March 27, 1956 G. D. PETERSON 2,739,359

WEATHER STRIPPING FOR A HORIZONTAL SASH

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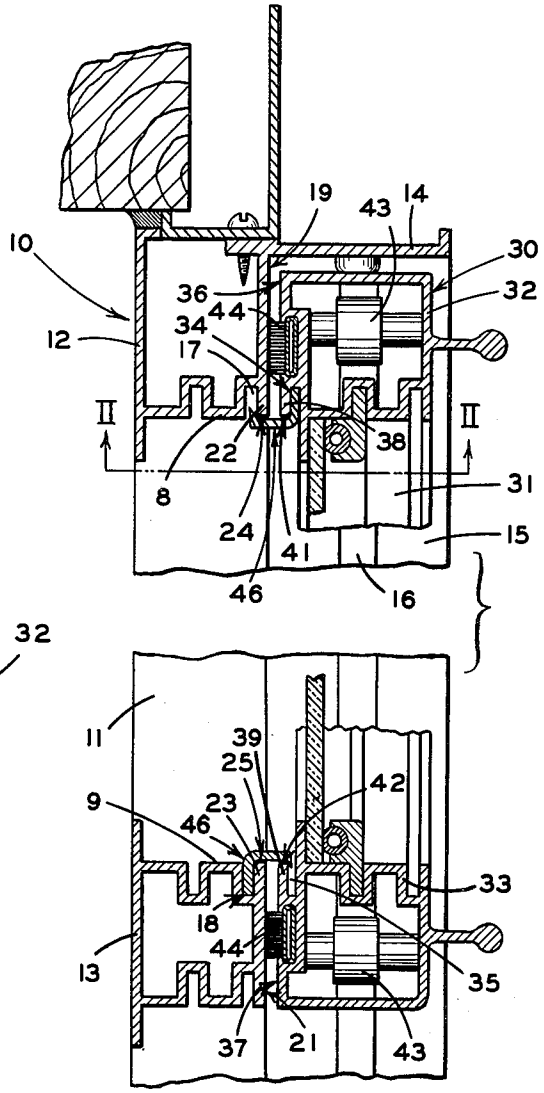

fig. 1

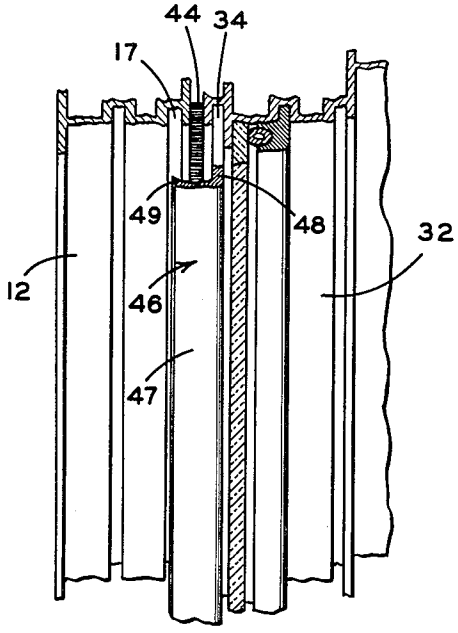

fig. 2

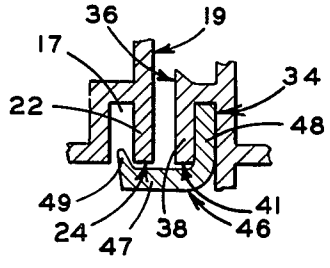

fig. 3

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WEATHER STRIPPING FOR A HORIZONTAL SASH

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4 Claims. (Cl. 20—69)

This invention relates in general to weather stripping and more particularly to a type thereof adapted to provide a seal between the vertical elements of a sash frame and the correspondingly adjacent stiles of a horizontally slidable sash mounted within said frame.

My United States Patent No. 2,663,917, patented December 29, 1953, discloses in substance the type of sash and sash frame with which the subject matter of the present invention is intended to be used.

It was found that, in this type window, strong winds could force cold air to pass between the adjacent vertical elements of the sash and frame in spite of the pile weather strips disposed along the full length of the opposed surfaces of such elements. It was also found that snow and other forms of moisture, under certain extreme weather conditions, could force their way into or through the space between the vertical sash and frame elements. Thus, the need for means to prevent such entry of snow and moisture became apparent but previously known designs of weather stripping were inapplicable, and no way was apparent to utilize previously known styles of weather stripping without materially and undesirably redesigning the window.

Accordingly, a primary object of this invention is the provision of weather stripping for sealing the space between the vertical elements of a sash frame and the adjacent stiles of a horizontally slidable sash mounted within such frame.

