Jan. 20, 1959 W. H. ZEGERS 2,869,184

CLIP FOR COMBINATION WEATHERSTRIP AND SASH BALANCE

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Fig. 1

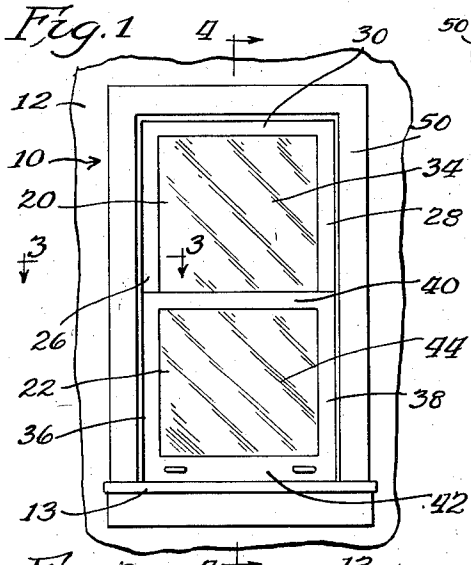


Fig. 2.

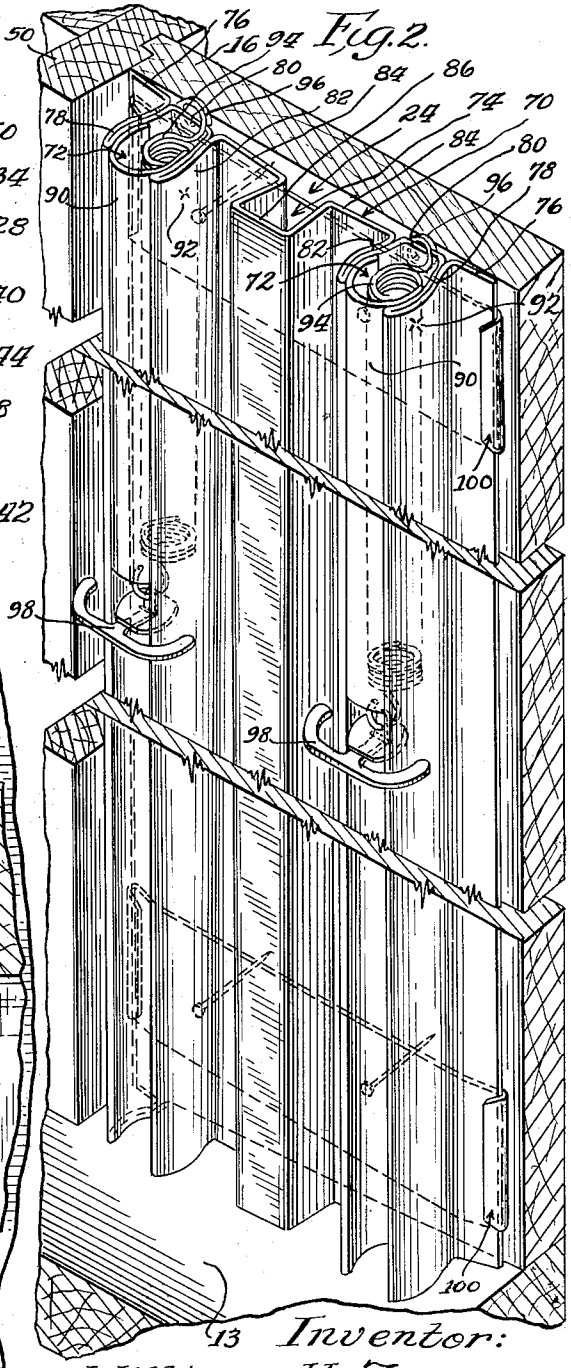
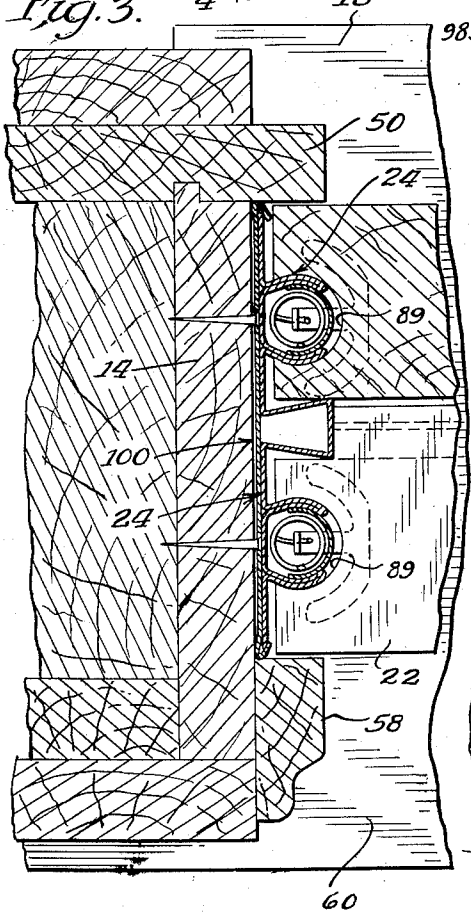


