

No. 675,048.

Patented May 28, 1901.

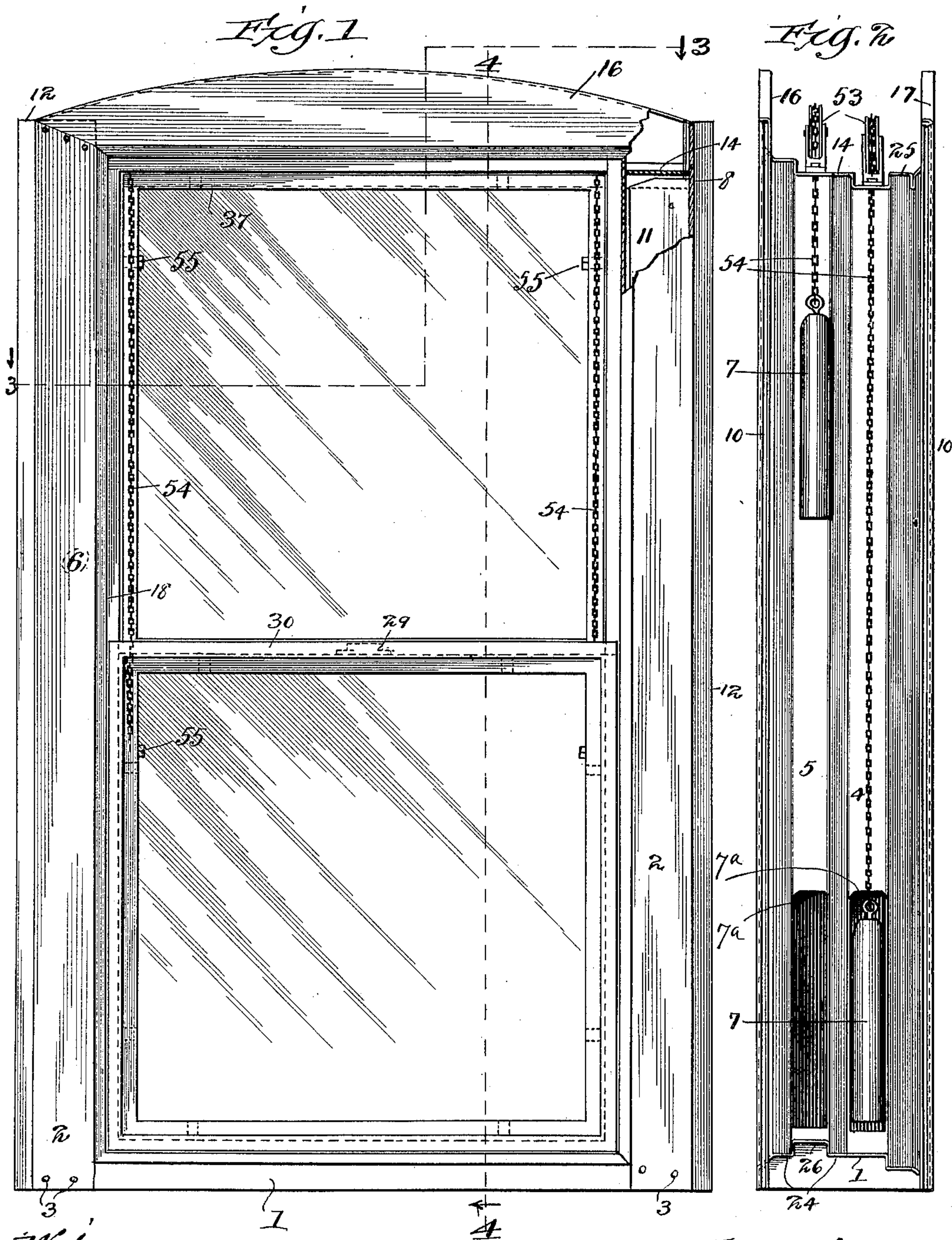
J. C. McFARLAND & W. J. LARKIN.

