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A. H. KIEHL ET AL  
WINDOW FRAME

2,912,078

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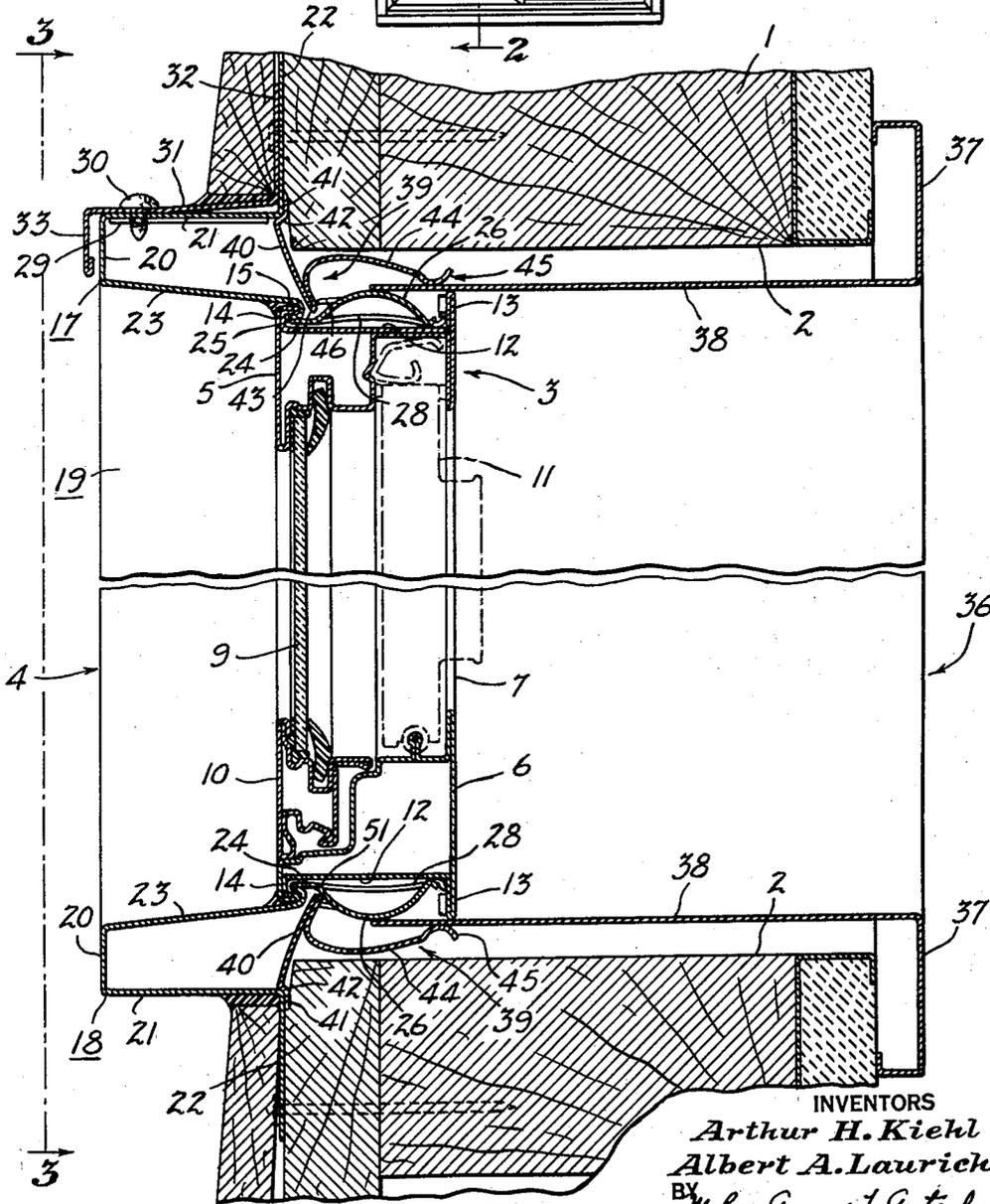
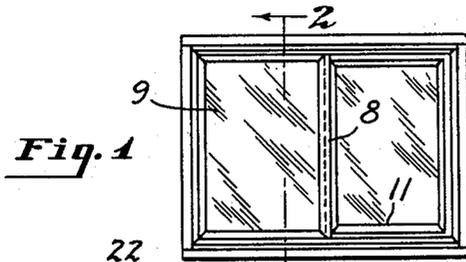