Fig. 3.



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Fig. 4.

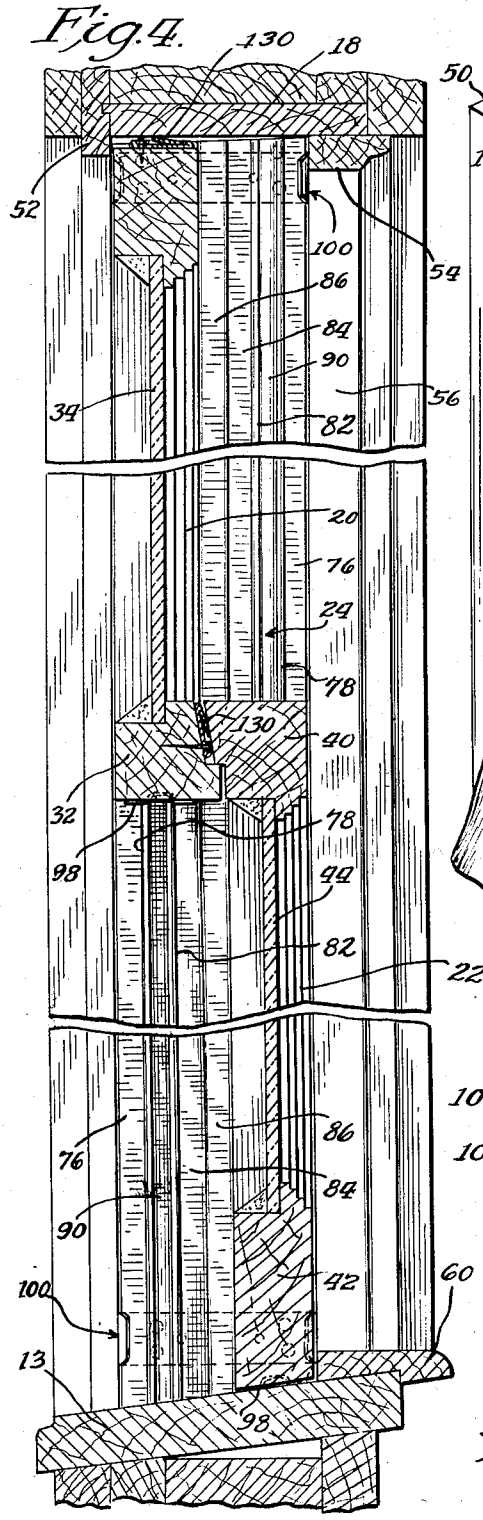


Fig. 5.

