

No. 865,374.

PATENTED SEPT. 10, 1907.

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

APPLICATION FILED APR. 17, 1907.

2 SHEETS-SHEET 1

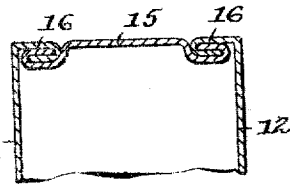
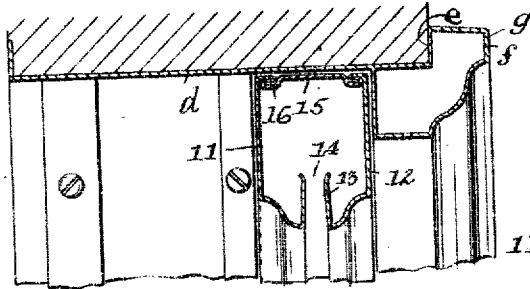


Fig. 4.

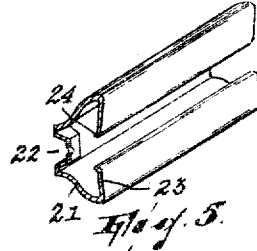
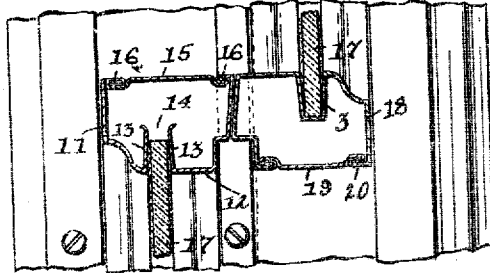
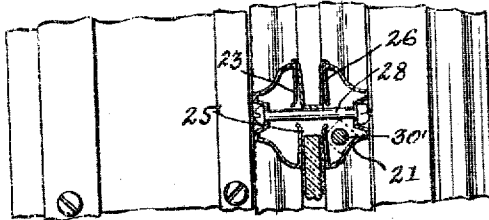


Fig. 5.

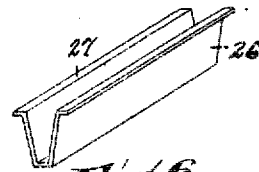
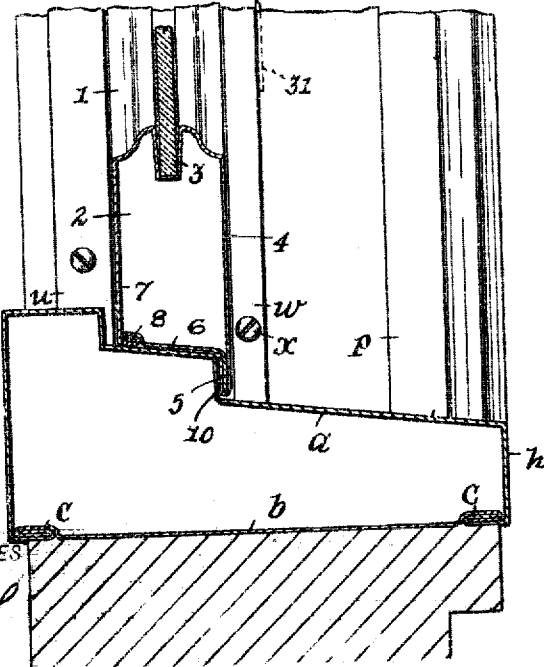


Fig. 6.

Fig. 1.



WITNESSES

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2 SHEETS-SHEET 2.

