Aug. 26, 1958 D. M. HETTINGER ET AL 2,848,760

WEATHER SEAL AND SASH BALANCE FOR REMOVABLE SASH WINDOWS

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Fig. 1.

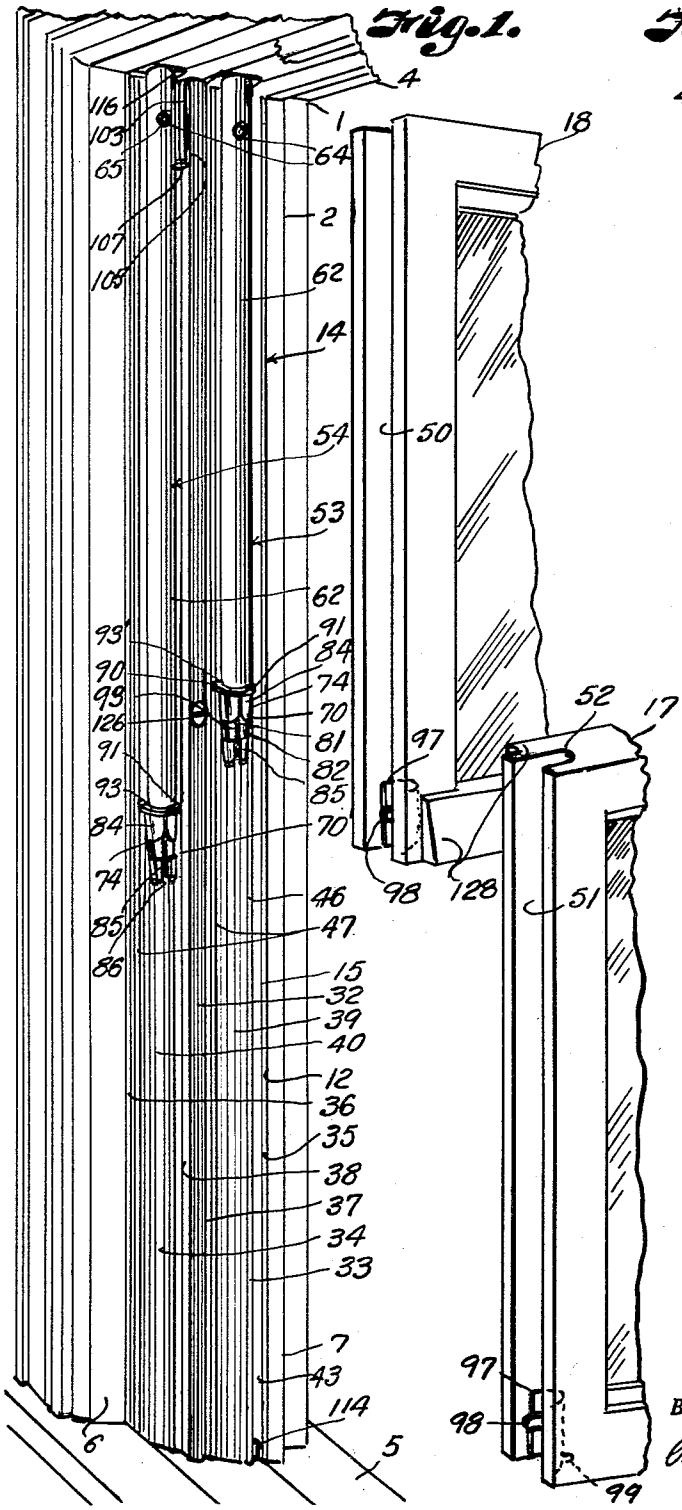
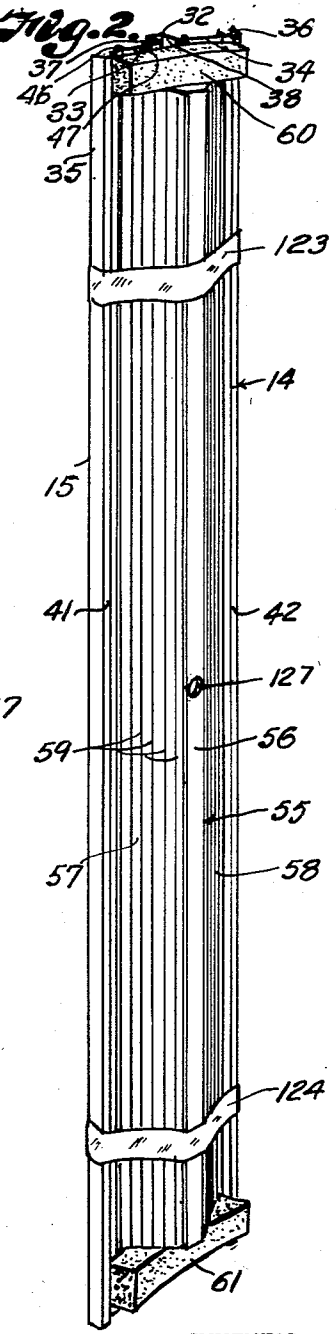


