Nov. 27, 1956 E. K. GEYSER 2,771,970

METAL WINDOWS

Filed Aug. 9, 1955 2 Sheets-Sheet 1

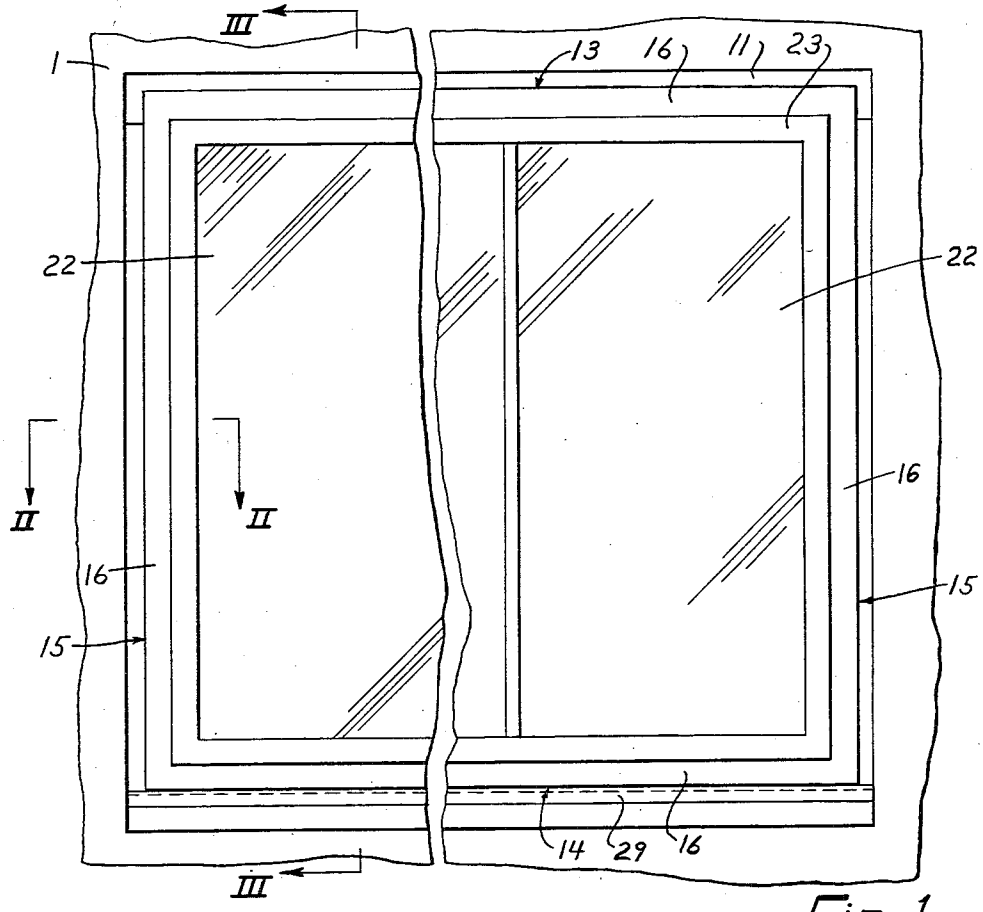


Fig: 1

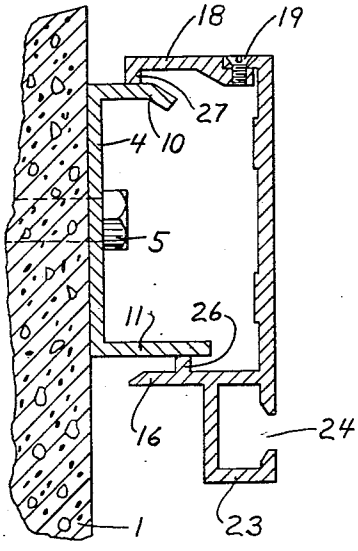


Fig: 2

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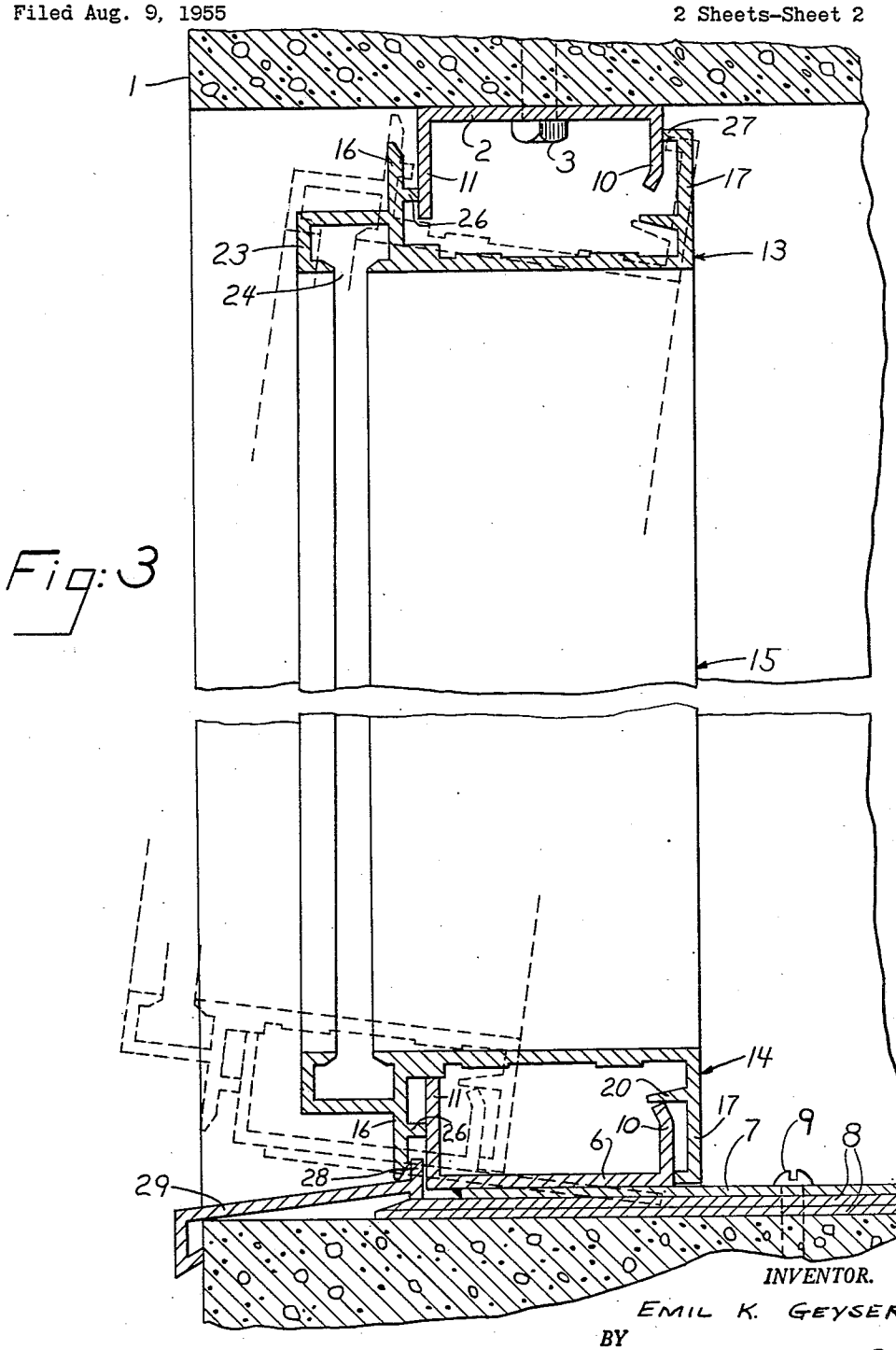


Fig: 3

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2,771,970

METAL WINDOWS

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6 Claims. (Cl. 189—75)

This invention relates to windows having stationary metal frames, and more particularly to a frame that can be inserted in a window opening from the outside of the building.

The window frame shown in my Patent No. 2,475,885 is very satisfactory after it has been installed, but it has to be inserted in the window opening from inside of the building. In some cases this is difficult to do because of interfering posts or scaffolding which do not leave enough space for manipulating the frame into place. Also, being inserted from the inside, trim strips have to be attached to the outside of the frame after it is in position.

It is among the objects of this invention to provide a window having a metal frame which can be mounted in place from the outside of the window opening, which can be installed quickly and easily, which does not require separate trim strips, which is held securely in permanent position and which is easy to manufacture.

