by said casing, and a sliding and swinging sash having hinge members formed with heads inclosed in said guideways.

6. A fireproof window comprising a sheet-metal casing, a guideway inclosed within and 40 secured to the casing to reinforce its wall, and a sliding and swinging sash having hinge members formed with heads engaging the guideways.

7. A fireproof window comprising a sheet-metal casing, a sheet-metal guideway within the casing and having flanges secured to the wall thereof, and a sliding and swinging sash 45 having hinge members formed with heads engaging the guideways.

8. A fireproof window comprising a sheet-metal casing, vertically movable and swinging sheet-metal sash-frames, the casing at 50 the hinged side of the sashes having vertical channels and the adjacent sides of the sash-frames having ribs to fit said channels, the free sides of the sash-frames having vertical channels and the opposing wall of the casing 55 having slots, and movable guide and weather strips adapted to project from said slots into the channels of the sashes and to be retracted into the casing.

9. A fireproof window comprising a sheet- 60 metal casing, vertically-movable and swinging sheet-metal sash-frames, the casing at the hinged side of the sashes having vertical channels and the adjacent sides of the sash-frames having ribs to fit said channels, the 65 free sides of the sash-frames having vertical channels and the opposing wall of the casing having slots, guides and weather-strips shaped to fit said sash-frame channels and mounted in said slots of the casing and having racks 70 extending into the casing, shafts mounted in the casing and having pinions engaging said racks, and means for actuating said shafts and pinions to project and retract the said strips.

In testimony whereof I affix my signature 75 in presence of two witnesses.

WILLIAM P. KIRK.

Witnesses:

A. M. WOOSTER,  
S. W. ATHERTON.