Fig. 2

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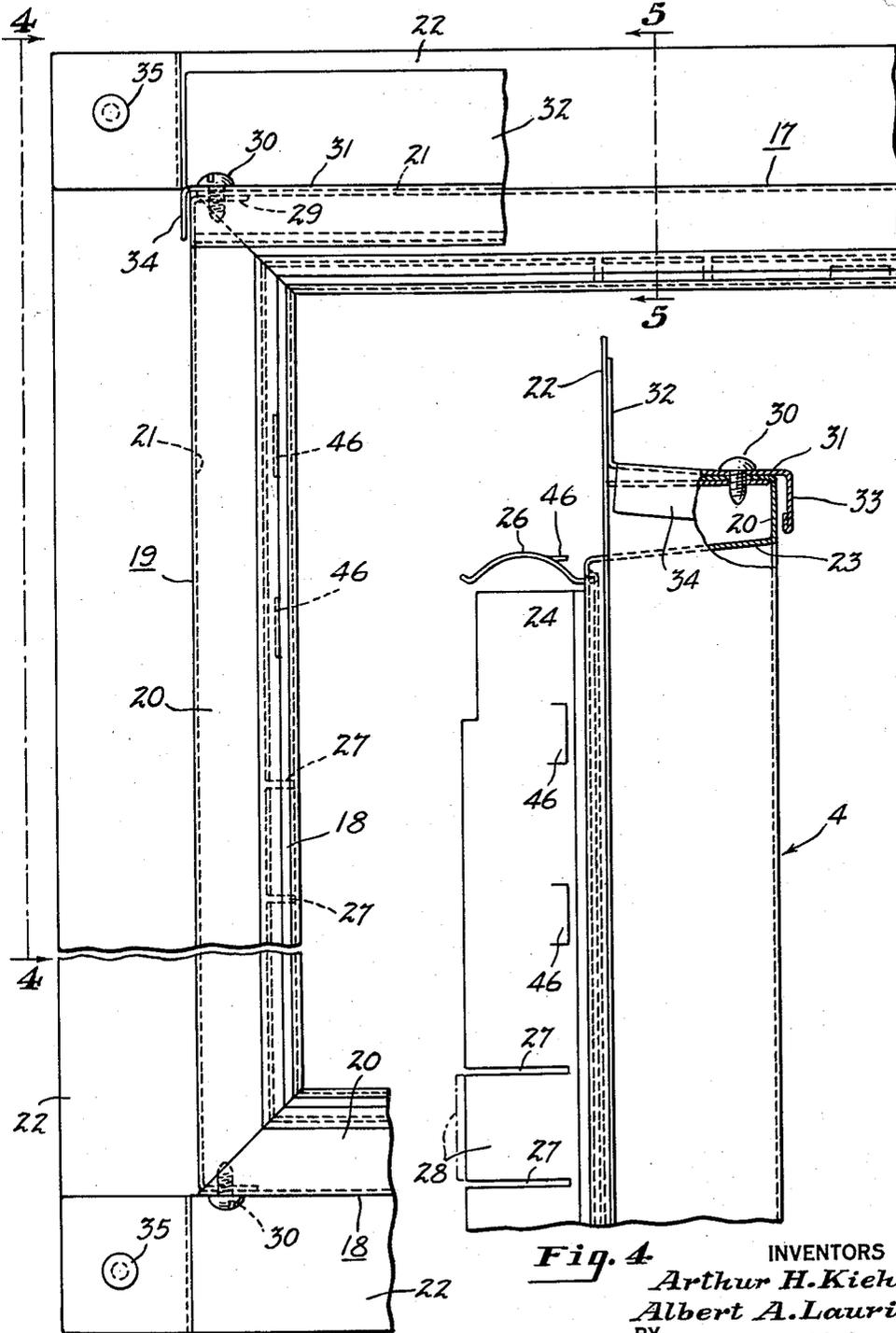
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**Fig. 3**

