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G. C. WITT & C. H. AMANN.

WINDOW FRAME AND SASH.

(Application filed Mar. 9, 1898.)

(No Model.)

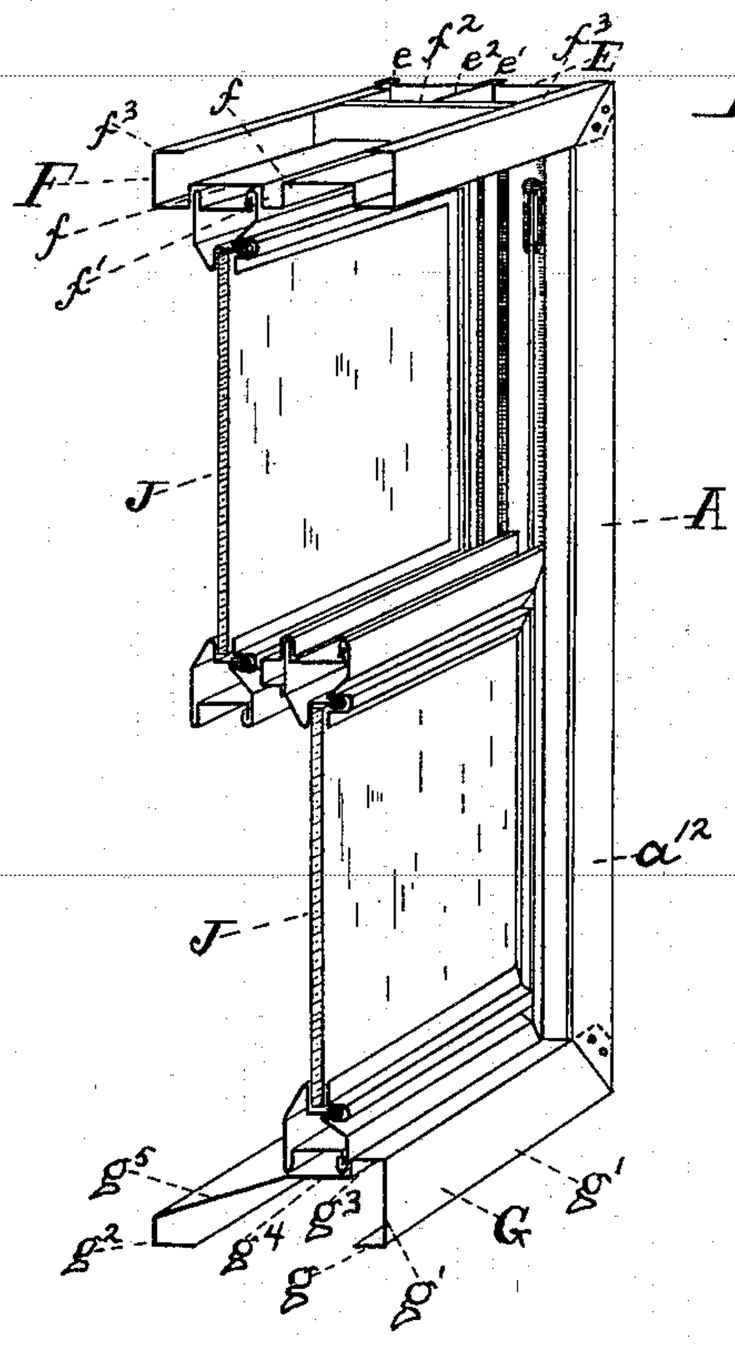


Fig 1

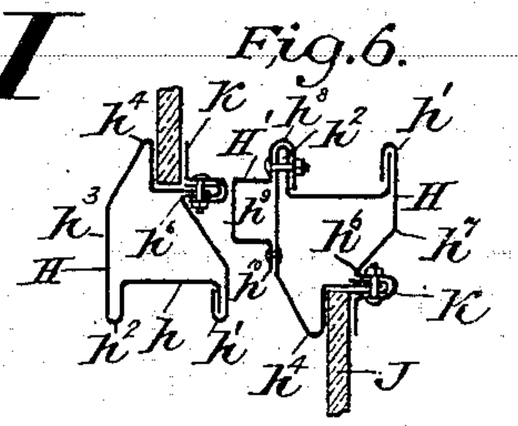


Fig. 6.

