

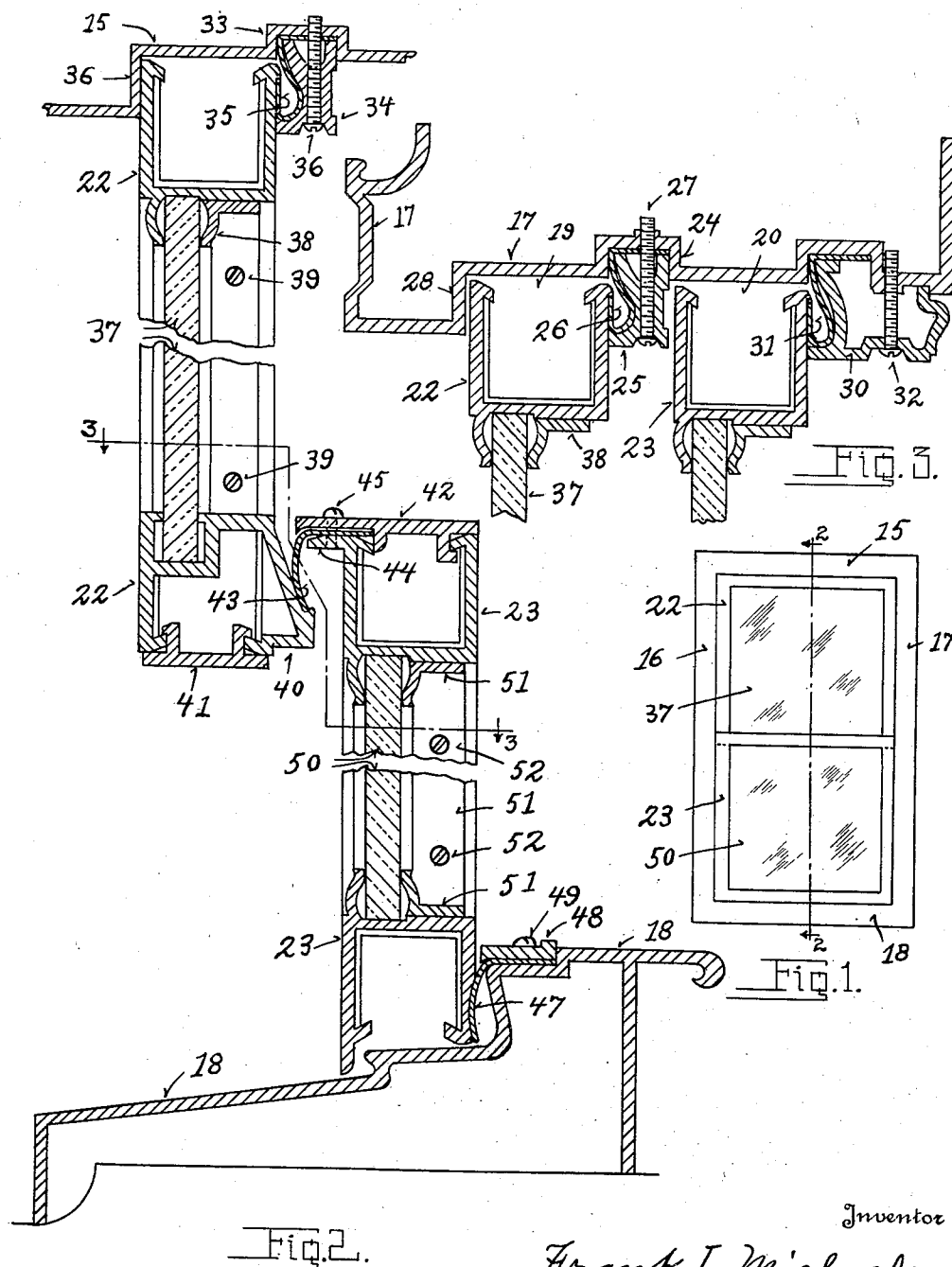
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METAL WINDOW AND WEATHER STRIP

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METAL WINDOW AND WEATHER STRIP

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My invention relates to improvements in metal window frame sash and weatherstrip. One of its objects is to provide an improved combination of metal window frame sash and weatherstrip. Another object is to provide an improved arrangement of frame sash and weatherstrip in which the wind pressure from without tends to more tightly close the weatherstrip joints to effectively exclude wind and water. Another object is to provide and adapt improved weatherstrips to metal window frames and sashes produced from mitered sections of stock bars of extruded metal of specially provided cross-sectional design. My invention also comprises certain details of form and arrangement and combination of components, all of which will be fully set forth in the description of the accompanying drawings, in which:

Fig. 1 is an inside elevation of a window frame and sash embodying my improvements.