**Fig. 4**

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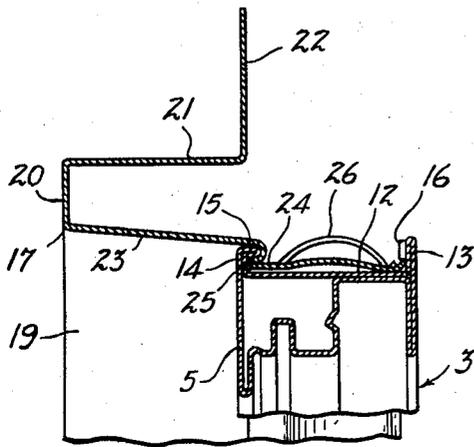
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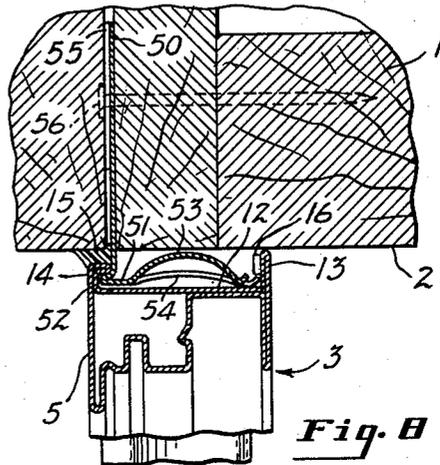
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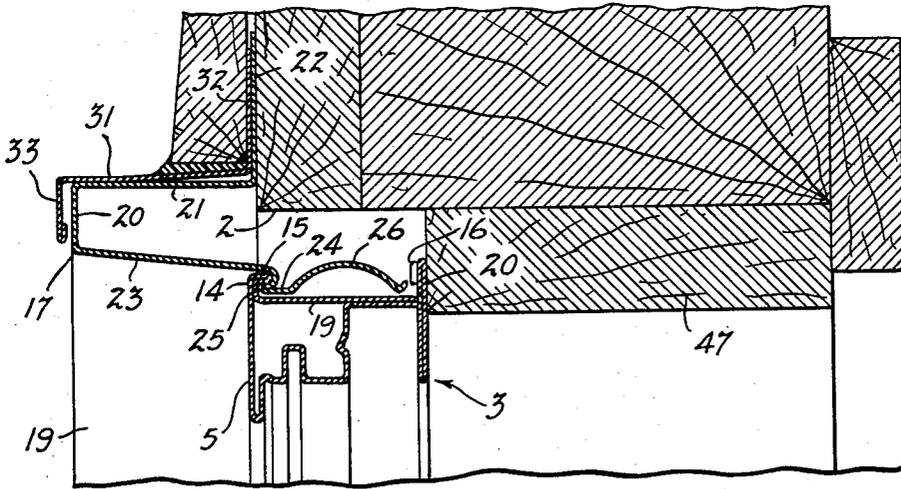
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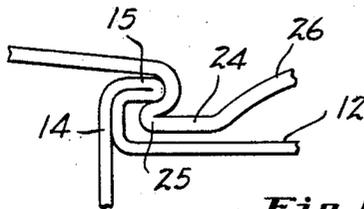
**Fig. 5**



**Fig. 6**



**Fig. 7**



**Fig. 8**

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2,912,078

**WINDOW FRAME**

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6 Claims. (Cl. 189—75)

This invention relates to window structures and more particularly to the mounting of a window frame in a building wall opening.

The window structure of the present invention comprises a main window frame which may be of conventional construction and an external mounting frame composed of a head bar, a sill bar and two jamb bars that can be assembled on the main frame and attached to the head, sill and jambs of the main frame and to one another to provide a mounting frame surrounding the main window frame. The four bars forming the mounting frame are so formed that they can be quickly and easily assembled on the main frame at the time of installation of the window. The mounting frame serves to support the window frame in proper position in the building wall opening, the four bars forming the mounting frame being provided with portions for attachment to a face of the building wall and providing an adjustable mounting for the window frame. The mounting frame bars are provided with deformable portions that provide means for locking them to the window frame and are also attached together at their ends to firmly secure the same to the window frame. The mounting frame may also serve as an external trim surrounding the main frame and covering the spaces between the top, bottom and side edges of the window frame and the building wall opening. An inner metal trim casing may also be provided which is clamped to the bottom, top and side edges of the window frame by means of resilient clamping strips that are held in place by the mounting frame.