Fig 2

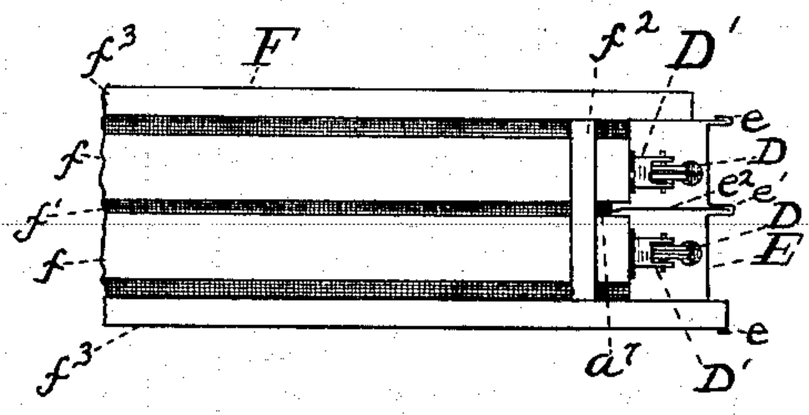


Fig 3

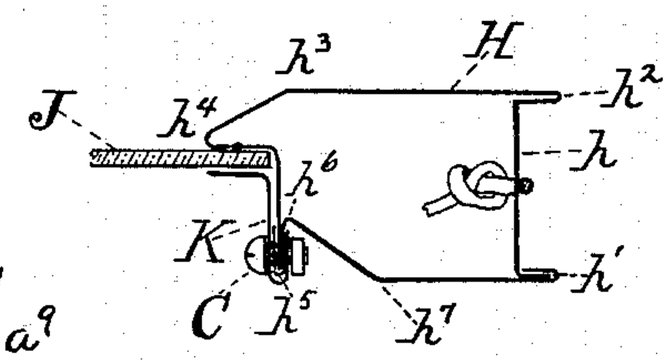


Fig 4

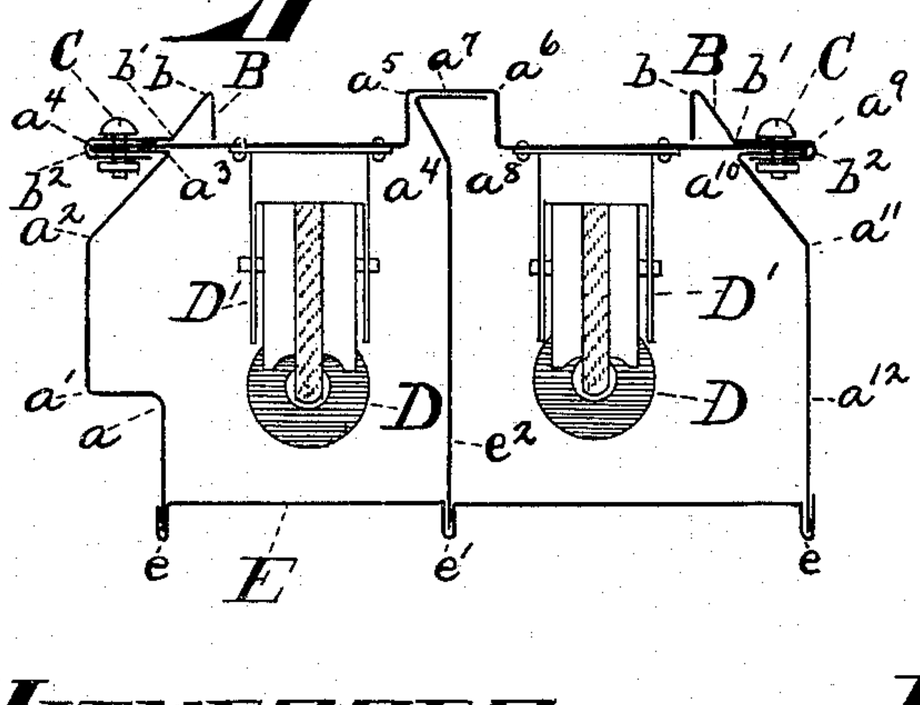
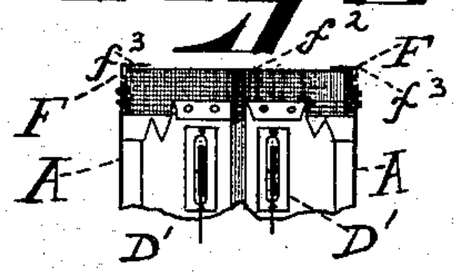


Fig 5



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WINDOW FRAME AND SASH.

SPECIFICATION forming part of Letters Patent No. 612,221, dated October 11, 1898.

Application filed March 9, 1898. Serial No. 673,229. (No model.)

