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J. T. COOK ET AL
WINDOW CONSTRUCTION

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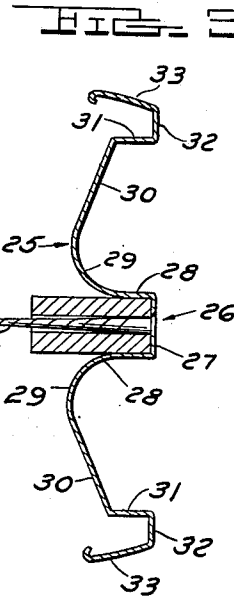
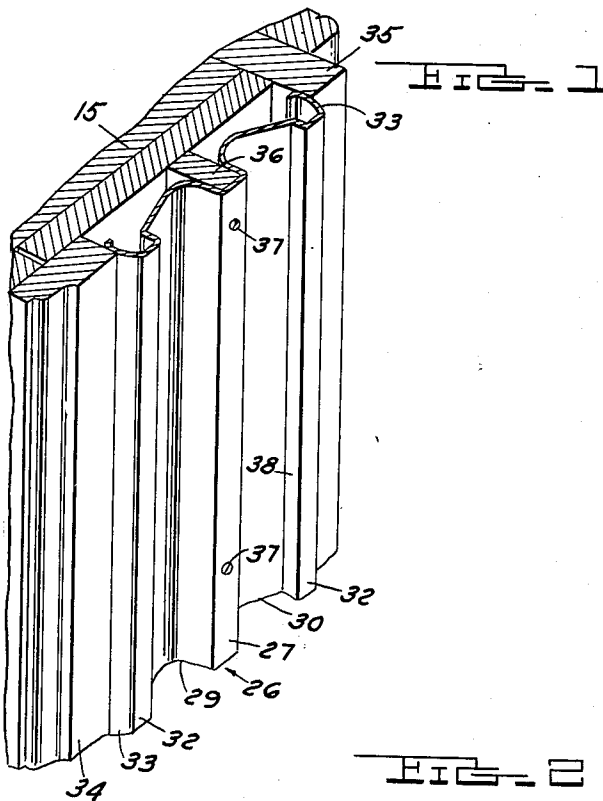
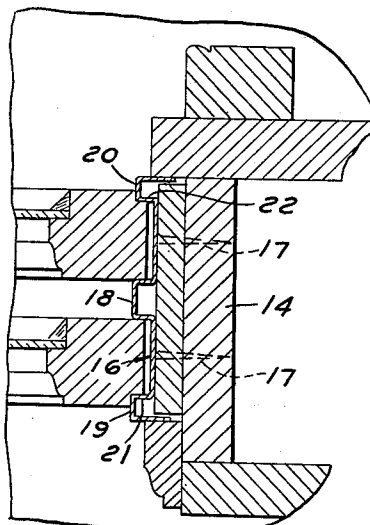
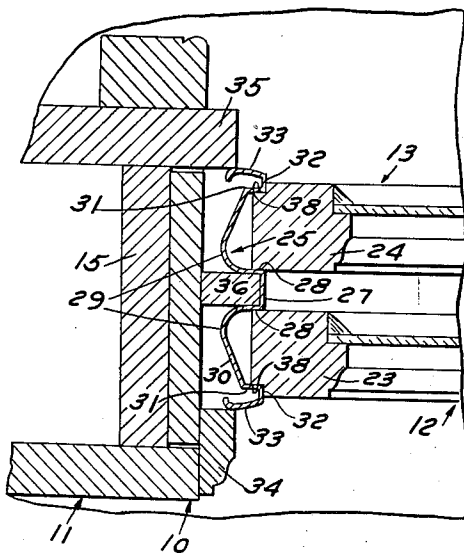


FIG. 2



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WINDOW CONSTRUCTION

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9 Claims. (Cl. 20—69)

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The invention relates generally to window constructions and refers more particularly to improvements in a combined sash guide and weatherstrip for windows of the type having vertically slidable sashes.

Windows of the above general type are usually provided with a casing having vertical side frame members and having stops respectively supported on the members adjacent the inner and outer sides of the casing. In the so-called double hung windows a parting stop is ordinarily provided on the frame midway between the inner and outer stops. The parting stop projects between the two sashes and acts as a spacer for the latter.