Fig. 2.



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Fig. 4.

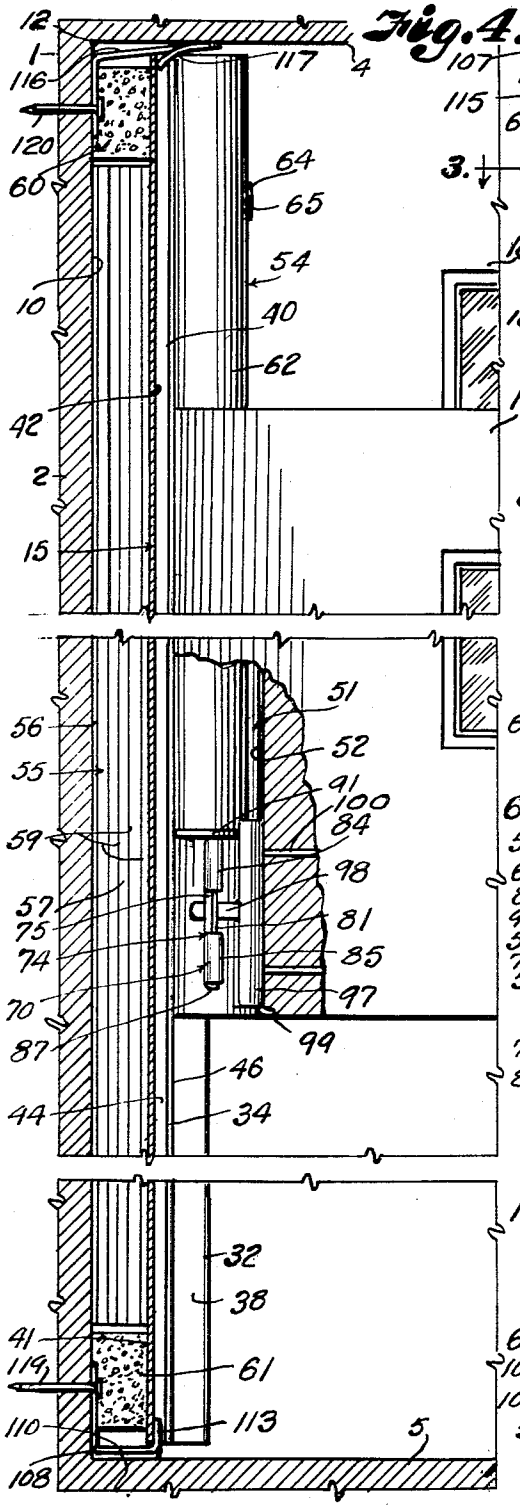
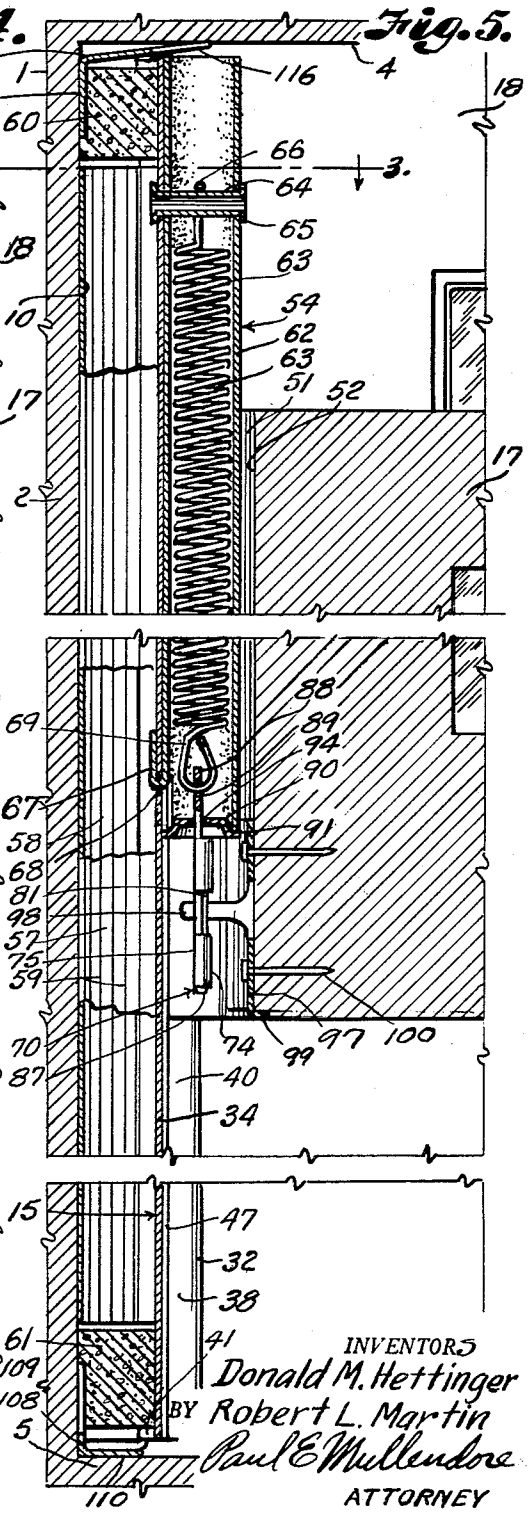