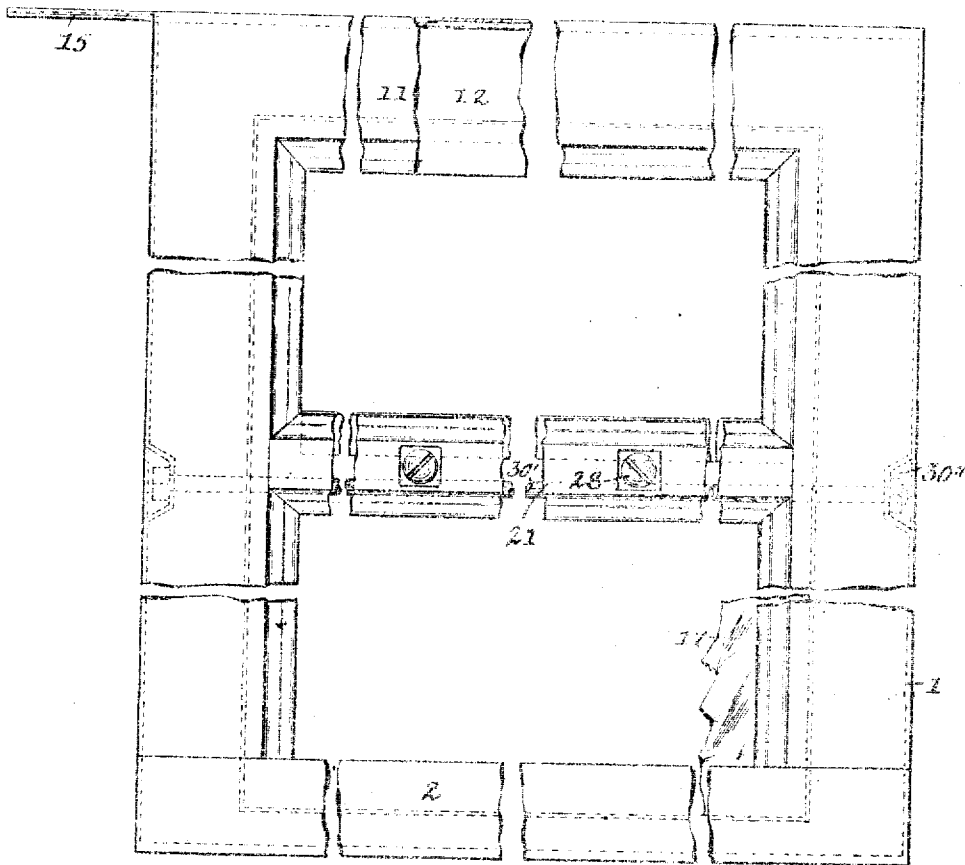


Fig. 3.

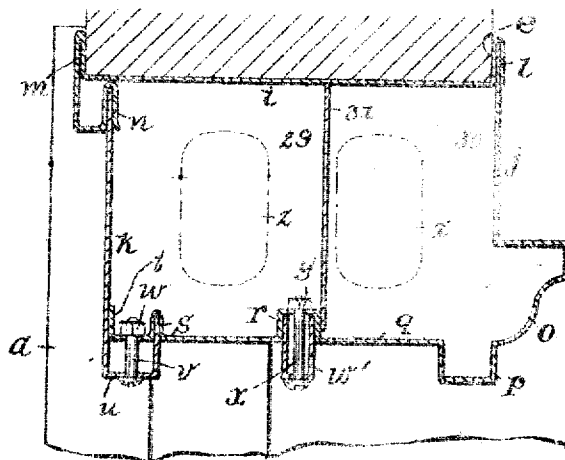


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

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FIREPROOF WINDOW FRAME AND SASH

No. 865,374.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed April 17, 1907. Serial No. 368,619.

To all whom it may concern:

Be it known that I, PAUL W. FRENZEL, a citizen of the United States, residing in Passaic, Passaic county, New Jersey, have invented certain new and useful Improvements in Fireproof Window Frames and Sashes; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide an improved fire proof window frame and sash constructed substantially wholly without solder and especially strong and durable in such parts thereof as are ordinarily subject to the greatest wear and tear; my invention consists, among other things, in a novel arrangement of the parts of the sash whereby the glass is held so that the glass may be placed in position after the sash is practically completed without the formation of leaky or otherwise undesirable joints, in a novel construction of so much of the frame as comprises the stop-heads, and in a novel construction of the frame itself so as to permit access to the weights controlling the sashes.

My invention will be found fully illustrated in the accompanying drawing, wherein,

Figure 1 is a vertical sectional view of a window frame and sashes constructed in accordance with my invention; Fig. 2 is a horizontal sectional view of the frame in a plane between the top and sill thereof; Fig. 3 is an inside view of the upper sash, the same being shown partly in section with its slide plate at the top as partially withdrawn, Fig. 4 is a vertical sectional view of the upper part of the upper sash; Fig. 5 is a perspective view of one member of the astragal of the sash; and, Fig. 6 is a perspective view of one of the channeled strips which receive the edges of the glass in the astragal.