With the above in view, it is an object of this invention to provide a combined sash guide and weatherstrip at one side of the window casing characterized in that it yieldably urges the sashes into retaining relation to the fixed guide at the opposite side of the casing, applies force components to the sashes in directions to urge the latter into weathersealing engagement with the parting stops between the sashes, and affords sufficient lateral shifting movement of the sashes relative to the casing to release the sashes from the fixed guide and permit withdrawal of said sashes from the casing.

Another object of this invention is to provide a one-piece strip having a channel-shaped section intermediate the opposite longitudinal edges of the strip for receiving a parting stop and having the flanges of the channel turned laterally outwardly on radii of substantial length to provide flexible wing parts which respectively extend toward the inner and outer stops on the casing between the frame members of the casing and the adjacent side edges of the sashes. The flanges of the channel are free from attachment to the parting stop and have in effect a rolling contact with the stop upon flexing of the wing parts so as to distribute the bending stresses over a substantial area of the flanges.

Still another object of this invention is to provide a strip of the above type having outwardly opening channel-shaped sections at the free edges thereof. The outer flanges of the channel-shaped sections have the terminal edges engageable with the inner faces of the inner and outer stops, and the inner corner portions of the channel-shaped edge sections respectively slidably engage in grooves formed in the sashes at the outer corners thereof. Thus both sashes are not only effectively guided by the strip but, in addition, the wing parts of the strip yieldably urge the sashes into sealing contact with the

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flanges of the channel-shaped intermediate section of the strip.

A still further object of this invention is to provide a strip of the type set forth in the preceding paragraph rendering it possible to shift the sashes laterally in a direction toward the strip a sufficient distance to release the opposite side edges of the sashes from the adjacent frame member of the window casing. Thus either or both sashes may be readily inserted into and removed from the window casing.

It is a still further feature of this invention to removably secure both the strip and associated parting stop to the adjacent frame member of the casing by common fasteners which extend outwardly through openings provided in the base portion of the intermediate channel of the strip.

The foregoing as well as other objects will be made more apparent as this description proceeds especially when considered in connection with the accompanying drawing, wherein:

Figure 1 is a fragmentary perspective view of a combined sash guide and weatherstrip embodying the features of this invention;

Figure 2 is a fragmentary cross-sectional view through a window of the double hung sliding sash type and embodying the combined sash guide and weatherstrip disclosed in Figure 1;

Figure 3 is an enlarged cross-sectional view through the combined sash guide and weatherstrip, and showing the same applied to the parting stop for the window.

Referring more in detail to the drawing, the numeral 10 designates a double hung window of the sliding sash type comprising a casing 11 and a pair of sashes 12 and 13. The casing 11 has vertical side frame members 14 and 15 constructed in accordance with conventional practice. The inner face of the frame member 14 is covered with a guide 16 comprising an elongated one-piece metal strip having portions at longitudinally spaced points secured to the frame member 14 by fastener elements in the form of screws 17.

The guide strip 16 is formed to provide a laterally outward opening channel-shaped section intermediate opposite longitudinal edges thereof and this section projects laterally inwardly with respect to the frame member 14 between the sashes 12 and 13 to provide a parting stop 18. The inner marginal edge of the guide strip 16 is formed to provide a channel-shaped stop 19 and the outer marginal edge of the guide strip 16 is formed to provide a similar stop 20. The stop 19 slidably engages in a groove 21 formed in the

adjacent portion of the sash 12 and the stop 20 slidably engages in a groove 22 formed in the adjacent portion of the sash 13. Thus, the vertical side edges of the two sashes adjacent the frame 14 are guided by the strip 16.

The opposite vertical sides 23 and 24 respectively of the two sashes are guided for vertical movement relative to the frame 15 by a strip 25 which also serves as a weather seal. The strip 25 is formed from a single piece of spring metal or some equivalent material and extends for substantially the full length of the frame 15. As shown, particularly in Figure 3 of the drawing, the strip 25 is fashioned intermediate opposite longitudinal edges thereof with an outwardly opening channel-shaped section 26 having a base portion 27 and having side flanges 28. The flanges 28 are turned laterally outwardly on radii of substantial length to provide arcuate portions 29. The arcuate portions 29 are extended obliquely toward a vertical plane including the base 27 to provide wing parts 30, and the wing parts are turned laterally inwardly to form flanges 31 which extend generally parallel to the flanges 23. The flanges 31 are turned outwardly to form flanges 32 which normally lie in a common vertical plane including the base 27 of the channel 26. The extremities of the flanges 32 are turned laterally outwardly to provide flanges 33 and the terminal edges of the flanges 33 are curled laterally inwardly. It will further be noted from Figure 3 of the drawing that the flanges 33 are arcuate in cross section and have a common center of curvature.