In accordance with this invention channels are secured to the top and bottom and side walls of a window opening and have front and rear flanges that project into the opening. The top and side channels may be fastened to the wall in any suitable manner, but the bottom channel preferably is held in place by metal straps that project from the back of it and are anchored to the underlying wall by suitable anchor members. Also disposed in the opening is a metal window frame that is surrounded by front and rear flanges which overlap the outer surfaces of the surrounding channel flanges. The frame has a portion provided with an inwardly facing slot adapted to receive the periphery of a pane of glass. The front flanges of the frame and its top and bottom rear flanges are integral with the frame. The rear side flanges of the frame are fastened to it by screws or the like. At the time this frame is being inserted in the window opening the rear side flanges of the frame are absent and the straps are not yet fastened to the wall. The loose bottom channel is placed between the bottom flanges of the frame and then the frame is held in an inclined position and its top flanges pushed up over the top channel. The bottom of the frame, containing the lower channel, then is swung into the window opening until the front side flanges of the frame engage the front of the side channels. The rear side flanges are then fastened to the back of the frame in engagement with the back of the side channels, following which the rear ends of the stress can be secured to the wall beneath them.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is a front or exterior view of the window;

Fig. 2 is an enlarged horizontal section of the frame taken on the line II—II of Fig. 1; and

Fig. 3 is an enlarged fragmentary vertical section of the frame taken on the line III—III of Fig. 1.

Referring to the drawings, a rectangular window opening is formed in the wall 1 of a building which may be constructed from any suitable building material. The web 2 of a top metal channel is fastened by studs 3 to

the wall above it, and the webs 4 of vertical side channels are similarly fastened by studs 5 to the wall at the sides of the opening. The web 6 of a bottom channel preferably rests on metal straps 7 that are welded or otherwise secured to its bottom and that project rearwardly (toward the interior of the building) from it. Although the straps may rest directly on the lower wall of the opening if the opening has been made exactly the right size, the opening generally is a little oversize and so the straps rest on suitable shims 8. The rear ends of the straps are anchored to the underlying wall by means of threaded studs 9 or other suitable anchor members. The rear or interior flange 10 of the top channel is shorter than the front flange 11 for a purpose that soon will be disclosed, but all of the channels are made alike so that only one shape will have to be used.

The window frame that is mounted in this window opening is formed from head and sill members 13 and 14 joined by vertical side members or jambs 15, all welded or otherwise fastened together rigidly at the corners of the frame before the frame is set in place. The head and sill members may be identical, and the side members are identical with them except for their rear flanges. Thus, the frame members are provided with front flanges 16 that extend outward in overlapping relation with the front flanges of the channels. The head and sill of the frame have integral flanges 17 overlapping the back of the top and bottom channels. The jambs likewise have rear flanges 18 that overlap the back of the side channels, but these flanges are secured to the remaining portions of the jambs by countersunk screws 19. The frame sill rests on top of the front flange 11 of the bottom channel. The rear flange of the sill has a forwardly projecting horizontal reinforcing rib 20 that rests on top of the short rear flange 10 of the bottom channel, although this rib is not absolutely necessary because the back of the sill could be supported by the straps beneath it.

To support panes of glass 22 (Fig. 1), the window frame has a forwardly projecting portion 23 that is hollow and provided with a slot 24 through its inner surface for receiving the periphery of the glass. This hollow portion of the frame may be filled with putty in a well-known manner to hold the glass and seal it in the frame.

For a purpose about to be described, the rear surfaces of the front flanges of the frame are provided about midway between their inner and outer edges with rearwardly projecting ribs 26 that engage the front of the channels. Also, the outer edges of the rear flanges of the frame are provided with forwardly projecting ribs 27 that engage the back of the channels. The front ribs 26 are located much farther inward than ribs 27. These ribs help to stiffen the frame. At the bottom of the frame the front rib 26 provides a space between the front flange 16 and the bottom channel for reception of a rib 28 extending along the top of an inclined sill wash bar 29, to hold the bar in place. At the top of the frame the ribs 26 and 27 space the top flanges of the frame from the top channel in such a manner that the frame can be disposed in a tilted position, as shown in broken lines in Fig. 3, with the bottom of the frame forward when straps 7 are not anchored to the wall and the rear side flanges of the frame are not present. That is the situation that exists while the frame is being inserted in the window opening.