Fig. 5.



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Fig. 3.

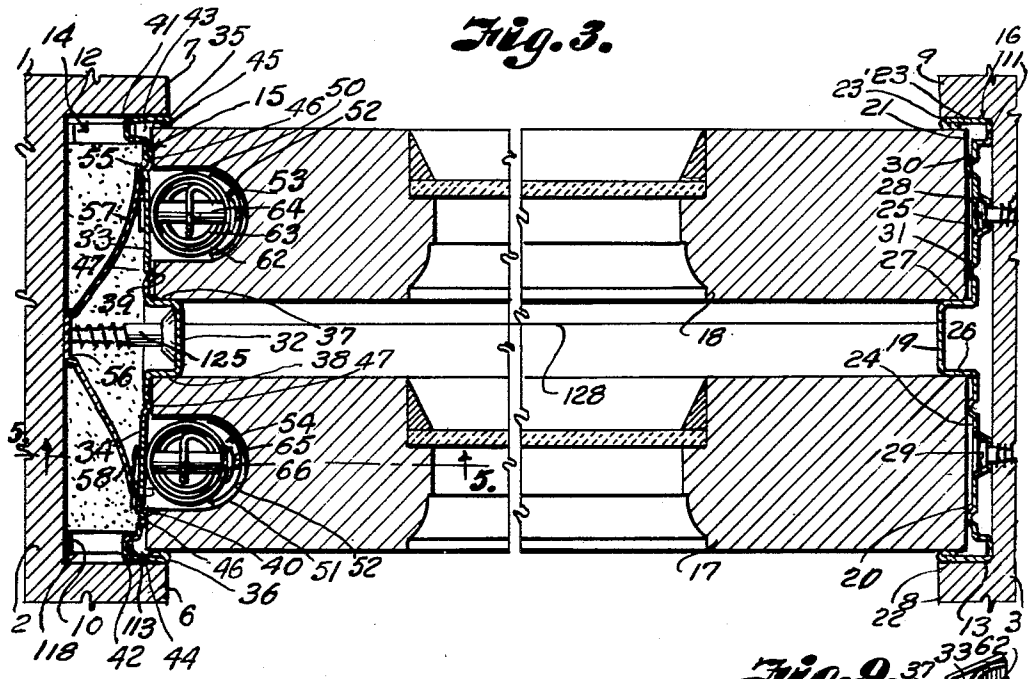


Fig. 9.

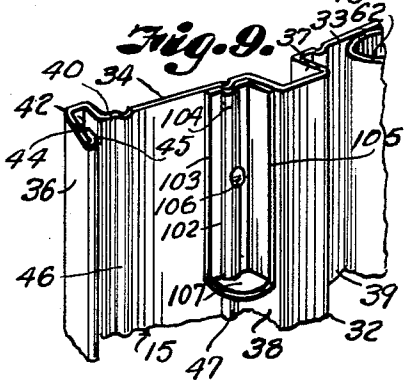


Fig. 7.

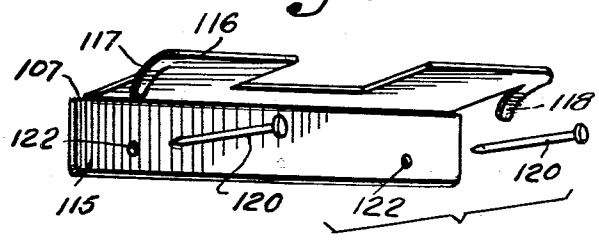


Fig. 10.

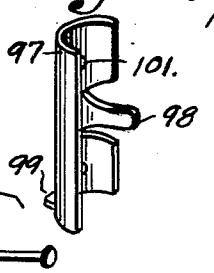


Fig. 11.

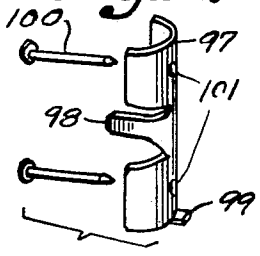
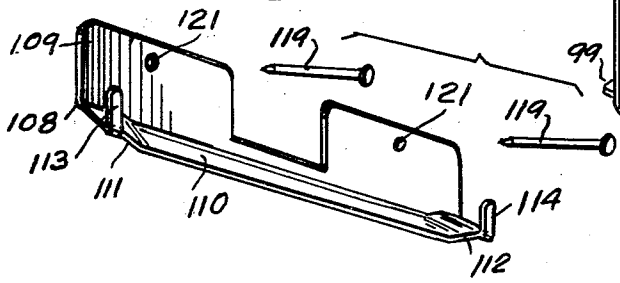


Fig. 8.



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Fig. 6.