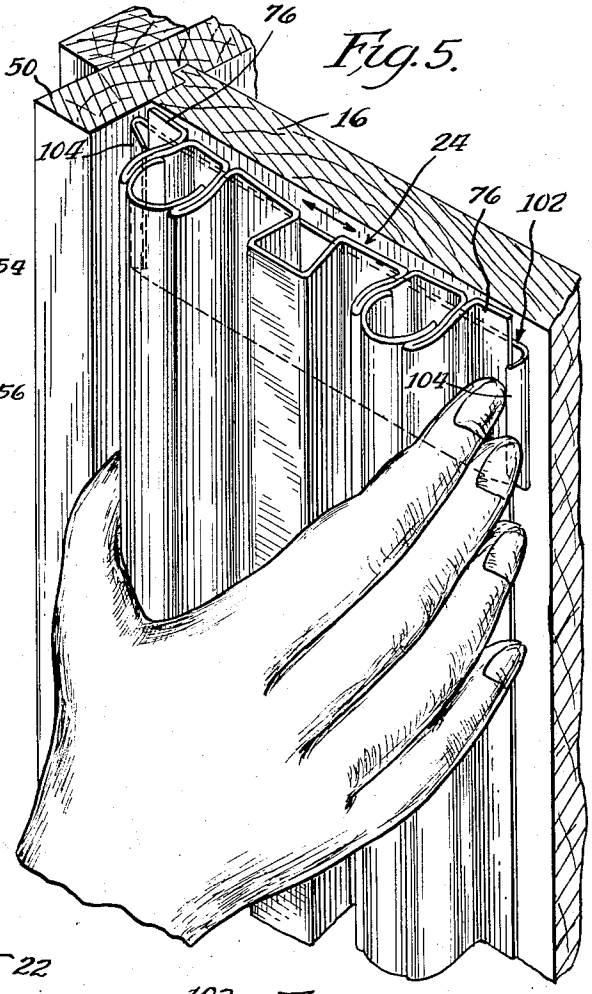


Fig. 8.

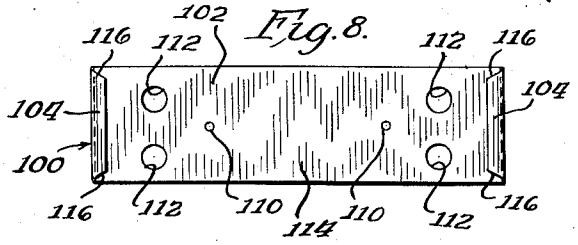
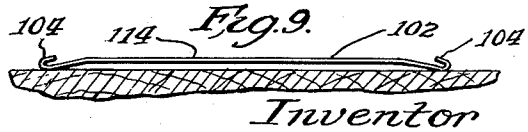


Fig. 9.



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Fig. 6.