Objects of the invention are to provide means for quickly and easily securing a window frame in proper position within a building wall opening which may be of a height and width materially greater than the height and width of the window frame to provide a mounting frame that can be shipped disassembled and be applied to the window frame at the time of installation and to so construct the mounting frame that it provides a neat and attractive trim or border for the window.

Reference should be had to the accompanying drawings forming part of this specification in which:

Figure 1 is a front elevation of the window structure;

Fig. 2 is a vertical section on an enlarged scale, taken on the line indicated at 2—2 in Figure 1;

Fig. 3 is a fragmentary front elevation of the assembled window and mounting frames viewed as indicated at 3—3 in Fig. 2;

Fig. 4 is a fragmentary elevation of the assembled frames viewed as indicated at 4—4 in Fig. 3;

Fig. 5 is a vertical section taken on the line indicated at 5—5 in Fig. 3;

Fig. 6 is a fragmentary section on an enlarged scale showing the interlocking connection between the mounting frame and window frame;

Fig. 7 is a vertical section showing a slightly modified window construction;

Fig. 8 is a vertical section showing a modified form of mounting frame.

Referring to the accompanying drawings the window structure of the present invention is shown applied to a building wall 1 that is provided with a window opening 2, the window structure including a main window frame 3 and a mounting frame 4 which surrounds the frame 3 and positions the same in the window opening 1.

Aside from its exterior configuration the construction of the window frame 3 is unimportant insofar as the present invention is concerned. As herein shown the frame 3 is formed of sheet metal and has a head 5, a sill 6, jambs 7, and a muntin bar 8 connecting the head and sill intermediate the ends thereof. A fixed glass pane 9 is mounted in the rectangular space between the bar 8 and one of the jambs, an adapter bar 10 being provided on the sill 6 between the bar 8 and jamb 7 to accommodate the lower edge of the pane. Inwardly of the fixed pane 9 a sash 11 is mounted to slide horizontally in the head 5 and sill 6.

The external edge faces of the frame members 5, 6 and 7 are of identical configuration and are formed to provide aligned external channels 12 that receive the mounting frame 4. The inner and outer walls of the frame members 5, 6 and 7 are bent back upon themselves to form inner and outer flanges 13 and 14 that form the inner and outer walls of the channels 12. The outer flanges 14 are provided with inwardly bent outer edge portions 15 and the flanges 13 are provided with inwardly projecting lugs 16 that are spaced from the bottom of the channel.

The mounting frame 4 closes the spaces between the top, bottom and side edges of the frame 3 and the interior of the window opening and, as shown in Figs. 2 to 7, is formed to provide a trim surrounding the frame 3. The mounting frame 4 is formed of sheet metal and consists of a head bar 17, a sill bar 18 and two jamb bars 19, which are mounted in the channels 12 of the head 5, sill 6 and jambs 7. The frame bars 17, 18 and 19 are preferably of identical cross sectional shape, are channel shaped in cross section and project outwardly from the outer face of the building wall and are mounted with the open side of the channel facing inwardly. Each of said frame bars has a portion 20 forming the bottom of the channel and the outer face of the trim and a portion 21 forming the exterior sidewall of the trim channel that extends inwardly from the portion 20 toward the outer face of the wall 1 and that terminates in a wall attaching flange 22 that engages the building wall 1 exteriorly of the opening 2 and that are attached to the wall by suitable fastening members such as screws, nails or the like. Each of the frame bars has a portion 23 that forms the interior wall of the trim channel and that extends inwardly from the portion 20 and past the attaching flange 22 into the window opening. Along their inner edges the portions 23 of the frame bars 17, 18 and 19 are inwardly offset to provide base portions 24 that are received in the channels 12 of the window frame. The base portion 24 of each frame bar has a reversely bent portion 25 that hooks over the inwardly bent portion 15 of the outer flange 14 and, inwardly of the bent portion 25, is provided with an outwardly arched portion 26. The base portion 24 of each frame bar is of a width less than the width of the channel 12 so that it can be readily inserted into the channel 12. The arched portions 26 of each of the frame bars are provided with pairs of parallel slots 27 extending across the same that provide locking tongues 28 between them which can be readily flattened to extend across the full width of the channels 12 to prevent disengagement of the reversely bent portions 25 from the returned portions 15 of the flanges 14. The tongues 28 are spaced apart along the length of each of the frame bars 17, 18 and 19 and extend under the projections 16 so that when the tongues