Fig. 2 is an enlarged vertical section taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged sectional view taken on the line 3—3 of Fig. 2.

The accompanying drawings illustrate one embodiment of my invention in which 15 represents the cap, 16 and 17 the side rails, and 18 the sill or ledge of a window frame, said frame being constructed from extruded metal, by cutting long bars thereof of especially designed cross-section into sections of the desired length and uniting said bar sections by brazing or similar means into a window frame. Guideways or channels 19 and 20 are provided along the inside of the side rails 16 and 17 to guide the vertical movements of the respective sash members 22 and 23. A vertical channel 24 in each of the side rails 16 and 17 provides a seat into which the base of a detachable vertical parting strip or guide strip 25 together with a thin flexible strip of sheet metal weatherstrip 26 enter and are held in place by means of a series of screws 27, which are threaded into perforations in the side rails 16 and 17. The upper sash is guided in its vertical movements between the ledges 28 of the side rails

16 and 17 and the guide strips 25 attached to said side rails 16 and 17.

The vertical window bead or guide strips 30 and flexible sheet metal weatherstrips 31 are held detachably in place relative to the side rails 16 and 17 to form channels 20 between the guide strips 25 and 30 by means of a series of screws 32 threaded into perforations in the side rails 16 and 17. The sash 23 moves vertically in the guideways 20 relative to the window frame. The window frame is adapted to be set in brick or stone masonry or to be set in a wooden framework as may be desired. Across the inside of the cap section 15 of the window frame is a channel 33 in which is detachably seated a cross bar 34, of cross section similar to that of the guide strips 25, and a flexible sheet metal weatherstrip 35. The top edge of the upper sash when in closed position enters between a ledge 36 on the cap section 15 of the window frame, and the cross bar 34 and weatherstrip 35, as shown in Fig. 2. The cross bar 34 is detachably held in place by means of a series of screws 36. The upper sash 22 is built up from short mitered sections of extruded metal cut from stock bars of metal of especially designed cross sectional pattern substantially as shown. A glass panel 37 is mounted in the upper sash 22, and held in place therein by means of strips 38, detachably held in place by screws 39 or similar means. The cross sectional pattern of the lower cross bar of the upper sash at 40 is somewhat different from the cross sectional pattern of the top and side sections of the sash 22, in order to provide for making a weather proof joint between the lower edge of the upper sash and the upper edge of the lower sash. The opening across the bottom of the lower cross bar of the upper sash is closed by means of an extruded metal strip 41, which is adapted to be inserted endwise or telescopically into place and to interlock with the edges of said lower cross bar substantially as shown in Fig. 2.

The lower sash is constructed from short mitered sections of an extruded metal bar of substantially the same cross sectional pattern, and substantially as described for the

upper sash. An extruded metal strip 42 serves to close the opening at the top of the upper cross bar of the lower sash, and a flexible sheet metal weatherstrip 43 is locked between the strip 42 and the ledge 44 of the upper cross bar of the lower sash. The free edge of the weatherstrip 43 bears resiliently against the lower cross bar of the upper sash to make a wind and water proof joint between the two sashes where they meet. Any wind pressure upon this weatherstrip 43 from outside of the sashes tends to hold the weatherstrip 43 more firmly in engagement with the lower portion of the upper sash. The strip 42 may be detachably locked to the ledge 44 by means of screws 45.

Where the lower cross bar of the lower sash comes in contact with the sill 18 of the window frame 18, a flexible sheet metal weatherstrip 47 is detachably held in place between the sill 18 and the strip 48, and may be detachably held in place by means of screws 49. The free edge of the strip 47 bears resiliently against the face of the lower cross bar of sash 23 substantially as shown in Fig. 2. Any wind pressure from without is adapted to act upon the strip 47 to press it more firmly against the lower cross rail of sash 23. The weatherstrips 26, 31 and 35 are also so arranged that any wind pressure from the exterior exerts a pressure upon the rear face of said strips so as to tend to close the weatherstrip joint more effectively. A glass panel 50 is held in place relative to the lower sash by means of detachable metal strips 51 secured in place by means of screws 52.

The apparatus herein shown and described is capable of considerable modification within the scope of the claims without departing from the spirit of my invention.