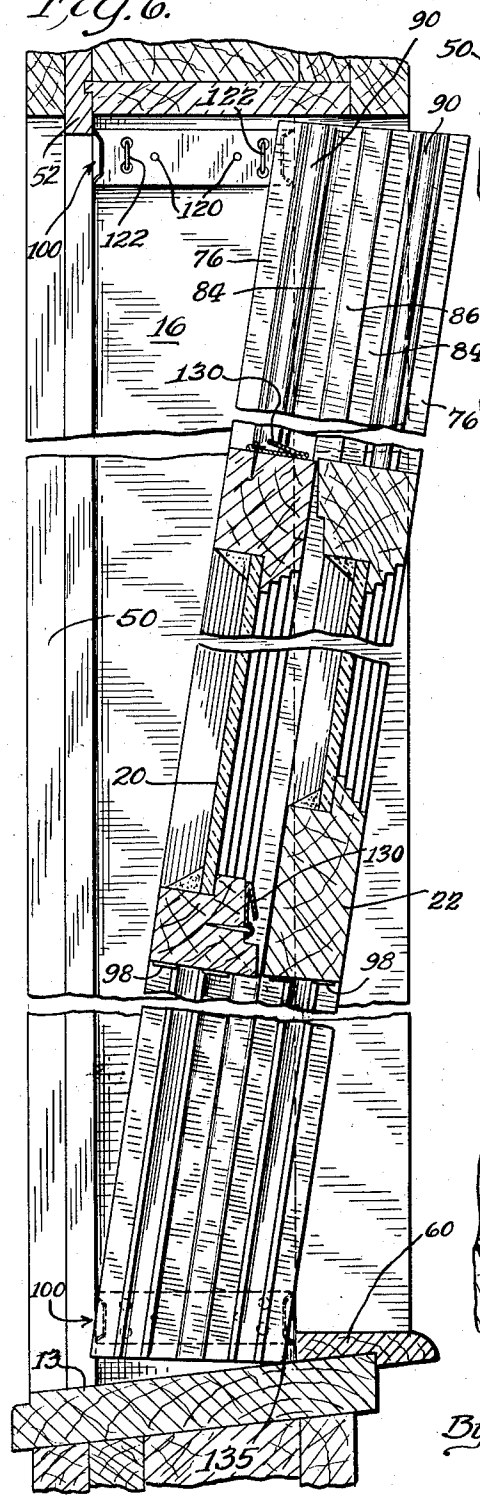
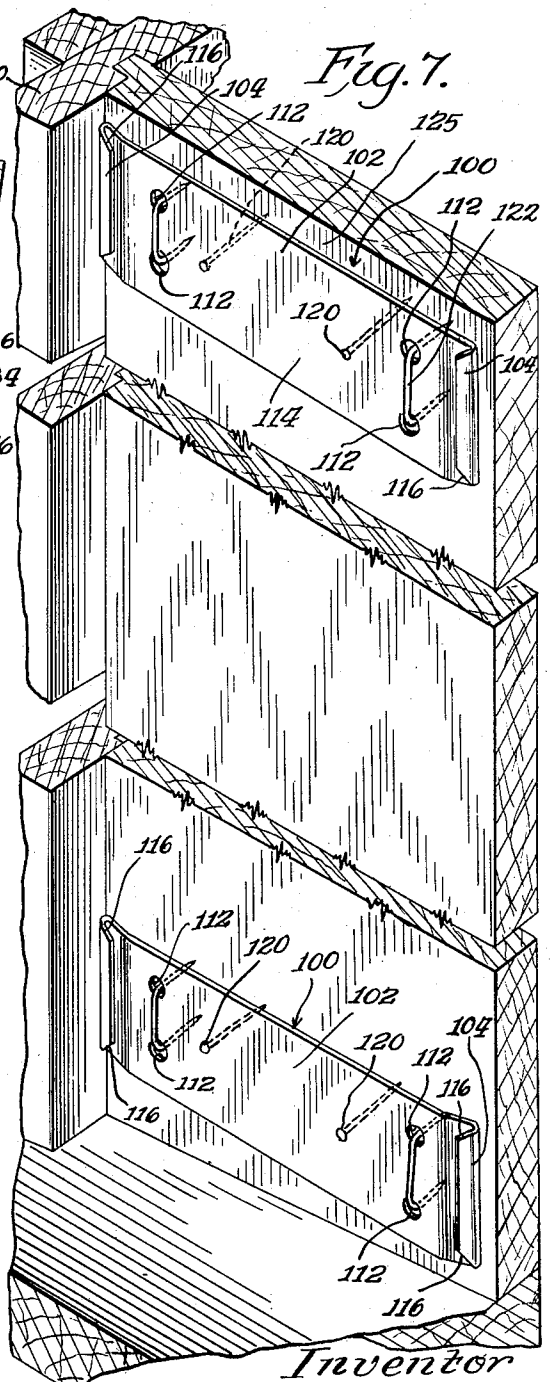


Fig. 7.



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2,869,184

CLIP FOR COMBINATION WEATHERSTRIP AND SASH BALANCE

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Application April 3, 1957, Serial No. 650,436

7 Claims. (Cl. 20—52)

My invention relates to a clip for a combination weatherstrip and sash balance, and more particularly, to a clipping or attaching device for detachably securing sash balances to window frames.

In recent years a combination weatherstrip and sash balance type of sash mounting has replaced the old style sash weight type of mounting. While these new balances eliminate the need for sash weights, and the double stile forming the elongate passageways in which the sash weights move, and thus have greatly simplified window construction besides permitting the use of window frames of less width for windows of a given sash, removal of sashes for replacement or repair is complicated by the fact that the sash balances as well as the inner and outer stops must also be removed.

As sash balances of this type are conventionally secured to the window frame or the like, sash balance removal ordinarily is tedious and time consuming. Moreover, the balance is frequently damaged during the process of removing the nails or the like that secure it in place.