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28 are flattened the mounting frame 4 is securely locked to the window frame 3. The mounting frame bars 17, 18 and 19 are formed at their ends to abut and overlap at the frame corners and means is provided for detachably securing the ends of the frame bars together. As shown in Fig. 3 the upper and lower ends of the portions 21 of the jamb bars 19 are provided with inturned flanges 29 that engage the portions 21 of the head and sill bars 17 and 18 and that are secured to the head and sill bars by means of screws 30.

A drip cap 31 may be positioned to overlie the head bar 17, the cap 31 being provided with an upturned flange 32 that overlies the flange 22 of the head bar, a downturned flange 33 that overlies the face portion 20 of the head bar and end flanges 34 that overlie the upper ends of the jamb bars 19, the drip bar being attached to the head bar by means of the screws 30 and heads of screws, nails or the like used to fasten the flange 22 to the building wall 1.

The attaching flanges 22 of the frame bars 17, 18 and 19 overlap at the corners of the mounting frame and are secured together by means of fastening members 35 such as screws or nails extending through the overlapping end portions of the flanges and into the building wall.

The window may be provided with an inner sheet metal trim casing 36 provided with outturned trim portions 37 that overlie the interior face of the building wall 1 around the opening 2 and outwardly extending flat walls 38 that overlie the top, bottom and side faces of the opening 2 and that engage the top, bottom and side edges of the window frame 3. The wall portions 38 of the inner trim casing are clamped to the window frame 3 by means of retaining strips 39 formed of resilient sheet metal that are held in place by the mounting frame 4. Each of the strips 39 has an outer anchoring portion 40 that is provided with an outer edge flange 41 that is disposed between the attaching flange 22 of a frame bar and the wall 1, and a shoulder 42 that engages the portion 21 of the frame bar at the base of the flange 22 to hold the retaining strip against outward movement. The anchoring portion 40 projects into the space between the hook portion 25 and the arched portion 26 of the frame bar base portion 24 and has a reversely bent inner edge portion 43. Outwardly of the reversely bent portion 43 the retaining strip has an outwardly arched portion 44 and an outwardly inclined free edge portion 45 which permits ready insertion of the inner trim casing between the retaining strip and the window frame. Tongues 46 struck up from the arched portion 26 of the frame bar hold the inner edge portion 43 of the retaining strip against inward movement.

Instead of a sheet metal inner trim a wood trim 47 may be provided as shown in Fig. 7 of the drawings.

In Fig. 8 of the drawings a modified form of mounting frame is shown in which each of the mounting frame bars is provided with an attaching flange 50 and a base portion 51 that engages in the external channels 12 of the window frame. The base portion 51 of each of the frame bars has a reversely bent hook portion 52 which engages beneath the inturned portion 15 of the outer flange 14 of the main frame and an outwardly arched portion 53. The base portion 51 is provided with locking tongues 54 which are formed in the same manner as the locking tongues 28, previously described, and when flattened lock the frame bars to the window frame 3. The attaching flanges 50 of the frame bars have overlapping corner portions 55 through which fastening elements 56 extend to secure the frame bars together and to the building wall.

It is to be understood that in accordance with the provisions of the patent statutes, variations and modifications of the specific devices herein shown and described may be made without departing from the spirit of the invention.

What we claim is:

1. A window structure comprising a main frame con-

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sisting of two jambs, a head and a sill having exterior faces with aligned longitudinal channels, each side wall of each channel having an inwardly projecting portion spaced from the channel bottom, and an outer mounting frame comprising head, sill and jamb bars joined together at their ends exteriorly of said main frame and each provided with an inner base portion seated in one of said channels and an outwardly projecting positioning portion at right angles to said base portion for engagement with a building wall, each of said base portions engaging the bottom of one of said channels with one side edge underlying one of said inwardly projecting portions and having an opposite side edge portion underlying the projecting portion of the opposite side wall to provide an interlocking connection between the head, sill and jambs of the main frame and the head, sill and jamb bars of the mounting frame.