FIREPROOF WINDOW.

(Application filed Feb. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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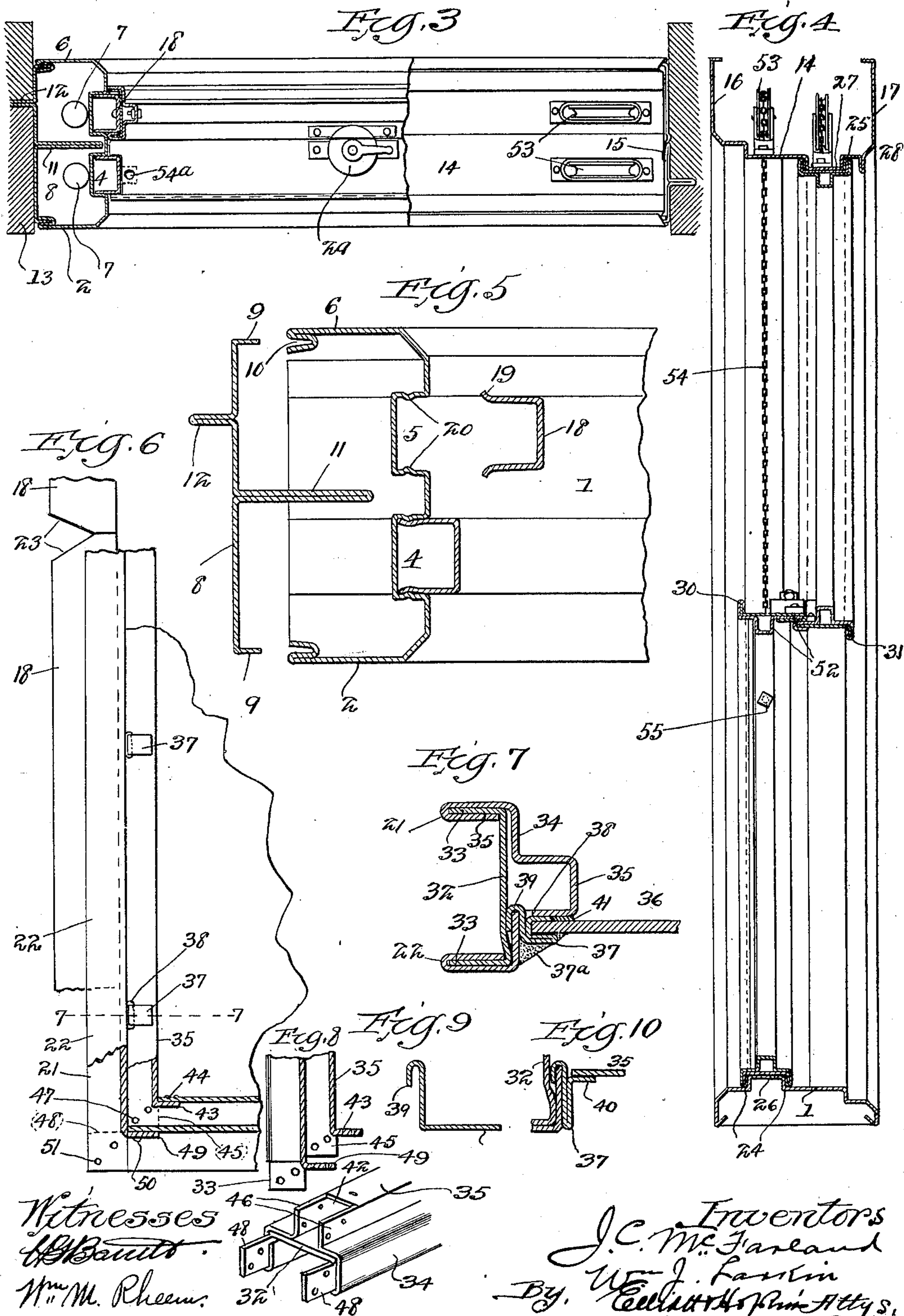
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UNITED STATES PATENT OFFICE.