The sill of the window frame consists of two pieces of sheet metal, *a*, *b*, the piece *a* being bent into a form conforming with the exposed contour of any ordinary sill and the piece *b*, which forms the base of the sill, being joined with piece *a* by means of the folded or lock-seams *c*. The top of the frame comprises a piece of sheet metal *d* bent to form a channel *e* to receive the portion of a building wall immediately above the window opening and a hollow molding *f*, the latter being at the outside and having its outer surface *g* flush with the outer surface *h* of the sill *a*. The sides of the frame, which may be soldered to or otherwise connected with the top and sill of the frame, are constructed as follows: Each comprises three sections, *i*, *j* and *k*. The section *i* is a piece of sheet metal having one edge portion bent off at right angles to the body of the piece and then

rebent to form the groove *l*; the other edge portion is also bent off at right angles, and in the same direction as the first mentioned edge portion, and then rebent again in a sharp fold *m*, the extremity thereof being carried forward of the body of the metal, then bent toward the opposite edge of the metal, then bent again toward and into contact with the body of the metal (the last two bends being right angles) and then rebent to form the groove *n*. The first and second rebends, whereby groove *l* and fold *m* are produced, together form abutments between which is received the portion of the wall at the window opening, said rebends in effect producing an extension of the channel *e* already referred to. The section *j* is a piece of sheet metal having one edge inserted in the groove *l* and clenched therein and, at some distance from the said edge, bent first to form the molding *o* and then the stop-head *p*; the remaining portion *q* (which constitutes the jamb-portion of the frame side) stands substantially at right angles to the portion adjoining the edge which is inserted in the groove *l*, and is substantially straight or flat except for a right angular groove *r* and the narrow groove *s* formed therein in the order named, which grooves are spaced a distance from each other which substantially corresponds with the distance between stop-head *p* and groove *r*. The edge is turned inwardly at right angles, as at *t*. The section *k*, which is designed to be removable for the purpose of permitting access to the weights, has one edge received by the groove *n* and its other edge portion bent in a right angular bend in such manner as to bring the same within the groove *s*, which it snugly fits. The portion of section *k* which has the right angular bend, marked *u*, forms the inner stop-head and through it and the opposed portion of section *q* are passed a series of bolts *v* having nuts *w*, whereby section *k* may be securely clamped in the position best shown in Fig. 2. In this position it is reinforced both by the turned-off edge *t* of section *q*, which bears against it, and by the fact that it is received at one edge in groove *s*. In assembling, the nuts *w* may be soldered to the inside of the section *q* so that the holes for the bolts *v* in said section and in the nuts coincide, with a view to having the nuts fixed in proper position when the bolts are screwed into them. In the groove *r* is fitted the parting-head which consists of a channeled piece of sheet metal *x* which is snugly received by said groove and is held therein by a series of bolts *y* having nuts *z*.

The construction of the frame above described permits the removal of both the parting-head and the inner stop-head whenever it is necessary to take out the sashes for any purpose; at the same time it will be ob-

served that these parts are so arranged that they offer substantial resistance to displacement under ordinary wear and tear. The removability of section *k*, which it will be observed is on the inside of the frame and hence accessible at all times without disturbing the sashes, permits access to the weights, which are indicated at *z* in dot and dash outline in Fig. 2.

The lower sash is constructed as follows: The sash-stiles 1 and lower rail 2 are constructed substantially in the same hollow form as is common in structures of this character, having the internal groove 3 to receive the panes of glass. In the present instance, however, the piece of sheet metal from which the lower rail is formed has the lower edge of its outer wall 4 rebent so as to receive the downwardly bent edge portion 5 of a strip of sheet metal 6 which forms the bottom of rail 2 and has its opposite edge joined with the front wall 7 of said rail in a folded or lock-seam 8. The result is the formation of a downwardly projecting lip which lies along the outside face of one of the shoulders 10 of the sill as a form of weather guard. The upper rail comprises the composite sections 11 and 12 having the edge portions 13 thereof extending upwardly inside of the upper or parting-rail and then turned slightly away from each other so as to produce a flared mouth 14. A slide plate 15, which forms the top wall of the upper or parting rail, is connected with the upper edges of the members 11 and 12 by the folded joints 16, in such manner, however, that said plate may be slid lengthwise to form an opening in the top of the rail. The object of this construction is to permit the panes of glass 17 to be inserted from the top into their grooves 3 in the sash, the same entering through the flared opening 14 produced by the edges 13 of the members 11 and 12.

35 The upper sash is constructed substantially similar to the lower sash except, of course, that the parts 11 to 16 inclusive form in this case the top-rail; the parting-rail of the upper sash preferably comprises the sheet metal pieces 18 and 19 together joined by folded or lock seams 20 along the lower edges of the rail, which latter should have the grooves 3 formed in the piece 18 to receive the glass 17.