2. A window structure comprising a main frame consisting of two jambs, a head and a sill having exterior faces with aligned longitudinal channels, each side wall of each channel having an inwardly projecting portion spaced from the channel bottom, and an outer sheet metal mounting frame surrounding said main frame and comprising two jamb bars, a head bar and a sill bar, each provided with an inner base portion seated upon the bottom of one of said channels and an outwardly projecting positioning portion at right angles to said base portion for engagement with a building wall, each of said base portions being in the form of a flange narrower than the channel in which it is seated and having a longitudinally extending arched portion, said flanges having spaced slots extending inwardly from their free edges and across said arched portion to provide integral tongues which when flattened provide the base with portions extending across the full width of said channels and underlying said inwardly projecting portions.

3. The combination with a building wall having a window opening of a main window frame in said opening that is provided with exterior edge faces having aligned longitudinal channels, a mounting frame surrounding said main frame and comprising two jamb bars, a head bar and a sill bar each formed of a single piece of sheet metal, said bars being of substantially identical cross sectional form, each of said bars having a channel shaped trim portion that projects laterally from a face of said main frame and that has spaced inner and outer walls, the free edge portion of the inner wall of the trim portion of each of said bars being inwardly offset and seated in one of said main frame channels, the outer wall of the trim portion of each of said bars terminating in a wall engaging flange, the outer walls of the trim portions of the jamb bars and the outer walls of the trim portions of the head and sill bars having overlapping end portions, means for securing said overlapping portions together, means including integral deformable tongues carried by said attaching portions for locking said attaching portions in said channels, and springs, each in the form of a resilient sheet metal strip interposed between the exterior edges of said frame and the sides of said wall opening, said springs having anchoring portions engaging the base and wall engaging portions of said bars and inwardly extending outwardly arched portions engaging the building wall at the top, bottom and sides of the window opening.

4. The combination with a building wall having a rectangular window opening of a mounting frame comprising four one piece sheet metal bars of substantially identical cross section each being channel shaped in cross section and disposed with the open side of the channel facing said opening, overlying an edge of said opening and projecting outwardly from said wall, each of said channel shaped bars having an outer wall provided at its free edge with a flange for engagement with said building wall exteriorly of said opening and an inner wall spaced from its outer wall, extending into said window opening and provided with an attaching portion along its free

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edge that is inwardly offset and of outwardly arched cross section, the attaching portion of each of said bars having spaced slots extending inwardly from its free edge across said arched portion to provide deformable locking tongues and a window frame having alined external channels in its jambs, head and sill of a width to receive said inwardly offset attaching portions and that have locking projections with which said attaching portions are interlocked when said deformable tongues are flattened.

5. The combination with a building wall having a window opening of a main window frame in said opening provided with exterior edge faces having alined longitudinal channels, a mounting frame surrounding said main frame and comprising two jamb bars, a head bar and a sill bar each formed of a single piece of sheet metal, each of said bars having an outwardly extending portion that engages the outer face of said building wall and a laterally extending attaching portion that is outwardly arched and of a width to be received in one of said window frame channels, an inner trim frame having flat wall portions overlying the exterior edge faces of said main window frame, a resilient sheet metal retainer strip overlying the attaching portion of each of said bars, each of said retainer strips having an outer anchoring portion disposed with its outer edge between the outwardly extending portion of one of said frame bars and the building wall and its inner edge portion in one of said window frame channels outwardly of the arched portion of the underlying attaching portion of a frame bar and an inwardly pro-

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jecting outwardly arched flange portion exteriorly engaging a flat wall portion of said inner trim frame, and lugs struck up from said arched attaching portion and engaging the inner face of said anchoring portion adjacent its inner edge.

6. A window structure comprising a main frame provided with a longitudinal channel in an edge face thereof that is provided with side walls having inwardly projecting portions spaced from the channel bottom and a sheet metal mounting bar having a base seated in said channel and an integral positioning portion extending outwardly from said base for engagement with a building wall, said base being narrower than said channel and having one longitudinal edge portion formed to engage beneath the projection of one side wall and having an outwardly arched longitudinally extending portion spaced from said edge portion, said base having slots extending inwardly from its opposite longitudinal edge and across said arched portion to provide integral tongues adapted to be flattened to provide the base with portions extending across the full width of said channel and underlying said inwardly projecting portions.

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