JOHN C. MCFARLAND AND WILLIAM J. LARKIN, OF CHICAGO, ILLINOIS;
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FIREPROOF WINDOW.

SPECIFICATION forming part of Letters Patent No. 675,048, dated May 28, 1901.

Application filed February 23, 1899. Serial No. 706,465. (No model.)

To all whom it may concern:

Be it known that we, JOHN C. MCFARLAND and WILLIAM J. LARKIN, citizens of the United States, and residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fireproof Windows, of which the following is a full, clear, and exact specification.

Our invention relates to that class of fireproof windows which are usually constructed of sheet metal, and our improvements relate more particularly to features of construction in the frame, in the sash, in the guide-strips or stops, in the means for holding the glass in the sash, and in the means for producing suitable compartments or boxes for the weights.

One of the objects of our invention is to construct the sash of sheet metal with the abutment-flange for the glass to rest against and without fusible joints.

Another object of our invention is to attach the clip for holding the glass without the aid of rivets or other fusible joints.

Another object is to have the stops or guide-strips removable, so that the sashes may be readily taken out.

Another object is to have the stops or guide-strips fit into the edge of the sash and yet have either sash removable independently of the other.

A still further object is to hold the guide-strips in place by means of the sash when the sash is opposite the strip and by means of its own elasticity when the sash is not opposite it.

With these ends in view our invention consists in certain features of novelty in the construction, arrangement, and combination of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a front view of a window, partly broken away, constructed according to our invention. Fig. 2 is a side elevation thereof with one of the end walls of the frame removed, disclosing the weights and pulleys and the apertures

through which the weights are inserted. Fig. 3 is a plan section taken on the line 3 3, Fig. 1. Fig. 4 is a vertical section taken on the line 4 4, Fig. 1. Fig. 5 is an enlarged plan section, with the parts separated, taken transversely of one side of the window-frame, showing one of the stops pulled out. Fig. 6 is an enlarged face view of one corner of the sash and glass, partly in vertical section. Fig. 7 is a detail transverse section taken on the line 7 7, Fig. 6, but on a larger scale. Fig. 8 is a detail perspective view of one end of the lower member of the sash, also showing the side member of the sash above it and partly in vertical section in the act of being conjoined with the said lower member. Fig. 9 is a detail sectional view of the clip shown in Fig. 7 before it is inserted and bent into form for receiving the glass; and Fig. 10 is a similar view showing the clip after it is inserted and bent to receive the glass, Fig. 7 illustrating the clip after it is bent against the glass.

Inasmuch as the sashes and the frame are the same on both sides, a description of one side will suffice for both. The sill 1 of the window-frame, which is best shown in Fig. 4, is composed, preferably, of a single strip or sheet of metal, which is bent upwardly to form the various ledges for the sash and to give it any other desired contour for ornamental or other purposes. Each side of the frame is composed of a single sheet of metal bent, as shown more clearly in Fig. 5, substantially at right angles to form one face 2, and the lower end of this face 2 is carried downwardly over the sill 1 and riveted thereto, as shown at 3. The lower end of the said strip, constituting the side of the frame, is cut out in conformity with the cross-section of the sill 1 and bent across the sill to form two vertical channels 4 5, extending substantially throughout the height of the frame and being located directly in the planes of the sashes, the opposite edge of the sheet being again bent at an angle to form the opposite face 6 of the frame. The faces 2 6 of the sheet being turned in the same direction constitute two sides of an inclosure for the weights 7, the third side of such inclosure being constituted by that portion of the sheet in which the channels 4 5