In use, the strip 25 is mounted on the casing 11 adjacent the frame member 15 between the suitable stops 34 and 35 respectively secured to the frame member 15. As shown particularly in Figure 2 of the drawing, a parting stop 36 is removably secured to the frame member 15 midway between the stops 34 and 35. The parting stop 36 projects inwardly between adjacent sides of the two sashes and is received in the channel 36 of the strip 25. In the present instance, the strip 25 is secured to the parting stop 36 and the latter is secured to the frame 15 by common fastener elements 37. These fastener elements are in the form of screws and extend through openings formed in the base 27 of the channel 26 at points spaced longitudinally of the strip. The construction is such that the strip 25 and parting stop 36 may be attached as a unit to the frame 15.

Referring again to Figure 2 of the drawings, it will be noted that the wing parts 30 of the strip 25 are spaced laterally inwardly from the frame 15 and are also spaced laterally outwardly from the adjacent edges of the two sashes. The outer vertical corners of both sashes are formed with vertical grooves 38 providing right angle surfaces which are respectively slidably engaged by the flanges 31 and 32 on the strip 25. The terminal edges of the flanges 33 of the strip 25 respectively slidably engage the inner surfaces of the stops 34 and 35 on the frame 15.

When the various parts of the window 10 are in their relative assembled positions shown in Figure 2, the wing parts 30 of the strip 25 are placed under tension by the two sashes and the terminal edges of the flanges 33 are compressed against the adjacent stops. The construction is such that the wing parts 30 of the strip 25 yieldably urge the sashes laterally against the guide strip 16 on the frame member 14 of the casing 11 but, in addition, apply force components to

both sashes in directions to urge the same in weathersealing contact with opposite sides of the parting stops. Any expansion or contraction of either or both sashes is automatically taken up by the flexible strip 25 so that the desired weatherseal is assured at all times. The frictional contact between the strip 25 and the adjacent side edges of the sashes is sufficient to enable holding the sashes in any desired position relative to the casing without the use of sash balances or equivalent devices.

The spacing between the frame 15 and adjacent portions of the strip 25 is at least as great and preferably somewhat greater than the depth of the grooves 21, 22 formed in the sashes 12 and 13 respectively. As a result of this construction either or both sashes may be readily removed by merely shifting the same relative to the casing 11 in a direction toward the frame member 15. As a result of this shifting movement of the sashes, the wing parts 30 of the strip 25 are displaced in directions toward the frame 15 sufficiently to release the sashes from the guide strip 16, and thereby enable the sashes to be withdrawn from the casing 11. It will of course be understood that the nature of the strip 25 also enables installing the sashes within the casing 11 while the stops are in place.

Attention is directed to the fact at this time that the flanges 28 of the channel 26 are free from direct attachment to the parting stop 36. This is important in that it enables the arcuate sections 29 of the strip to roll along opposite sides of the stop 36 during flexing of the wing parts 30 so that the bending stresses are distributed over a greater area of the strip and the liability of fracture of the strip due to such bending stresses is reduced to a minimum.

What we claim as our invention is:

1. In combination with a window casing having a vertical side member, a sash supported for vertical sliding movement relative to the side member and stops on the side member at opposite sides of the sash, a combined sash guide and flexible weather strip having a part seated on the first stop at the inner side of the sash and having a flexible wing part extending toward the second stop between adjacent faces of the side member and sash in spaced relation to both said faces, said strip having a portion at the free edge slidably engageable with the inner side of the second stop and having portions adjacent said free edge respectively engageable with the edge of the sash facing the side member and with the adjacent outer surface of said sash, and guide means slidably engageable with the opposite side edge of the sash and holding said sash in a position wherein the wing part of said strip is under tension, the spacing of said wing part relative to the adjacent faces of the side member and sash and the extent of movement of the wing part toward the side member upon shifting of the sash toward said member being sufficient to release the opposite side of the sash from the guide means to permit removal of the sash.