The astragals, best shown in Figs. 1, 5 and 6, are constructed as follows: each comprises two composite members 21 like that shown in the figure referred to which is a piece of sheet metal bent twice lengthwise, substantially midway thereof and formed with countersinks or recesses 22, being then bent downwardly from both sides of its recessed portion divergently, the edge portions being then bent toward each other, as at 23, in substantially the same plane and having their extremities turned inwardly, as at 24. When two of these members have been placed in the relation shown in Fig. 1 and secured by solder or otherwise to the stiles or other parts of the frame (Fig. 3) a space 25 exists between them for the admission of the subjacent pane of glass. The upper pane of glass is supported by a channelled piece of sheet metal 26 (Figs. 1 & 6) having the lateral flanges 27 which, when the said strip is arranged between the upper portions of the members 21, may be partly supported by the flanges thereof. Both of the lower and upper panes of glass being arranged in place, as illustrated in Fig. 1, for instance, bolts 28 are passed through the recessed portions of the members 21 and made to clamp the panes of glass between them; the

channeled strip, if desired, resting on the bolts. This construction affords a very strong, tight and substantial form of joint between the adjoining panes of glass, while it permits the ready removal of broken panes and the insertion of new ones. In order to both brace the astragals against buckling in case undue pressure should be applied to them and give increased strength and rigidity to the entire sash I employ a tie-bolt 30' which is passed through the stiles and the astragal, as shown in Figs. 1 and 3, and has its head and nut countersunk in the former, as at 30".

If desired, the window frame may be divided vertically into two compartments 29 and 30, one for each weight; by a partition 31 which should not extend so far toward the bottom (see Fig. 1) as to prevent access to the weight in compartment 30.

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

1. A hollow sheet metal window frame having a removable section forming the interior wall of each of its sides, said section being removable from the frame in the plane of said section when arranged in the frame, substantially as described.

2. A hollow sheet metal window frame having a removable section forming the interior wall of each of its sides, and having grooves opening in the same direction and receiving the opposite edges of said section, substantially as described.

3. A hollow sheet metal window frame having a removable section forming the interior wall of each of its sides, and having grooves opening in the same direction and receiving the opposite edges of said section, and means for securing said section with its edges in said grooves, substantially as described.

4. A hollow sheet metal window frame having a removable section forming the interior wall of each of its sides, and a vertical partition substantially parallel with said section and extending short of the sill surface of said frame, substantially as described.

5. In a hollow sheet metal window frame, a side thereof having a vertical groove in its jamb-portion and comprising a section disposed at an angle to said jamb-portion and having one edge bent back and inserted in said groove, substantially as described.

6. In a hollow sheet metal window frame, a side thereof having a vertical groove in its jamb-portion and comprising a section disposed at an angle to said jamb-portion, said section abutting against the edge of said jamb-portion and having one edge bent back and inserted in said groove, substantially as described.

7. In a hollow sheet metal window frame, a side thereof having a vertical groove in its jamb-portion and comprising a section disposed at an angle to said jamb-portion and having one edge bent back and inserted in said groove, said section projecting beyond the surface of said jamb-portion and forming a head, substantially as described.

8. In a hollow sheet metal window frame, a side thereof having vertical parallel grooves in its jamb-portion and comprising a section disposed at an angle to said jamb-portion and having one edge bent back and inserted in one of said grooves and also comprising a head arranged in the other groove, substantially as described.

9. A window sash comprising two sheet metal opposed spaced members in its astragal adapted to receive between them the edge or edges of a pane or panes of glass, each member having its longitudinal edge-portion standing in substantially the same plane and projecting toward each other, in combination with a channelled strip interposed between said members and adapted to receive the edge of a pane or panes of glass and means, engaging the exterior walls of said members, for drawing said members together and thus clamping the pane or panes between them, substantially as described.

10. A window sash comprising two opposed spaced

sheet metal exteriorly recessed members adapted to receive between them the edges of adjoining panes of glass, in combination with a channeled strip interposed between said members and receiving the edge of one pane, and
5 means, extending through the recessed portions of said members, for clamping said members together, substantially as described.

11. A window sash comprising two horizontal opposed members arranged to form a vertical space between them
10 and adapted to receive in said space the edges of super-

posed panes of glass, in combination with a channeled strip interposed between the members with its open side up and adapted to receive the lower edge of the upper pane, substantially as described.

In testimony, that I claim the foregoing, I have hereunto
set my hand this 12th day of April, 1907. 15

PAUL W. FRENZEL.

Witnesses:

JOHN W. STEWARD,
WM. D. BELL.