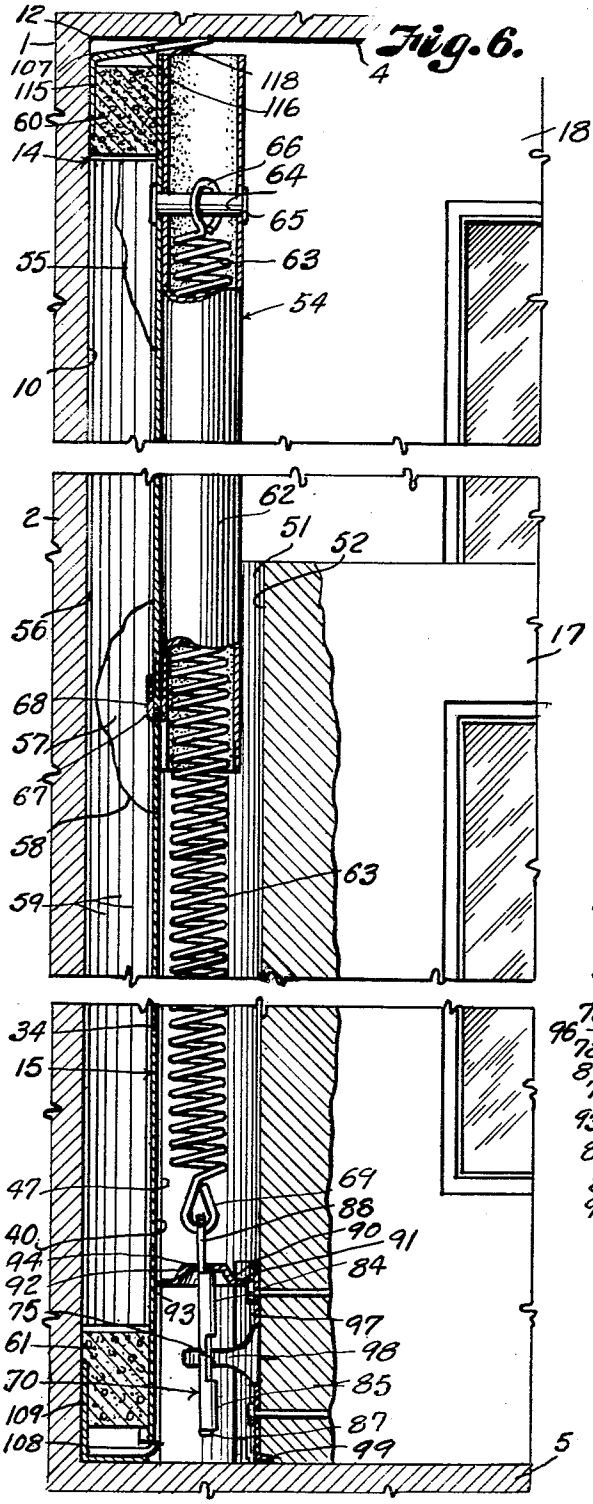


Fig. 12.

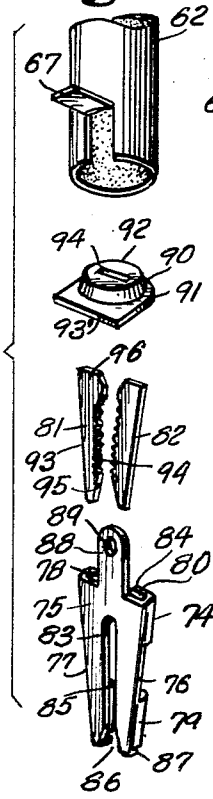


Fig. 13.

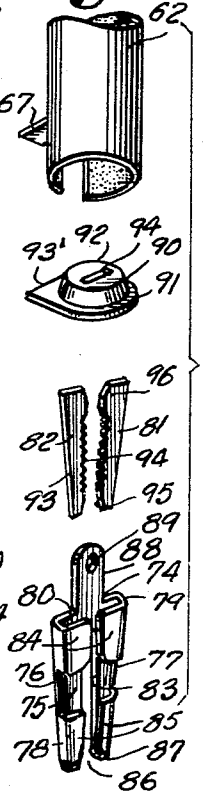


Fig. 14.

