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METAL SILLS

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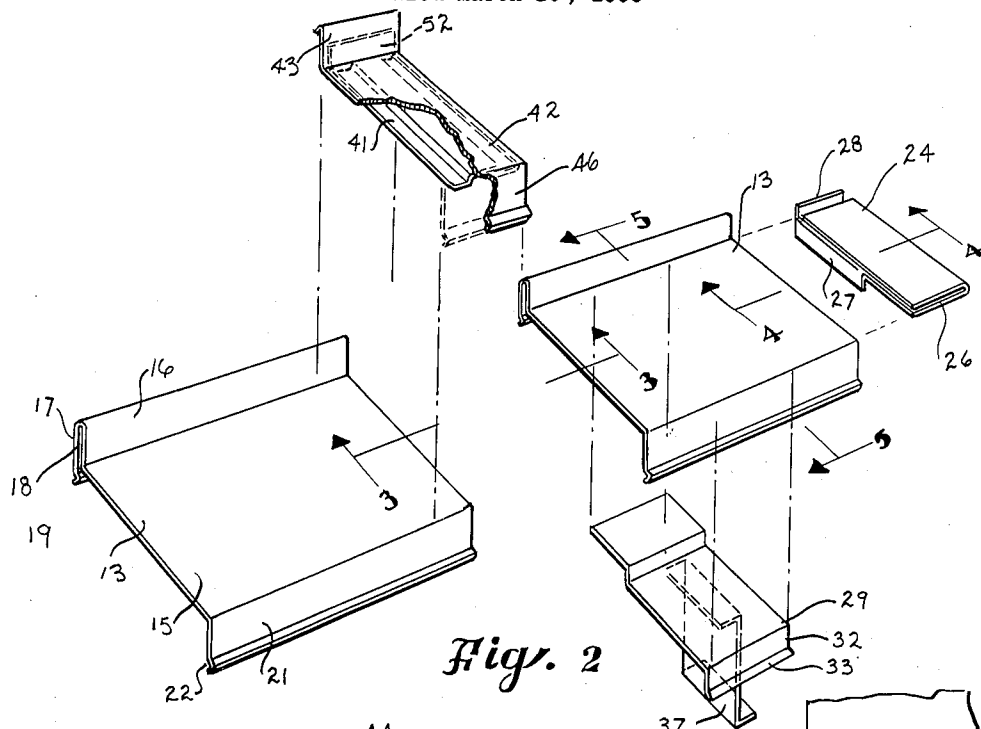