To all whom it may concern:

Be it known that we, GEORGE C. WITT and CHARLES H. AMANN, citizens of the United States, and residents of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Window Frames and Sashes, of which the following is a specification.

The object of the invention is to provide a practically fireproof window which will obviate the necessity of using iron or iron-lined fireproof shutters, which when closed for protection prevent any fire that may occur in the building from being observed from the outside. This object is attained by the means illustrated in the accompanying drawings, in connection with which the invention will be first fully described and then particularly referred to and pointed out in the claims.

Preliminary to a general description of the drawings and in order to get a clearer understanding of the invention at the outset, it may be stated that the window frame or casing and sash are preferably made of sheet metal, for economy and strength formed up in the manner hereinafter described, and the sashes fitted with what is known as "wired glass," which experimental tests have demonstrated will stand a high degree of heat without being fractured to such an extent as to admit air to feed an incipient fire, and which in case of fire may be easily chopped or broken out by the fireman to turn a stream of water or other extinguishing fluid on the fire.

Referring to the drawings, in which like parts are indicated by similar reference-letters wherever they occur throughout the various views, Figure 1 is a sectional perspective view of a window frame and sash embodying the invention. Fig. 2 is a top or plan view of the same. Fig. 3 is a transverse sectional view, upon an enlarged scale, through one of the side stiles of the sash. Fig. 4 is a view, upon the same scale as Fig. 3, in transverse sectional view through the upright stile of the frame or casing. Fig. 5 is a detail view illustrating the miter-joint uniting the vertical and transverse stiles of both frame and sash. Fig. 6 is an enlarged detail view, in transverse section, through the meeting-rails of the sashes shown in Fig. 1.

Referring to the parts, the body of the side stiles or uprights of the frame A is formed of a single piece of sheet metal, for cheapness preferably of galvanized iron or soft steel, as clearly shown in Fig. 4. Beginning at the outside end, which is embedded in the brickwork, the different bends will be described in succession from that portion to the end of the inside stile or facing. The first bend a forms an angle with the end of the sheet and the rectangular portion which extends to the bend a'. The rectangular space between the end and angle a' receives the brickwork which embeds the frame, and the straight part of the angle a^2 forms the outer facing of the stiles. The metal from the angle a^2 is inclined inwardly in a straight line, as shown, but may be in a curved line, if desired, to the angle a^3, from which it extends in a line at right angles to the window-opening and returns upon itself at a^4, making a double loop to the angle a^3 and extending beyond it to the angle a^4, thence in a right-angle bend to the angle a^5, and at a right angle from that point to the angle a^6, forming a dividing-bead a^7, against which the adjacent edges of the sash bear. From the angle a^6 the metal is returned at a right angle to the angle a^8 and from thence at a right angle to the loop a^9, which is similar to the loop a^4. From this loop the metal sheet is returned to the angle a^{10}, thence in a diagonal line to the angle a^{11}, and in a line from a^{11} parallel with the face of the wall to the end of the casing, forming the inside facing a^{12}.

B are the removable moldings or strips which form the outer and inner guides for the sashes and retain them in their seats. These moldings have a bend at b, the part from the end of the strip to the angle forming the guide for the sashes. From thence the metal inclines to the angle b' and thence in a straight line parallel with the edges of the sash to the points b^2, at which points the metal of the molding-strips is turned in a loop to snugly fit over the loops on the upright stiles. When the sashes are in position and the moldings B pressed over the return-bends of the side stiles, they are held firmly in place by the screw-bolts C, which pass through the four thicknesses of metal and are tightened in position by nuts upon the inner screw-threaded ends of the bolts.

The pockets or chambers for the balance-weights D are inclosed at the ends of the stiles by a sheet-metal partition E, which has return-bends e at the ends and e' in the center. The end returns are to slip over the inner ends of the casing, and the return-bend e' is to receive the dividing-partition e^2, which extends inwardly to the dividing-strip of the sashes a^7 and is bent around parallel to the inner wall of the dividing-strip to retain it in position. The ends of these upright stiles are mitered to meet the top stile and sill of the window-frame, and to the inner walls are riveted pulley-boxes D', the rivets passing through the outwardly-projecting flanges of the guide-pulley box.