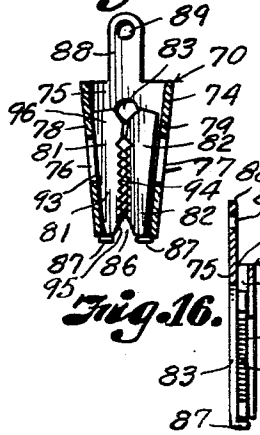


Fig. 15.

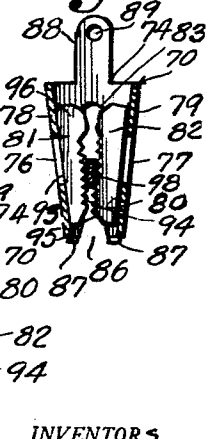
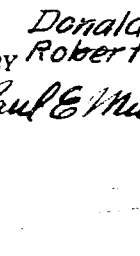


Fig. 16.



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2,848,760

WEATHER SEAL AND SASH BALANCE FOR REMOVABLE SASH WINDOWS

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Application June 18, 1956, Serial No. 591,936

14 Claims. (Cl. 20—52.2)

This invention relates to a double hung window structure of the type wherein the sash are removable from the frame of the window for cleaning, and has for its principal object to provide a window of this character with substantially weathertight seals between the sash guides and between the guides and the sash.

Other objects of the invention are to provide a sash guide and spring balance assembly adapted for installation as a single unit; to provide the spring balance with gripping elements for removably engaging parts on the sash and which are automatically operated responsive to manipulation of the sash relatively to the sash guides; to provide a guide and balance assembly which is to be snapped into position in the frame for facilitating insertion and for ready removal thereof for repair; to provide fittings for attachment to the sash to be engaged by the gripping elements of the balances and which are correctly positioned on the sash without measurements or other calculations; and to provide balances that are self-adjustable in the guides incidental to raising and lowering of the sash so as to prevent binding of the sash in the guides.

It is a further object of the invention to provide a weather-sealed guide and balancing assembly that is simple and inexpensive to manufacture, but which is of sturdy and long lasting construction.

A further object is to provide a guide and balance assembly that is quickly and easily installed by any carpenter.

In accomplishing these and other objects of the invention, improved structure is provided, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of one side of a window equipped with a guide and spring balance assembly constructed in accordance with the present invention and showing the sash removed therefrom to better illustrate the gripping elements of the spring balances and the fittings on the sash adapted to be gripped thereby for connecting the sash.

Fig. 2 is a perspective view of the rear side of the guide and spring balance assembly.

Fig. 3 is a horizontal section through the window frame and sash on the line 3—3 of Fig. 5 and showing both sash in their uppermost positions.

Fig. 4 is a vertical section through the side of the window frame and showing the upper sash in closed position and the lower sash raised, a portion of the lower sash being broken away to better illustrate the connection between the spring balance and the fitting attached to the sash.

Fig. 5 is a similar vertical section through the window frame but taken through the balance for the lower sash on the line 5—5 of Fig. 3, the sash being shown in the same relative position as they appear in Fig. 4.

Fig. 6 is a vertical section similar to Fig. 5 but showing both sash in closed position.

Fig. 7 is a perspective view of the upper fastener for the guide and spring balance assembly.

Fig. 8 is a similar view of the lower fastener.

Fig. 9 is a fragmentary perspective view of the upper portion of the movable guide, particularly illustrating the stop for limiting upward movement of the inner sash.

Fig. 10 is a perspective view of one of the fittings which is to be attached to the sash to make connection with the gripping elements of the spring balances.

Fig. 11 is a view of the fitting from the opposite side.

Fig. 12 is a perspective view of the lower end of one of the spring guides, the spring stop, and parts of the gripping element shown in disassembled spaced relation.

Fig. 13 is a similar view showing the same parts as viewed from the opposite side.

Fig. 14 is a section through one of the gripping elements and showing the jaws in their lowermost position and ready to be engaged for making a connection with the sash.