Fig. 2

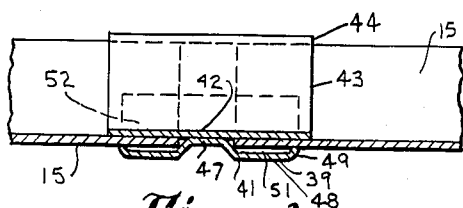


Fig. 3

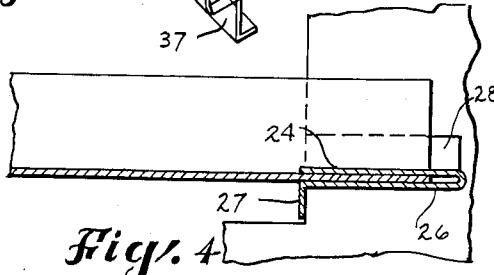


Fig. 4

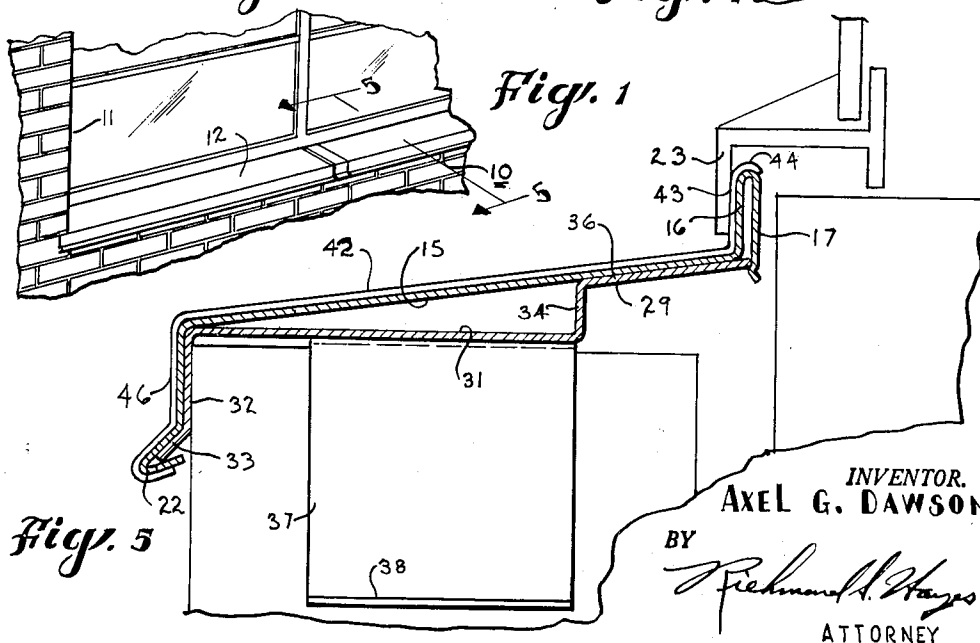


Fig. 1

Fig. 5

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METAL SILLS

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7 Claims. (Cl. 189—75)

This invention relates to metal sills for windows or other openings and particularly to improvements in the structure and assembly thereof.

Considerable difficulty has heretofore been experienced in the erection and maintenance of metal sills for openings, such as windows. It would appear that the metal sills now available or already installed have been so constructed that they could not be made entirely weather-tight. That is, over a period of time, moisture would tend to work its way beneath and around the sill into the masonry. Of course, there is caulking material which may be used to weatherproof such sills, but this material is subject to deterioration and must be replaced from time to time at considerable expense. Furthermore, any attempt to seal current metal sills against infiltration of moisture, either by structural additions to the sill or the application of caulking material, may produce such rigidity as to make it impossible for the sill to expand or contract without disastrous results, due to changes in temperature. For example, should caulking material be used, it frequently tends to crack or pull away from either the sill or masonry by reason of a slight change in the sill's dimensions. If, as is usual, the sill includes parts that are embedded in the masonry, such as end brackets and anchors, any slight change in the sill's dimensions, resulting from temperature changes, will either break the brackets and anchors loose from the masonry, or cause the sill to buckle.

The above mentioned problems of metal sill installation and maintenance may not be as serious in certain climates where the temperature is more or less uniform and the extent of expansion and contraction is negligible. However, even under the most favorable climatic conditions, metal sills tend to become loose and the supporting masonry or other structure becomes undermined by continued ingress of moisture. It is quite evident that in areas where there is a considerable range in temperature from day to day the extent of expansion and contraction of a metal sill will, in a very short time, crack or loosen caulking, dislocate anchors, and in many other ways render the sill unsuitable as the lower weather barrier of a window opening.

The present invention has been developed for the purpose of providing a metal sill of such construction that it may readily be installed and will require no maintenance other than that which is required to maintain proper appearance, such as painting or cleaning, and this therefore constitutes one of the objects.

Another object of the invention lies in the provision of a metal sill that is so constructed as to allow for its expansion and contraction without displacing or breaking the bond or seal thereof with the jambs or supporting masonry.

A further and important object of the invention lies in the provision of a metal sill that comprises multiple parts which, when assembled, not only permits expansion and contraction of the sill but enables, by reason of such

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multiple parts, the assembly and installation of a sill of any required length.

A still further object of the invention lies in the provision of such support and anchorage for a sill as to permit expansion and contraction thereof without breaking the bond with the masonry or in any way weakening or loosening the supporting effect.

Other objects and advantages of the invention will be more fully understood from a consideration of the following specification, taken in conjunction with the accompanying drawing; in which—

Fig. 1 is a fragmentary perspective view of a metal sill embodying one form of the invention as it appears installed in the window opening of brick masonry;

Fig. 2 is a fragmentary exploded perspective view of the sill shown in Fig. 1;

Fig. 3 is an enlarged vertical sectional view taken substantially as suggested by the line 3—3 of Fig. 2;

Fig. 4 is an enlarged vertical sectional view taken substantially as suggested by the line 4—4 of Fig. 2; and

Fig. 5 is an enlarged transverse vertical sectional view taken substantially as suggested by the line 5—5 of Fig. 1.

Referring more particularly to the drawing, the reference numeral 10 is generally employed to designate a building wall, in the opening 11 of which a window is to be located. A metal window sill 12, embodying the invention, is mounted on the lower masonry wall of the opening 11 and is designed to provide a weather-tight enclosure for this exposed portion of the masonry.