are formed and the fourth side by a vertical strip 8. The strip 8 is provided along its vertical edges with flanges 9, which fit into grooves 10, formed in the edges of the portions 2 6, respectively, by bending such edges back and forth upon themselves, as clearly shown in Fig. 5. The strip 8 is also bent inwardly and then outwardly at its mid-length to form a partition 11, which extends into the said inclosure for the weights 7 and constitutes thereof two weight-boxes and serves to keep the weights from colliding with each other. When the flanges 9 are in place in their grooves 10, the inner edge of the partition 11 fits between the adjacent walls of the channels 4 5, as shown in Fig. 3. The plate 8 is also bent outwardly and then inwardly on its outer side to form a flange 12 for engaging between the bricks or into the masonry 13, and thus holding the frame in place. The partition 11 extends between the sill 1 and the top 14 of the frame, and the partition 11 from the top 14 to the upper end of the strip 8 is cut away, as shown on the right in Fig. 3 and also in section in Fig. 1, the edges of the strip at such cut-away portion being lapped over and clenched, as shown at 15 in Fig. 3. The top 14 of the frame is composed of a single strip of metal, which is bent to form the two faces 16 17 of the frame and also to form the proper ledges for the sash.

The channels 4 5 in the sides of the frame are for the reception of the guide-strips or stops 18, each of which is composed, preferably, of a single strip of metal bent into the form of a channel-iron and having its free ends inserted into the channels 4 5. These free ends of the stop or strip 18 ordinarily possess sufficient elasticity to retain the stop in place in its channel; but if the uses to which the window is put require a more stable fastening the free ends of the stop, in addition to being slightly flared outwardly, may be turned abruptly to form engaging hooks 19, and the opposite walls of the channels 4 5 may be bent inwardly here and there to form lugs 20 for the engagement of the hooks 19 when the stop is forced into place, the construction being such, however, that the stops may be withdrawn by compressing their sides together. These stops 18 instead of fitting between the sashes fit into grooves or channels in the edges of the sash, respectively, the said channels or grooves in the sash being constituted by flanges 21 23. It is quite evident, therefore, that in order to insert the sash after the window-frame has been constructed it is necessary to construct each of the stops of two pieces, or, in other words, divide the stop at its mid length or height, so that the sash may be placed in at the top of the frame after the lower halves of the stops have been inserted in the lower part of the frame, the sash then pulled down over the lower halves of the stops and the upper halves of the stops subsequently inserted above the sash.

The abutting ends of the upper and lower halves of the stops 18 are shown in Fig. 6 in side elevation, and in order to facilitate the insertion and removal of such halves their abutting ends are beveled off on opposite angles, as shown at 23 in said figure. By thus fitting the stops 18 into the edges of the sash a tight joint is produced, which will be effective in excluding dust and wind as well as fire. The bottom of the lower sash and the top of the upper sash are also preferably constructed in a similar manner with flanges 24 25, respectively, which fit over a rib 26, formed on the sill 1, and a similar rib 27, formed on the top 14 of the frame. The top of the frame is also provided with a depending weather-strip 28 on the outside of the window-frame, which fits down over the outer flange 25 of the upper sash and prevents the escape of dust and the elements past such flange. This weather-strip 28 may be formed in one piece with the top 14 by bending the metal upon itself, as shown in Fig. 4. Each of the sides and the bottom of the lower sash and the top and sides of the upper sash are constructed with these flanges 21 22 24 25 on both edges, but the flange on one edge of the top of the lower sash and on the contiguous edge of the bottom of the upper sash is preferably omitted, as shown in Fig. 4, to allow for the operation of the sash-fastener 29 and to permit the upper sash to be lowered far enough to allow the upper half of the stop 18 to be taken out and permit the lower sash to be elevated the full height of the window-frame, the purpose of the flanges 30 31, shown on their outer sides, being more to stiffen the structure.