2. The structure defined in claim 1 wherein the wing part of the strip yieldably urges the sash against the portion of the strip which extends along the said one side of the first stop.

3. The structure defined in claim 2 wherein the wing part of the strip has a channel shaped section at its free edge opening in a direction toward the side member and wherein the terminal portion of the outer flange of said channel is

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flexibly and frictionally engageable with the inner face of the second stop.

4. The structure defined in claim 3 wherein the side of the sash adjacent the vertical side member has a vertical groove in the outer corner for slidably receiving the inner corner of said channel-shaped section.

5. In combination with a window casing having a vertical side frame member and having laterally spaced inner and outer stops on said member, a parting stop on the frame member substantially midway between the inner and outer stops, and sashes respectively slidably supported on the casing at opposite sides of the parting stop, a one-piece flexible metal strip having a laterally outwardly opening channel shaped section intermediate the opposite side edges for receiving the parting stop and having the base of said channel seated against the inner face of the parting stop, the opposite flanges of the channel extending along opposite sides of the parting stop free from connection with the latter and curved in an outward direction relative to the parting stop to provide wings, said wings being spaced from the frame member and adjacent side edges of the sashes and having portions at the free edges respectively slidably engageable with the inner surfaces of the inner and outer stops, means on each wing adjacent the free edge thereof providing guide surfaces respectively engageable with the edge of the adjacent sash facing the frame member and with the adjacent outer surface of said adjacent sash, and guide means slidably engageable with the opposite side edge of each sash and holding the sashes in positions wherein the wing parts of the strip are under tension, the spacing of said wings relative to the side member and adjacent side edges of the sashes and the extent of movement of said wings upon shifting of the sashes toward said member being sufficient to release the opposite side edges of the sashes from the guide means to permit removal of the sashes.

6. The structure defined in claim 5 wherein the wings of the strip each has a channel-shaped section at its free edge which opens toward the frame member and wherein the outer flange of each of the last-named channel-shaped sections has a terminal portion which flexibly and frictionally engages the inner face of the adjacent stop.

7. The structure defined in claim 6 wherein the side edges of the sashes facing the frame member have vertical grooves at the outer corners for respectively slidably receiving the inner corner portions of the last-named channel-shaped sections.

8. In combination with a window casing having a vertical side member, a sash supported for vertical sliding movement relative to the side member and stops on the side member having

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opposed surfaces at opposite sides of the adjacent side edge of the sash, a combined sash guide and flexible weather strip on one of the stops and having a part extending along and seated against the surface of said one stop, said strip having a flexible wing part between the adjacent faces of the side member and sash in spaced relation to both faces, said parts being joined by an arcuate part having its concave side towards the sash, whereby said arcuate part has a rolling contact with the surface of said one stop upon flexing of said wing part relative to the side member, and guide means slidably engageable with the opposite side edge of the sash including stops at opposite sides of said opposite side edge of the sash, said wing part having means adjacent its free end engageable with the sash and yieldably urging the latter toward said guide means.

9. In combination with a window casing having a vertical side member, a sash supported for vertical sliding movement relative to the side member and stops on the side member having opposed surfaces at opposite sides of the adjacent side edge of the sash, a combined sash guide and flexible weather strip seated on one of the stops at the inner side of the sash and having a part extending along and seated against the surface of said one stop, said strip having a flexible wing part between the adjacent faces of the side member and sash in spaced relation to both faces, said parts being joined by an arcuate part having its concave side towards the sash, whereby said arcuate part has a rolling contact with the surface of said one stop upon flexing of said wing part relative to the side member, and guide means slidably engageable with the opposite side edge of the sash including stops at opposite sides of said opposite side edge of the sash, said wing part having a portion at its free end slidably engageable with said surface of the other stop and having portions adjacent said free end respectively engageable with the said face of said sash and with the outer side of the sash to yieldably urge the latter toward the first-mentioned part and toward said guide means, the spacing of said wing part relative to the side member and sash and the extent of movement of said wing part toward the side member upon shifting of the sash toward said member being sufficient to withdraw the opposite side edge of the sash from said guide means to permit removal of the sash.

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