One of the principal objects of my invention is to provide a combination weatherstrip and sash balance that is quickly and easily removed.

A further principal object of my invention is to provide a window construction in which the sashes and the sash balances may be removed as a unit after a minimum of dismantling steps are performed.

Another object of the invention is to provide a simplified mounting device for combination weatherstripping and sash balances which permits the sash to be secured to the window frame without any permanent deformation whatsoever of the sash balances.

A further object of the invention is to provide a clip for securing combination weatherstripping and sash balances to window frames in which it is the clip that is fixed to the frame and not the combination weatherstrip and sash balance.

Still another object of the invention is to provide a new method of detachably securing window sashes in operating position.

Yet a further object of the invention is to provide a sash window mounting that permits ready removal of sashes, weatherstrips, and balances for repair or replacement even by those not skilled in the building trades.

Yet another object of the invention is to provide a window construction that not only provides complete weather protection and easy window operation but also permits ready removal of the sashes, weatherstrips, and balances when desired.

Still a further object of the invention is to provide a window construction that is economical of manufacture, convenient in use, and readily adapted to a wide variety of applications.

Other objects, uses, and advantages will be obvious or become apparent from a consideration of the following detailed description and the accompanying drawings.

In the drawings:

Figure 1 is an elevational view of a window arranged in accordance with the principles of my invention, as viewed from inside the building;

Figure 2 is a perspective view of one of the window frame jambs of the window shown in Figure 1, illustrating a preferred embodiment of my invention applied to a combination weatherstrip and sash balance of a preferred type;

Figure 3 is a cross-sectional view along line 3—3 of Figure 1;

Figure 4 is a cross-sectional view along line 4—4 of Figure 1;

Figure 5 is a view similar to that of Figure 2 illustrating the manner in which the combination weatherstrip and sash balance of Figure 2 is applied to my mounting device;

Figure 6 is a view similar to that of Figure 4 but illustrating the manner in which the upper and lower window sashes, and both the combination weatherstrips and sash balances mounting these sashes, may be removed as a unit after the sash balances have been detached from their mountings:

Figure 7 is a view similar to that of Figure 2 illustrating my detachable mountings after the sash balance has been removed from the window frame jamb;

Figure 8 is a plan view of one of the clips forming my sash balance mounting device; and

Figure 9 is a side view of the device shown in Figure 8 positioned against the jamb before it is fixed to the jamb, illustrating one of the structural features of the device.

Reference numeral 10 of Figure 1 generally indicates a window construction in which my invention is applied, installed in a building 12. For purposes of illustration, the window construction 10 is shown in this and other figures of the drawings as comprising a window frame including side jambs 14 and 16, sill 13 and head section 18. These members provide the familiar rectangular window frame in which is mounted an upper sash 20 and a lower sash 22. Sashes 20 and 22 are mounted in the window construction 10 for vertical movement by combination weatherstrip and sash balance members 24, which are best illustrated in Figures 2 and 3.

The upper sash 20 may comprise side rails 26 and 28, a top rail 30, a bottom rail 32, and a window pane 34 associated with the sash rails in the usual manner. The bottom sash 22 may comprise side rails 36 and 38, top rail 40, bottom rail 42, and window pane 44 associated with these latter rails in the usual manner.

The window construction 10 for illustrative purposes is shown as including outer casing members 50, the ends of which project somewhat beyond the outer sides of jambs 14 and 16 to provide outer stops for the upper sash 20, while a casing member 52 (see Figure 4) is provided across the top of the window frame at the outside thereof to form an outer stop for the upper sash member at the top of the window frame. On the inner side of the window, top stop strip 54 is provided together with side stop strips 56 and 58. At the bottom of the window, a stool member 60 is mounted above the window sill 13.