The sash is composed of a strip or thickness of metal 32, arranged one on each of the four sides thereof and having flanges 33 bent outwardly therefrom, so as to form a channel-iron, the said flange 33 on the inner edge of the upper side of the lower sash and the inner edge of the lower side of the upper sash being omitted, however, as will be hereinafter explained. Lapped over each of these strips or thicknesses 32 is another strip or thickness 34, having its edges lapped around and clenched with the flanges 33, as shown at 35', so as to constitute the flanges 21 22 24 25 30 31, while the intermediate part of the strip 34 is bent outwardly from the strip 32 and again back against the strip 32 to form an abutment flange or rib 35 for the glass 36 to rest against. The glass 36 may be held in place by any suitable means; but it is of course desirable to provide means other than the usual putty 37^a, which would be liable to fall out when subjected to heat, and it is also necessary that the means for holding the glass be secured to the sash without the aid of solder or other fusible connections and preferably, for the sake of cheapness, without the aid of rivets. To this end, therefore, we provide the sash with a number of clips 37. (Shown in detail in Figs. 7, 9, and 10.) Each of these clips is secured to the sash by pro-

viding the side of the abutment-flange 35 with an aperture 38, through which a hooked end 39 on one end of the clip is inserted and then engaged between the laps or layers of metal 32 34 by pulling the clip outwardly, after which the outer end of the clip may be bent back against the abutment-flange 35 to form an angle 40, which bears against the flange 35 and prevents the clip from being dislodged by pushing inwardly. After the glass 36 has been put in place, the usual bed of putty 41 being first placed against the flange 35, the outer doubled end of the clip may be bent back against the glass, as shown in Fig. 7.

The strips 32 34, which constitute the sides of the sash, may be secured to the corresponding strips constituting the top and bottom in any suitable way. In the example shown in the drawings the upper side of the flange 35 of the bottom member of the sash is cut away, as shown at 42, and the corresponding side of the flange 35 of the side member of the sash is bent outwardly at its lower end to form a tongue 43, which engages under the upper side of the flange 35 of the lower member of the sash and is riveted thereto at 44, as clearly shown in Fig. 6, the two side portions 45 of the side flange 35 being let down between the two side portions 46 of the lower flange 35 and riveted thereto, as shown at 47. The lower one of the angle-irons 32, with its flanges 33, and the side one of the said angle-irons are treated in a similar manner—that is to say, the flanges 33 of the lower one of the angle-irons 32 are allowed to project beyond the strip 34, as shown in Fig. 8, to form ears 48, while the angle-iron 32 of the side member is bent outwardly to form a tongue 49, which is lapped under the angle-iron 32 of the lower member and riveted thereto, as shown at 50, while the flanges 33 of the side member of the sash are carried downwardly between the projecting ears 48 and riveted thereto, as shown at 51.

In the construction of the top member of the lower sash and the bottom member of the upper sash the same method may be followed, excepting that instead of forming a flange on each side of each of these members one edge of the strip 32 may be carried under and around and clenched with the strip 34, as shown at 52, or vice versa.

53 represents the chain-pulleys of the chains 54, which support the weights 7 and which are carried downwardly through apertures 54^a into the spaces formed by the abutment-flanges 35 and secured to the sashes by bolts 55.

Formed at each lower end of each of the channels 45 is an aperture 7^a for the admission of the weights to their compartments. These apertures 7^a are closed by the guide-strips or stops 18 when in place.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. In a fireproof window the combination

with a frame, of a sash constructed with the glass-abutment flange and being composed of two thicknesses of metal the outer one of which constitutes the side of the sash which comes against the frame while the inner one is bent off from the outer one and then bent back again to form a ridge or flange for the glass to abut against, the edges of said thicknesses of metal being overlapped and clenched one around the other and thus secured together, substantially as set forth.

2. In a fireproof window the combination with a frame of a sash composed on each side of two strips of metal, the outer one of which constitutes one of the four margins of the sash while the inner one is bent at an angle to form a ridge or flange extending lengthwise of said outer strip, said strips being secured together by folding the edges of one around the edges of the other, substantially as set forth.

3. In a fireproof window the combination with a frame, of a sash having its sides composed of a thickness of metal bent to form an angle-iron with its flanges turned outwardly and another thickness lapped upon the first and bent outwardly to form an abutment-flange for the glass, the two thicknesses having their edges overlapped one around the other, and a guide-strip on the frame engaging between the first said flanges, substantially as set forth.