What I claim is:

1. A metal window structure comprising a metal window frame, metal sash members, metal guide strips detachably attached to said window frame and forming vertical guide channels to guide the movements of said sash members relative to said window frame, a flexible metal weatherstrip at the meeting edges of said sash members, detachably attached at one edge to the cross rail of one of said sash members and with its free edge bearing resiliently upon the cross rail of the opposite sash member, the relation of said sash members and weatherstrip being such that wind pressure from the exterior of said window tends to hold the free edge of said weatherstrip more firmly in engagement with the opposite sash member.

2. A metal window structure comprising a metal window frame, metal sash members, metal guide strips detachably attached to said window frame and forming vertical guide channels to guide the movements of said sash members relative to said window frame, a flexible metal weatherstrip at the meeting

edges of said sash members detachably attached at one edge to the top cross rail of the lower sash member by means of a metal binding strip secured across the top of the top cross rail of the lower sash, the free edge of said weatherstrip extending downwardly between the sash members and resiliently engaging the lower cross rail of the upper sash member, the relation of said sash members and weatherstrip being such that wind pressure from the exterior of said window tends to hold the free edge of said weatherstrip more firmly in engagement with the opposite sash member.

3. A metal window structure comprising a metal window frame, metal sash members, metal guide strips detachably attached to said window frame and forming vertical guide channels to guide the movements of said sash members relative to said window frame, a flexible metal weatherstrip at the meeting edges of the lower sash with the sill of said window frame detachably attached to said sill member by means of a metal binding strip secured across the top of said sill, and with the free edge of said weatherstrip extending downwardly between the sash member and sill and resiliently engaging the lower cross rail of said sash member, the relation of said sash member, sill and weatherstrip being such that wind pressure from the exterior of said window tends to hold the free edge of said weatherstrip more firmly in engagement with said sash member.

4. A window structure comprising a window frame, window sashes, vertical guide strips detachably attached to the side rails of said window frame to form vertical guide channels to guide the movements of said sash members relative to said window frame, vertical recesses between said sash members and said guide strips, and flexible metal weatherstrips attached at one edge to said window frame by said guide strips and having their free edges looped upon themselves within said vertical recesses with one side of said loops bearing resiliently against the side rails of said sash members and the other side of said loops bearing resiliently against said guide strips.

5. A window structure comprising a window frame, sash members, guide strips detachably attached to said window frame and forming vertical guide channels to guide the movements of said sash members relative to said window frame, said guide strips being provided with vertical weatherstrip channels formed therein adjacent to the faces of said sash members, a flexible metal weatherstrip at the meeting edge of each guide strip and sash member detachably attached along one edge to said window frame by said guide strip and having the free edge of said weatherstrip looped upon itself within the recess in said guide strip with one side of said

weatherstrip loop in contact with the side of the sash member and the opposite side of the weatherstrip loop in contact with the face of said guide strip recess, the relation of said guide strip, sash member and weatherstrip loop being such that wind-pressure from the exterior will enter said loop and exert pressure from within upon both faces of said loop to more firmly engage the weatherstrip with the sash member and guide strip.

6. A metal window structure comprising a metal window frame, metal window sashes guided by and movable relative to said frame, a flexible metal weatherstrip located at the meeting edges of the sill and lower sash and having a section detachably attached to the upper face of said sill and a section interposed between the sill and lower edge of the sash and bearing resiliently against the lower edge of the sash, a metal attaching strip superimposed upon the section of said weatherstrip resting upon the sill and detachably attached with said weatherstrip to the upper face of the sill, the upper face of said attaching strip being of a pattern adapted to drain water condensed upon the inner face of the lower sash down between said sill and the lower edge of said sash instead of across the upper face of said sill.

7. A metal window structure comprising a metal window frame, metal window sashes guided by and movable relative to said frame, the sill of said frame having a recess in its upper face adjacent to the meeting edge of the sill with the lower sash, a flexible metal weatherstrip located at the meeting edges of the sill and lower sash and having a section detachably attached to the recessed portion of the sill and a section interposed between the sill and lower edge of the sash and bearing resiliently against the lower edge of the sash, a rigid metal attaching strip superimposed upon the weatherstrip section resting in said sill recess and detachably attached therewith to said sill, the upper face of said attaching strip being of a pattern adapted to drain water condensed upon the inner face of the lower sash down between said sill and the lower edge of said sash instead of across the upper face of said sill.

In testimony whereof I have affixed my signature.

FRANK L. MICHAELS.