The top stile F of the window frame or casing is formed of a single piece of sheet metal bent around, as clearly shown in Figs. 1 and 2, to form upon its under side grooves f for the sashes and the dividing-bead f' between the sashes. The ends of the top stile are made to extend over the inner ends of the side walls, and the inner and outer vertical facings have also projecting ends, which form extensions when the mitered joints are stamped down to pass back of the exposed facing-strips of the upright stiles A, the mitered joints being connected by rivets, as clearly shown in Fig. 5. The ends of the inner or lower walls of the stile F also extend beyond the inner walls of the uprights and are bent down over the sash-pockets and the inclined portion of the outer facing-strips to make a tight joint, the parts bending over the sash-pockets being riveted for additional strength. The top stile is also strengthened by bridges f^2, which are also made of a U-shaped piece of sheet metal, the lower edge of which is formed counter to the upper side of the stile and the upper edge passed under the inturned flanges f^3 of the top stile, the parts being united by solder.

The sill G of the window-frame is formed of a single piece of sheet metal having the inturned bends g at each end to form a base, which bend at a right angle to form the inner facing g' and the outer facing g^2. The inner facing g' is returned to form the inner seat g^3 for the sash and again returned at a right angle to form the seat g^4, upon which the lower flanged ends of the inner sash rest, and from this point to the outer facing g^2 inclines downwardly, forming the watershed g^5. The inner and outer facings of the lower sill have their ends stamped up to form a miter, leaving the projecting end to pass under the facings of the uprights, to which they are riveted, the same as the upper stile F.

The upright and cross stiles of the window-sash are formed of a single piece of sheet metal, as clearly shown in Fig. 3, the side stiles H differing only from the cross-stiles in that one or the other has its mitered joint stamped up, leaving the projecting end to pass under the square cut-off miter of the opposite stile to receive the rivets which frame them together in forming up the molding for the stile-pieces or frame. The outer edge h has an upturned end h' at one end and a similar return-bend h^2 at the opposite end. The metal from this point extends in a straight line to the angle h^3, from which point it diverges to the return h^4, which furnishes the seat or back for one edge of the glass plate J. It then returns in a line parallel to the outer edge, forming a loop h^5 to the angle h^6, from which it returns in a diagonal line to the angle h^7, and from there to the outer edge, looping over the end h' and forming the guide-beads, which slide in the grooves formed in the casing and reduce friction between the parts.

The removable molding-strips K, which hold the glass in place, consist of an angle-molding having its short angle to bear against the face of the glass, its long angle bear against the inner wall of the sash-frame, and thence loop over the return at h^5, the molding being held in place by the screw-bolt C.

To the outer wall of the upper or meeting rail of the lower sash is secured a strip or molding H', as clearly shown in Figs. 1 and 6. This has a loop h^8, which terminates in a rectangular box h^9, having a flange h^{10} projecting down from it, by which the strip is secured to the meeting-rail. The box h^9 projects far enough from the sash-frame to contact with the glass-holding strip K on the meeting-rail of the upper sash to make a practically close joint when the sashes are closed, as shown in Figs. 1 and 6.

We have shown our invention in what we believe to be its simplest and best form; but it is obvious that it would be an inferior modification to make the same structure of separate parts and unite them in a manner well known to the trade, and it is also obvious that many mere mechanical changes may be made without varying the spirit or scope of the invention, and we therefore do not desire to be limited to the exact construction shown.

What we claim is—

1. In a window-casing the combination of the upright and transverse stiles, each formed from a single piece of sheet metal, having overlapping mitered corners, and the laterally-projecting loops to receive the sash-holding molding, substantially as shown and described.

2. In a window frame or casing the combination of the frame-body having its vertical and transverse stiles formed of a single piece of sheet metal and its vertical stiles formed with outwardly-projecting loops or flanges to receive the sash-holding moldings, the sash-holding moldings formed of a single piece of sheet metal and having a return-loop to fit over the loop or flange of the upright stiles of the frame and screw-bolts to removably secure the said molding to the frame to hold the sashes in place.

3. The combination in a window-frame of

the upright stiles the bodies of which are formed of a single piece of sheet metal forming the balance-weight chambers, the back plate to close the back of said chambers, and a partition dividing the chambers into separate pockets, substantially as and for the purpose set forth.

4. The combination of the sheet-metal window frame or casing having sash-receiving seats, the removable strips to hold the sash in place, the sash-frame having its stiles each formed of a single piece of sheet metal and framed together by lapped miters, and the removable molding-strips to hold the glass in place, substantially as shown and described.

5. The sheet-metal sash hereinbefore described formed of a single piece of sheet metal having outwardly-returned loops forming flanges to fit in the grooves of the casing-frame and having outwardly-projecting flanges to receive the molding-strips for holding the glass in place and the bolts passing through said strips and flanges for securing the molding to the sash-frame.

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