4. In a fireproof window the combination with a frame, of a sash composed of the strips 32 34, the strip 34 having the flange 35 cut away at 42 and forming the extensions 46 on one member of the sash and the corresponding strip on the adjacent member of the sash having the tongue 43 and extensions 45 engaged with the flange 35 and extensions 46 on the first said member; the strip 32 clenched with the strip 34, said strip 32 on one member of the sash having the extensions 48 and the strip 32 on the adjacent member of the sash having corresponding extensions engaging with said extensions 48 and a tongue 49 engaging with the strip 32 on the first said member, substantially as set forth.

5. In a fireproof window the combination with a frame of a sash composed of two thicknesses of sheet material clenched together and bent to form a hollow flange 35 on the sides of the sash, the upper member of the sash being provided with the apertures 54^a, and weighted chains passing downwardly through said apertures and being secured in said hollow flanges, substantially as set forth.

6. In a fireproof window the combination with a frame of a sash composed of a plurality of thicknesses of material, a clip inserted through one thickness and engaging between two of them, one end of said clip protruding from the sash and being adapted to be bent against for holding the glass, substantially as set forth.

7. In a fireproof window the combination with a frame of a sash composed of a plu-

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rality of thicknesses of material, a clip inserted through one thickness and engaging between two of them on the inside and having a flange or projection engaging against one of them on the outside, thus preventing the clip from being pushed in or pulled out, the protruding end of said clip being pliable and adapted to be bent against for holding the glass, substantially as set forth.

10 8. In a fireproof window the combination with a frame of a sash having an aperture 38, a clip having a hook 39 on one end adapted to be inserted through said aperture and said sash being provided with means for engaging with said hook after its insertion, said clip being doubled back on itself to form the foot-flange 40 abutting against the sash for preventing the clip being pushed inwardly, substantially as set forth.

20 9. In a fireproof window the combination with a frame of a sash having the strip 34 having the flange 35 formed thereon and said flange being provided with the aperture 38, a clip provided on one end with the hook 39 inserted through said aperture and engaging with the edge of the strip 34 and having the flange 40 engaging against the outer side of the flange 35, substantially as set forth.

30 10. In a fireproof window the combination with a frame of guide-strips or stops divided at a point intermediate of their length and being removably seated in said frame and the sash having grooved edges for receiving said guide-strips, substantially as set forth.

35 11. In a fireproof window the combination with a frame having a vertical groove formed therein and being provided with the bosses 20, of a guide-strip or stop composed of a channel-iron having its edges 19 turned outwardly and adapted to engage with said bosses, and a sash held in place by said stops or guide-strips, substantially as set forth.

12. In a fireproof window the combination of a frame having its top portion formed in one piece of sheet metal bent to produce the depending weather-strip 28 and the ledge 27 opposite and adjacent to said strip, and a sash fitted in said frame and having flanges adapted to fit over said ledge 27 and between said ledge and weather-strip 28, substantially as set forth.

13. In a fireproof window the combination with a frame composed of sheet material having its side members bent to form three sides of an inclosure and its extreme edge doubled back upon itself and out again to constitute grooves, the end wall 8 having flanges 9 adapted to fit into said grooves and form the fourth side of said inclosure, said end wall being provided with the inturned fold 11 constituting a partition dividing said inclosure into two compartments and the outturned fold 12 constituting a flange for engaging with the masonry, substantially as set forth.

14. In a fireproof window the combination of a frame having weight-compartments and apertures for the admission of the weights to said compartments, removable stops fitting over and closing said apertures, the sash held in place by said stops and the weights connected to said sash, substantially as set forth.

15. The combination with a sheet-metal window-frame of sheet-metal sashes, the frame having detachable guide-strips of sheet metal, said guide-strips being strips of sheet metal folded longitudinally, the sashes being provided with grooves, in which said guide-strips are placed, substantially as set forth.

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