The illustrated combination weatherstrip and sash balance is one of the forms described in the application of Henry J. Zegers, Jr., Serial No. 576,672, filed April 6, 1956, now abandoned and assigned to the assignee of the instant application, the disclosure of which is hereby incorporated by reference. As best shown in Figures 2 and 3, the sash balance housings 24, which are identical, each comprise a relatively thin elongated strip of metal 70 (such as aluminum) shaped to provide a pair of sash balance spring receiving or operating passages 72 and a parting strip channel 74. The strip 70 is shaped with relatively thin and flat side flanges 76 which merge into

overlapped arcuate portions **78** that in turn merge with relatively flat lengths **80** that form the bases for the passages **72**. The lengths **80** merge into overlapped arcuate portions **82** that in turn merge into relatively flat lengths **84** that are integral with channel shaped portion **86** that is provided to receive the conventional parting strip found in double hung windows (this strip is omitted in the window construction illustrated).

The arcuate portions **78** and **82** on each side of the flanges **76** curve toward each other and generally conform to the shape of curved grooves **89** formed in the side rails of the sashes.

A semi-circular section **90** is mounted in the upper portion of each channel **72**, these sections **90** being spot welded as at **92** or otherwise secured to the respective adjacent arcuate portions **78** and **82** that define the channels **72**. The sections **90** terminate slightly short of one half of the strip **24** and are proportioned to enlarge somewhat the curvature of portions **78** and **82** of their upper ends as by biasing or bending the upper ends of the respective pairs of portions **78** and **82** away from each other. The sections **90** also form closing members between the doubled arcuate portions **82** and provide housings for coil springs **94** that are employed in mounting the window sashes. As shown in Figure 2, one coil **96** of a spring **94** that is received in each channel **72** is looped over the respective flat lengths **80** to anchor the springs at their upper ends. Springs **94** at their lower ends carry horizontally disposed sash supports **98**.

When the sashes are mounted in the window construction, the overlapped arcuate portions **78** and **82** are received in the rounded grooves **89** of the respective sash side rails (see Figure 2). The supports **98** are received under the bottom rails of the respective sashes. When the sashes **20** and **22** are in their lowermost positions, they are supported mainly by the tension exerted on the springs **94**, but when they are in their uppermost positions, they are frictionally engaged by the upper ends of arcuate portions **78** and **82** as sections **90** bias them into engagement with the rounded surfaces of the respective grooves **89**. In moving between these two extreme positions, the weight of the sashes is gradually transferred between the springs **94** and the arcuate overlapping portions **78** and **82**, depending upon which way the sashes are moved.

Heretofore, sash balances of the type illustrated have been secured in position by nails or screws passing therethrough into the jamb, as, for instance, through flanges **76** and flat areas **84**. When it is desired to remove the sashes, the nails or other securing means must be removed to detach the balances from the window jambs. This is a time consuming and tedious job and in the nature of things, frequently results in damage to and deformation of the sash balance housings **24**.

In accordance with my invention, I provide a simplified mounting device **100** in the form of a clip that has the configuration best illustrated in Figures 7, 8, and 9. Device **100** comprises an elongate strip **102** of relatively stiff material, such as aluminum, having in the illustrated embodiment a generally quadrilateral configuration and provided with hooked ends **104**. Hooked ends **104** are formed by doubling over two opposed ends so that they extend toward each other.

Referring to Figures 8 and 9, strip **102** is preferably formed with a pair of relatively small perforations **110** and a pair of relatively large perforations **112** at each end of the strip. Referring to Figure 9, preferably the portions of the strip **102** that are adjacent the hooked ends **104** are bent or disposed out of the plane of the central portion **114** for a purpose hereinafter made clear. Also, preferably the corners of the doubled end portions that form hooked ends **104** are trimmed at their corners as at **116**.

In accordance with my invention, before the sash balance housings **24** are applied to the jambs, a clip **100** is secured adjacent the top and bottom of each jamb in a manner indicated in Figure 7. It will be seen that the devices **100** extend substantially perpendicular to the sashes and to the jambs, so that the hooked ends **104** are vertically disposed. The devices **100** may be secured in place by appropriate nails **120** (or screws) passing through perforations **110** or by staples **122** passing through each pair of perforations **112**, or both. The perforations **112** are made relatively large to provide ample room for inserting the inwardly projecting ends of staples **122** at each end of the staple.