In the present disclosure of the invention, the sill 12 is shown in two parts 13. These parts are of identical design but may be of different lengths and the sole purpose of this portion of the disclosure of the invention is to indicate that, through the use of the various structural parts, a sill embodying the invention may be readily installed in a window or other opening in which the masonry of the base wall of the opening is of varying length. It will be understood from the following description of the invention that through the use of one, two, or more sill parts 13, together with the accompanying anchoring and connecting parts, the invention is applicable to a great variety of buildings. Only one of the identical parts 13 of the sill shown will be described in detail. Each part consists of a base 15 which constitutes the covering portion for a masonry wall. The inner edge of the base 15 is defined by upstanding return-bent flanges 16 and 17. These flanges form a vertical, downwardly opening pocket 18. Flange 17 extends beneath the base 15 and terminates in a rib 19. The base 15 is at an incline from the perpendicular to flange 17 for the purpose of providing the usual and necessary sill incline. The front side of the base 15 is formed with a depending flange 21, the lower edge of which is shaped to provide a full length rib 22. As suggested in Fig. 5 of the drawing, the return-bent flanges of the sill are intended to be interfitted with a frame 23, adapted to be mounted in a window opening. This interfitting provides a weather-tight arrangement as between the sill and the frame. The flange 21, it will be noted, overlaps and projects downwardly of the vertical face of the masonry wall.

Although the sill is shown in two parts, the connection thereof with the jamb of the building opening is the same as though the sill were in one part. A member 24 is provided as a means of enclosing the ends of the sill. Each member comprises a channel 26, from one edge of which depends a flange 27. The member extends transversely of the masonry wall and, at its inner end, includes an upstanding flange 28. As is indicated in Fig. 1, the channel is embedded in the masonry of the jamb at sill level and, due to the flanges 27 and 28, is firmly anchored against lateral displacement. The opening of this channel is substantially flush with the face of the jamb. The

channel walls are very close together and are intended to have frictional engagement with an end of the sill base 15. It will be noted that the upstanding flange 28 is spaced slightly from the top wall of the channel in order that flange 16 of the sill may move into a position such that the flanges 16 and 17 will at least partially enclose the upstanding flange 28. Although it will be more fully described hereinbelow, it is pointed out that the interfitting engagement as between an end of the sill and the member 24 enables endwise movement of the sill without disturbing the member or in any way loosening it from the masonry. Of course, due to the sill and member incline, any moisture that is present at the point of overlap will drain off the front edge of the sill and not penetrate the interfitting connection of these parts.

In most instances of metal sill installation it is good practice to anchor the sill intermediate its ends. For this purpose the present invention discloses an anchor 29. This anchor is a relatively narrow member that extends transversely of the masonry wall and comprises a base 31 that terminates at its forward end in a depending flange 32. The edge of the flange 32 finishes in an angular lip 33. Base 31 and flange 32 abut the horizontal and vertical faces of the masonry substantially as shown in Fig. 5. The other end of the base 31 continues in an upstanding flange 34 that in turn terminates in a rearwardly and upwardly inclined flange 36. Depending from the base is a strap 37 that terminates in an angular flange 38. This strap and flange project downwardly into the masonry and constitute the securing portion for the anchor. The sill 13 is intended to be snapped into engagement with the anchor, the end of the flange 36 being positioned above the rib 19 on the rear side of the sill and the lip 33 projected into the recess formed by the rib 22 on the forward side of the sill. This interfitting of the sill and parts of the anchor prevents upward and sidewise displacement of the sill but leaves the sill free for slight endwise movement which is of the nature of expansion and contraction.

When a sill embodying the present invention is to be applied to enclose the masonry of a somewhat wide window or other opening, it is found expedient, from the standpoint of manufacture and assembly, as well as accommodation of the sill to unusual dimensions, to form the sill in two or more parts. To accomplish this and still provide a suitable weather barrier, it is necessary to provide a connector for the adjacent ends of the sill parts. To this end, a combined connector and cover plate 39 is provided. The connector is a relatively narrow member that extends transversely of the masonry wall and consists of two permanently connected parts 41 and 42. Part 42 takes the form of a cover plate and terminates at its inner end in an upstanding flange 43 which is slightly return-rolled, as indicated at 44. The other end of this part terminates in a depending flange 46 that overlaps the adjacent portions of depending flanges 21 of the adjacent sill plates. Part 41 has a central rib 47 which is permanently joined along the longitudinal center of the under face of part 42. From this rib, part 41 is formed with flanges 48 which, along the sides of the part, are somewhat return-bent, as at 49. It may thus be seen that parts 41 and 42 combine to provide side opening recesses 51, into which the ends of the bases 15 of the sill plates may project. The flanges 48 are spring-like and thus frictionally engage the sill plates. The innermost end of part 41 terminates in an upstanding flange 52 and this flange, of course, projects into the recesses 18 of the sill plates. Any moisture tending to enter the connector at any place of overlap with the sill plates, will be caught in the trough-like recesses 51 and, due to the incline of the connector, will flow to the forward edge of the masonry and have no opportunity to penetrate it.