A further object of this invention is the provision of weather stripping, as aforesaid, which can be installed with a minimum change in window structures presently in use and manufacture, and which does not detract from the appearance of the window.

A further object of this invention is the provision of weather stripping, as aforesaid, which is simple in structure, inexpensive to manufacture and can be easily installed or removed by persons unskilled in the construction and/or assembly of windows.

Other objects and purposes of this invention will become apparent to persons familiar with this type of equipment upon reading the following specification and examining the attached drawing in which:

Figure 1 is a horizontally sectioned view of a sash and sash frame employing the invention.

Figure 2 is a broken, sectional view taken along the line II—II of Figure 1.

Figure 3 is an enlarged fragment of Figure 1 in one area of the weather strip.

In carrying out the above mentioned objects, as well as others related thereto, I have utilized a glazing slot in the vertical elements of the sash frame and have provided a similar slot in the sash stiles adjacent to the vertical frame elements. The weather stripping is inserted into one slot of this pair of mutually parallel slots in adjacent vertical sash and frame elements and extends into the other of said pair of slots, thereby covering the space between said sash and frame elements.

For purposes of convenience in description, the terms

"outer" and "inner" and derivatives thereof, when used herein, will refer to the normal weather side and interior side, respectively, of the window. The terms "center" and "peripheral" and derivatives thereof will refer to the geometrical center of the window.

Construction

A detailed description of the construction and operation of the general type of window to which this invention is especially applicable has been disclosed in my United States Patent No. 2,663,917, patented December 29, 1953. Therefore, the description herein will be limited to those details of the window structure particularly referred to, and necessary for, a full disclosure of the subject invention.

As shown in Figure 1, the frame **10** is provided with a bottom frame element **11** and a pair of vertical frame elements **12** and **13**. The one vertical element **13** may, as shown herein, be a mullion. The vertical element **12** and bottom element **11** have inwardly extending, substantially perpendicular flanges **14** and **15**, respectively. The bottom flange **15** has an upstanding rail **16** extending the full length thereof intermediate its inner and outer edges.

The opposed surfaces **8** and **9** of the vertical elements **12** and **13** have opposed, aligned glazing slots **17** and **18**, respectively, which extend the full length of said elements and are disposed adjacent to the inner faces **19** and **21**, respectively, of said vertical elements. The walls **22** and **23** between the slots **17** and **18** and the faces **19** and **21**, respectively, have centerward or opposed edges **24** and **25**, respectively, positioned co-planar with said opposed surfaces.

The frame elements may be fabricated from any convenient, conventional material, such as aluminum, and may be secured together as described in said Patent No. 2,663,917.

The sash **30** has a bottom element **31** and a pair of stiles **32** and **33**, which in this embodiment, are tubular and have substantially similarly shaped centerward faces. However, the centerward or opposing faces of the vertical elements **32** and **33** have grooves **34** and **35**, respectively, which are disposed lengthwise of their elements and adjacent to their outer faces **36** and **37**. Said grooves are substantially identical to said slots **17** and **18** both in width and depth. The walls **38** and **39** provided between the grooves **34** and **35** and the faces **36** and **37**, respectively, of the elements **32** and **33** have centerward or opposing edges **41** and **42**, co-planar with the edges **24** and **25** of the frame elements **12** and **13**.

The sash is provided with rollers **43** at its lower corners which support said sash upon said rail **16** for horizontal movement therealong. Pile weather strips **44** are positioned upon the outer faces **36** and **37** of the elements **32** and **33** for engaging the opposing inner faces **19** and **21** of the frame elements **12** and **13**, respectively, when the window is in closed position. The sash **30** may be fabricated from conventional materials and assembled in such manner as disclosed in Patent No. 2,663,917.

The weather strip **46** (Figures 1 and 3) is substantially L-shaped in cross-section, having a web **47** and a perpendicularly disposed flange **48** along one edge thereof. Along the other edge of said web **47** is bead **49** which extends therefrom in substantially the same direction as said flange. The web **47** is of width substantially equal to the distance between the slot **17** and the groove **34**, so that, when the flange **48** is inserted into said groove **34** in the corresponding sash stile and the window is in closed position the bead **49** will extend into the slot **17** of a vertical frame element. Likewise, the spacing and dimensions of the parts are such that the bead **49** of the same strip

will extend into the groove **35** when the flange **48** is inserted into the slot **18** under similar circumstances.

The weather strip may be fabricated, as by extrusion from any conventional material such as metal, rubber or synthetic plastic, but it is preferably of resilient, moldable, material such as one of the vinyl compounds. It is preferably in one piece (Figure 2) extending from the top to the bottom of the window.