Since each device **100** has its ends bent as generally illustrated in Figure 9, when the nails and/or the staples are applied to fix the device against the jamb, the center portion **114** of the device will be forced inwardly into engagement with the jamb, which bends the hooked ends **104** back into the plane of the portion **114**. This preset bend in the device **100** is provided to insure that the hooked portions will not bend or curl toward each other when the device is nailed or stapled in place. It has been found that when this bend is omitted, the portion **114** is given a concave bend (opposite to the showing of Figure 9) when the staples or nails are applied thereto, which causes the ends **104** to project away from the jamb and interfere with further installation and operation of the sashes.

When the devices **100** have been applied to each jamb in the manner indicated in Figure 7, the sashes are mounted between the sash balances, and then the sash balances and the sashes are inserted into the window opening as a unit. When the unit formed by the sashes and the sash balances has been positioned upright in the window opening, the ashes are vertically aligned with each other adjacent the center of the window (see Figure 6), if this has not already been done, and then the respective ends of each sash balance are gripped one at a time in the manner indicated in Figure 5 to secure them to the devices **100**. As indicated in Figure 5, the installer grips the longitudinally extending sides of the sash balance and presses these sides towards each other, which causes the sash balance to compress somewhat and/or bend somewhat about its middle portion, or the channel portion **86**. The relatively flat flanges **76** may then be positioned behind the hooked ends **104**, after which the installer releases the balance so that it returns substantially to its original effective width (see Figure 3).

When both of the sash balances have been secured to the jambs in this manner, the sashes are mounted for operation in the window. Stops **54**, **56** and the remaining components of the window construction are applied in the usual manner. Also, appropriate weatherstripping **130** may be applied to the sashes as deemed desirable or necessary.

When it is desired to remove the sashes, the inner stops **54** and **56** are removed, and the sashes are vertically aligned adjacent the center of the window opening. The ends of the sash balances are then gripped one at a time in the manner indicated in Figure 5 to compress or bend the balances so that the flanges **76** may be removed from behind the hooked ends **104** of the device **100**. When this has been done, the sashes and sash balances may be rocked inwardly and removed in the manner indicated in Figure 6.

Those familiar with the building trades will appreciate the advantages provided by my invention. For instance, removal of window sashes after they have once been installed is made easy and convenient. By employing screws to fix stops **54** and **56** in place, the sashes may be removed even by those having minimum experience in this sort of work, and after all trim is in place.

In construction work, the window sashes may be delivered after window frames have been installed with the clips **100** applied thereto and can be snapped into position at any time during construction. The sash and window frames can be completely primed, even behind the combination weatherstrip and sash balance elements. The

sash balances can be removed until plastering work is completed if they were previously installed, and if plaster brick or building settlements bow the window frame, the sashes are quickly removed for refitting operations. Moreover, in these days of quickly changing styles, my invention makes it easy to change window sashes from one style to another without damage to either the sash or the weatherstripping employed. Of course, if either of the panes 34 or 44 is accidently broken, the sashes are readily removed for reglazing at a convenient location.

The trimming of the corners of the devices 100 prevents sharp corners from digging into the sashes when they are moved vertically. Also, it has been found that the dies employed in forming the device 100 are much more cheaply made if these corners are eliminated.

An important feature of my invention is that it enables the home builder to provide the best type of window at minimum cost.

Materials other than aluminum, having appropriate characteristics, may be employed to form the clip 100 and the sash balances.

The foregoing description and the drawings are given merely to explain and illustrate my invention and the manner in which it may be performed, and the invention is not to be limited thereto, except insofar as the appended claims are so limited, since those skilled in the art who have my disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

I claim:

1. A window structure for a window frame including spaced side jambs, a sill and a head section, said window structure comprising a pair of combination weatherstrip and sash balance units, each of said units comprising an elongate strip of resilient material formed with track means and laterally extending side flanges that extend longitudinally of the unit, a sash received between said units and formed with surfaces along its side rails that are complementary to and cooperate with said track means whereby movement of the sash longitudinally of the units is guided, said units further comprising resilient means that is secured between said units and said sash, and a plurality of clips fixed to said jambs and releasably securing said units thereto, each of said clips comprising a strip of relatively stiff material disposed substantially perpendicular to the respective units and the jambs, with both ends of the strip being hooked, said flanges of said units being respectively received behind the respective hooked ends of said clips.