It will be particularly noted that the combined connector and cover plate above described further carries out the idea of the invention of enabling the various sill

plates to have some endwise movement with respect to each other without in any way affecting the weather tightness of the joints. Expansion or contraction of the sill plates, due to temperature changes, will merely cause the ends of the plates to move slightly further into, or slightly outwardly of, the recesses of the connector and no damage or misplacement of any of the parts of the sill may take place.

From the foregoing it is clearly evident that the present invention provides a sill that may readily be installed in a window opening of any dimensions by merely producing or cutting one or more sill plates to such dimensions, fitting their remote ends in the channel members anchored to the masonry at the jambs and, of course, if the sill is of such length as to require two or more plates, the inner ends of such plates will be projected into the recesses of the connector 39.

Although applicant has shown and described only one form of the invention, it will be apparent that modifications may be made thereto in adapting the structure to the base walls of window openings of different proportions or material, and such modifications are contemplated as being within the spirit and scope of the invention insofar as they are set out in the annexed claims.

Having thus set forth my invention, what I claim as new and for which I desire protection by Letters Patent is:

1. A metal sill to cover the lower masonry wall of a window or other opening comprising a plate extending over and completely covering said wall, end members secured to said wall at the ends of said opening, said members having channels opening toward said opening and being adapted to frictionally engage the ends of said plate, an anchor having a depending portion embedded in said wall and depending flanges on said plate engageable with said anchor in a manner to permit endwise movement of said plate with respect to said anchor.

2. A metal sill to cover the lower masonry wall of a window or other opening comprising a plate extending the full length of said wall, flanges defining the longitudinal edges of said plate, end members secured to said wall at the ends of said opening, channels forming part of said members, said channels opening toward each other and adapted to frictionally receive and engage the ends of said plate, an anchor, a depending portion of said anchor being embedded in said wall, said anchor having end engagement with said flanges, said engagement being such as to permit endwise movement of said plate with respect to said anchor.

3. A metal sill to enclose the lower masonry wall of a window or other opening comprising a plate extending the full length of and completely covering said wall, an upstanding flange defining one side of said plate, said flange being engageable with the lower rail of a frame adapted to be mounted in said opening, a depending flange defining the other side of said plate, said depending flange being adapted to overlap the vertical edge of said wall, an anchor having a depending portion embedded in said sill, the ends of said anchor being so interengaged with the flanges of said plate as to permit endwise movement thereof and prevent vertical and lateral displacement from said wall.

4. A metal sill to enclose the lower masonry wall of a window or other opening comprising a plate extending the full length of and completely covering said wall, end members secured to said wall at the ends of said opening, channels forming part of said members being open toward each other, said channels frictionally engaging the ends of said plate, an upstanding flange defining one side of said plate, said flange being engageable with the lower rail of a frame adapted to be mounted in said opening, a depending flange defining the other side of said plate, said depending flange being adapted for overlapping relation with the vertical edge of said wall, an anchor, a depending portion of said anchor being se-

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cured to said wall, said anchor extending transversely of said wall and having the ends thereof interengaged with the flanges of said plate in a manner to enable endwise movement of said plate with respect to said anchor.

5. A metal sill to enclose the lower building wall of a window or other opening comprising a plate extending the full length of and completely covering said wall, end members secured at the ends of said opening, channels in said members opening toward each other, the width of said channels being such as to provide frictional interfitting for the ends of said plate, an anchor for said plate, a depending portion of said anchor being secured to said wall, said anchor having a body portion resting on said wall, end flanges of said body portion having frictional interengagement with the front and rear marginal edges of said plate. 15

6. A metal sill to enclose the lower building wall of a window or other opening comprising plates adapted to extend over and cover the entire length of said wall, end members secured at the ends of said opening, channels on said end members extending transversely of said wall and opening toward each other, said channels receiving and frictionally engaging the remote ends of said plates, a connector for the adjacent ends of said plates, oppositely opening channels frictionally receiving the adjacent ends of said plates, said connector extending transversely 25

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of said wall and concealing the interfitting of said plates therewith.

7. A metal sill to enclose the lower building wall of a window or other opening comprising a pair of plates adapted to extend over and cover the entire length of said wall, an upstanding flange defining a corresponding side of each of said plates, a depending flange defining the opposite side of each of said plates, a connector extending transversely of said plates, oppositely opening channels on said connector frictionally engaged with the adjacent ends of said plates, the ends of said connector overlying and engaging adjacent portions of the side flanges of said plates.

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