Operation

The installation of the weather strips **46** and the operation of the sash equipped with such strips is probably obvious from the foregoing description.

When the sash **30** is in closed position (Figure 1), the edges **24** and **41** are coextensive centerwardly as are the edges **25** and **42**. The flange **48** of a weather strip **46** is inserted into the groove **34** in the sash stile **32**. The web **49** thus extends across the edges **24** and **41** and the bead **49** extends into the slot **17**.

In a similar, but reversed, manner the flange of a strip **46** is inserted into the slot **18** of the mullion **13** so that the bead **49** extends into the groove **35** and the web **47** extends across the edges **25** and **42**. Accordingly, the sash **30** can be moved freely out of the closed position along the rail **16** without any interference whatsoever from the weather strips **46**. In such movement, the weather strip mounted upon the sash stile **32** moves with the sash away from the frame element **12**, and the stile **33** moves away from the weather strip mounted upon the mullion **13**.

The particular shape of the strip **46** and the parts of the window with which it is used permits it to be used in both of the positions indicated in the respective upper and lower parts of Figure 1 without modification. It is required only to reverse a length of strip end-for-end with respect to its position in and with the slot **17** and the groove **34** to insert it into the slot **18** and groove **35**, or vice versa. This is obviously advantageous in that it requires only one design of strip to function effectively in both places of use.

The weather strips may be installed for seasonal removal, or permanently installed by appropriately cementing their flanges **48** into their respective grooves or slots.

Although a preferred embodiment of my invention has been disclosed hereinabove for illustrative purposes, it will be understood that modifications thereof will lie within the scope of this disclosure unless the appended claims specifically state to the contrary.

I claim:

1. In weather stripping for a sash mounted upon a sash frame for horizontally slidable movement with respect thereto, said sash having a pair of stiles and said frame having a pair of vertical elements juxta-positioned with respect to, and outwardly of said stiles when said sash is closed, the combination comprising: means providing a pair of lengthwise grooves in the opposed faces of said stiles adjacent to the outer edges thereof; means providing a pair of lengthwise slots in the opposed faces of said vertical elements adjacent to the inner edges thereof; and a pair of elongated weather strips each extending laterally between one of said grooves and the adjacent slot, one said strip having a portion anchored in the groove and the other strip having a portion anchored in the slot.

2. In weather stripping for a sash mounted upon a sash frame for horizontally slidable movement with respect thereto, said sash having a pair of stiles and said frame having a pair of vertical elements juxta-positioned with respect to, and outwardly of, said stiles when said sash is closed, the combination comprising: means providing a pair of lengthwise grooves in the opposed faces of said stiles adjacent to the outer edges thereof; means providing a pair of lengthwise slots in the opposed faces of said vertical elements adjacent to the inner edges thereof; and a pair of elongated weather strips each extending laterally between one of said grooves and the adjacent slot, one said strip having a first portion anchored in the groove and a second portion extending into the adjacent slot, and the other strip having a first portion anchored in the slot and a second portion extending into the adjacent groove, said strips extending substantially from the top to the bottom of said sash.

3. In weather stripping for a sash mounted upon a sash frame for horizontally slidable movement with respect thereto, said sash having a pair of stiles and said frame having a pair of vertical elements juxta-positioned with respect to, and outwardly of, said stiles when said sash is closed, the combination comprising: means providing a pair of lengthwise grooves in the opposed faces of said stiles adjacent to the outer edges thereof; means providing a pair of lengthwise slots in the opposed faces of said vertical elements adjacent to the inner edges thereof; a pair of identical, elongated weather strips having a web with a flange extending normally therefrom along one edge thereof and a bead extending therefrom along the other edge thereof in substantially the same direction as said flange, the flange of one strip being anchored in a groove and its bead extending into the adjacent slot, and the flange of the other strip being anchored in the other slot and its bead extending into the adjacent groove; said strips permitting horizontal movement of said sash in one direction and opposing its movement in the other direction.

4. In weather stripping for a sash mounted upon a sash frame for horizontally slidable movement with respect thereto, said sash having a pair of stiles and said frame having a pair of vertical elements juxta-positioned with respect to, and outwardly of said stiles when said sash is closed, the combination comprising: means providing a pair of lengthwise grooves in the opposed faces of said stiles adjacent to the outer edges thereof and lying substantially in a first common plane with respect to each other; means providing a pair of lengthwise slots in the opposed faces of said vertical elements adjacent to the inner edges thereof, said slots lying substantially in a second common plane, said second common plane being parallel with said first common plane; and a pair of elongated weather strips each extending laterally between one of said grooves and the adjacent slot, one of said strips having a portion anchored in the groove and the other strip having a portion anchored in the slot.

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