2. A window structure for a window frame including spaced jambs, a sill and head sections, said window structure comprising a pair of sash balance units having relatively thin laterally extending side edges, a vertically movable sash secured between said balances, and spaced hooked elements for releasably securing said balances to the respective jambs of the window frame, said hooked elements each comprising a length of relatively flat material having hooked ends, means for fixing said elements to said jambs in a substantially horizontal position, said edges of said units being received within the hooked ends of said elements.

3. A window structure for a window frame including spaced jambs, a sill and a head section, said window structure comprising a pair of combination weatherstrip and sash balance units, each of said units comprising an elongate strip of flexible metal formed with longitudinally extending track means and side flanges that project laterally from said track means, a sash received between said units and formed with surfaces that are complementary to and cooperate with said track means, whereby movement of the sash longitudinally of the units is guided, said units further comprising resilient means that is secured between said units and said sash, and a plurality of clips fixed to said jambs and releasably securing said units thereto, each of said clips comprising a strip of relatively stiff material disposed substantially perpendicular to the respective jambs, with both ends thereof being hooked away from the jamb to which the clip is secured, said units being secured to said clips by flexing said strips of said units about their longitudinal axes to position said side flanges thereof behind the hooked ends of said clips.

4. In a window structure including a window frame formed by spaced jambs, a sill, and a head section, a pair of combination weatherstrip and sash balance units, and a sash secured between said units, said units each comprising an elongate strip of flexible metal formed with longitudinally extending track means that guide the movement of the sash with respect thereto and side flanges that project laterally from said track means, a device for releasably securing the respective units to the respective jambs, said device comprising a generally flat, relatively stiff and generally quadrilateral element having two of its opposed ends doubled over on the same side of the element, the tips of said ends thereby extending generally toward each other, said tips being spaced apart a distance that is less than the distance between the outwardly extending edges of said side flanges, the side flanges being received within said doubled over tipped ends and means for fixing said element to a jamb in a generally horizontally extending position, with the other side of said element abutting the jamb, whereby one of the above mentioned units may be secured to the jamb by flexing same about its longitudinally extending axis and positioning the side flanges thereof behind the doubled over ends of said element, and then releasing the unit to permit same to unflex to the extent permitted by the ends of said element.

5. The device set forth in claim 4 wherein said element further comprises a relatively flat central portion spacing angled portions extending away from the plane of said central portion in the direction that is opposite to the direction that said ends are doubled over, said angled portions including said opposed ends, whereby, when said central portion is fixed flush against the jamb, said doubled over ends are bent back into the plane of said center portion.

6. The device set forth in claim 5 wherein the corners of said doubled over ends are trimmed off.

7. In a window structure including a window frame formed by spaced jambs, a sill and a head section, a pair of combination weatherstrip and sash balance units, and a sash secured between said units, said units each comprising an elongate strip of flexible metal formed with longitudinally extending track means that guide the movement of the sash with respect thereto and side flanges that project laterally from said track means, a device for releasably securing the respective units to the respective jambs, said device comprising spaced anchor means secured to a jamb, said anchor means having hook portions extending inwardly toward said units, the distance between the inner edges of said hook portions being less than the distance between the outwardly extending edges of said side flanges and the side flanges being received within said hook portions, whereby one of the above mentioned units may be secured to the jamb by flexing same about its longitudinally extending axis and positioning the side flanges thereof beneath said hook portions and then releasing the unit to permit same to unflex to the extent permitted by said anchor means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,654,805	Hamric	Jan. 3, 1928
2,065,325	Calhoun	Dec. 22, 1936
2,158,963	Gossen	May 16, 1939
2,678,477	Russell	May 18, 1954
2,761,173	Dinsmore	Sept. 4, 1956
2,775,795	Hettinger	Jan. 1, 1957