More specifically, when the frame is ready to be set in place the bottom channel 6 is inserted between the lower flanges of the frame and then the frame is lifted up in a tilted position to slip its upper flanges over the top channel. This can be done because the upper front rib 26 is located at a lower level than the upper rear rib 27, so that the distance between those two ribs is greater than the width of the channel. Straddling of the top channel is facilitated by its short rear flange 10, the lower edge

of which is turned forward as shown. As soon as the top of the tilted window frame has been slipped up over the upper channel the bottom of the frame with the lower channel in it is swung inward. During this movement it passes through the position shown in broken lines in Fig. 3, and the frame rocks on its upper front rib **26**. The bottom of the frame is pushed back into the window opening until the front side ribs **26** engage the side channels, as shown in Fig. 2. The rear side flanges **18** of the frame then are attached to the frame by screws **19**, with ribs **27** along their outer edges engaging the backs of the side channels. This will lock the frame in the opening, but it also is desirable to fasten the straps **7** down to the wall by means of the anchor members **9**. The channels will be engaged all of the way around the window frame by the front and back ribs **26** and **27** of the frame.

It will be seen that this window frame not only can be inserted from outside of the building, where there is plenty of room to work, but also that it is held in place in a simple manner and does not require the subsequent attachment of trim strips to give the frame a finished appearance. The space between the front of the frame and the surrounding wall can be filled with caulking material in the usual way. The window pane can be mounted in the frame either before or after the frame has been set in the window opening. The head and sill of the frame can be made from the same stock, and the sill wash bar can be omitted where not desired, without detracting from the appearance of the window.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. The combination with a wall having a window opening through it, of channels secured to the wall at the top and sides of the opening and having front and rear flanges projecting into the opening, a channel at the bottom of said opening having upwardly projecting front and rear flanges, a metal window frame in said opening surrounded by front and rear flanges overlapping the outer surfaces of the channel flanges, the front flanges of the frame and its top and bottom rear flanges being integral with the frame, and fastening members securing the rear side flanges of the frame to the rest of it, whereby before said side flanges were attached the frame was installed in said opening from the front by first placing the frame in an inclined position with its top flanges straddling the top channel and with the bottom channel disposed between

the bottom flanges of the frame and then swinging the bottom of the frame back into said opening until the frame was upright so that said rear side flanges could be secured to the frame behind the side channels.

2. The combination with a wall having a window opening through it, of channels secured to the wall at the top and sides of the opening and having front and rear flanges projecting into the opening, a channel at the bottom of said opening having upwardly projecting front and rear flanges, metal straps projecting from the bottom of the back of said bottom channel, anchor members extending through the straps and into said wall to hold the bottom channel in place, a metal window frame in said opening surrounded by front and rear flanges overlapping the outer surfaces of the channel flanges, the front flanges of the frame and its top and bottom rear flanges being integral with the frame, and fastening members securing the rear side flanges of the frame to the rest of it, whereby before said anchor members and side flanges were attached the frame was installed in said opening from the front by first placing the frame in an inclined position with its top flanges straddling the top channel and with the bottom channel disposed between the bottom flanges of the frame and then swinging the bottom of the frame back into said opening until the frame was upright so that said anchor members could be installed and said rear side flanges secured to the frame behind the side channels.

3. In the combination recited in claim 1, the frame having a portion provided with an inwardly facing slot adapted to receive the periphery of a glass pane, said slotted frame portion projecting in front of said channels.

4. In the combination recited in claim 1, the front flanges of the top and bottom channels being longer than their rear flanges, the bottom of said frame resting on the front flange of the bottom channel, and the inside of the rear bottom flange of the frame being provided with a horizontal rib resting on the rear flange of the bottom channel.

5. In the combination recited in claim 1, the upper flanges of the frame being provided with horizontal ribs spacing them from the upper channel, the rear rib being at the top of the rear upper flange of the frame and the front rib being located at a considerably lower level.

6. In the combination recited in claim 1, a horizontal rib spacing the front bottom flange of the frame from the bottom channel, and an inclined sill wash bar extending along the front of the bottom channel and provided at its inner edge with an upright rib disposed between that channel and the front flange of the frame for holding the bar in place.

No references cited.