Fig. 15 is a similar section but showing the jaws in position for gripping the prong or pin of the sash fitting.

Fig. 16 is a central vertical section through the gripping element.

Referring more in detail to the drawings:

1 designates a window frame having side jambs 2 and 3, a header jamb 4, and a sill 5. The side jambs 2 and 3 have inner and outer stops 6 and 7 and 8 and 9. The stops 6 and 7 and 8 and 9 cooperate with inner faces 10 and 11 of the jambs to form vertical recesses 12 and 13, the recess 12 being of greater depth than the recess 13. Yieldingly mounted in the recess 12 is a movable sash guide and spring balance assembly 14. The assembly 14 includes a sash guide 15 that cooperates with a fixed guide 16 (Fig. 3) in the opposite recess 13 to slidably contain therebetween lower and upper sash 17 and 18.

The fixed guide 16 is formed of resilient sheet metal and extends from the head jamb 4 to the sill 5 of the window frame. The guide 16 has a central parting stop 19 positioned between the sash and includes integral side channel portions 20 and 21. The channel portions 20 and 21 have side flanges 22 and 23, webs 24 and 25, and flanges 26 and 27, which latter flanges constitute the sides of the parting stop 19. The edges of the outer flanges 22 and 23 are turned inwardly as indicated at 23' to engage the outer side face of the upper sash, and the inner side face of the lower sash, respectively, while the inner side face of the upper sash and the outer side face of the lower sash engage the portions 26 and 27. The web portions 24 and 25 of the channels engage the inner face 11 of the jamb 3 and are fixed thereto by fastening devices such as screws 28 and 29, as shown in Fig. 3. To facilitate the seal with the edge faces of the sash, the webs have spaced apart longitudinal ribs 30 and 31.

The movable guide 15 is likewise of resilient sheet metal and shaped to form a parting stop portion 32, spaced apart web portions 33 and 34, and outer flanges 35 and 36 that cooperate with flange portions 37 and 38 that form the sides of the parting stop 32 to provide channels 39 and 40. The web portions 33 and 34 connect with the outer flanges 35 and 36 by ribs 41 and 42 to enhance the rigidity of the guide and provide grooves 43 and 44 which extend the full height of the window opening to accommodate portions of fasteners by which the assembly 14 is yieldingly retained in the recess 12. The outer flanges also have inturned edges 45 that engage the outer side faces of the respective sash to further stiffen the outer flanges and to provide finished edges for the flanges to facilitate entrance of the edges of the sash, as later described. Each of the webs 33 and 34 of the guide member also have inwardly extending ribs 46 and 47 to make contact with side edges of the sash on opposite sides of inwardly extending grooves 50 and 51. The grooves 50

and 51 extend the full height of the sash and are of suitable width and have rounded bottoms 52 to accommodate freely the balancing mechanisms 53 and 54, to be later described.

The movable guide member is yieldingly retained with the ribs thereof in pressing contact with the side edges of the sash and the opposite side edges of the sash in pressing contact with the ribs of the fixed guide member by means of a spring element 55. The spring element 55 is also formed of resilient sheet metal and has a central rib portion 56 adapted to engage the face 10 of the jamb 2 and extending laterally and outwardly therefrom are resilient wing portions 57 and 58 which engage the outer faces of the web portions of the movable guide member, as best shown in Fig. 3. The spring element 55 is of less width than the spacing between the ribs 41 and 42, so that when the movable guide element is pressed into the recess 12 against action of the spring element 55, the wings 57 and 58 have room to slide on the outer face of the web portions 33 and 34 as the wings flatten under the pressure exerted on the guide member 15. To promote resiliency of the wings 57 and 58 and to stiffen the wings in the longitudinal direction thereof, the metal of the wings is provided with spaced apart vertical breaks 59, as best shown in Fig. 2. The spring element is of shorter length than the guide member, to accommodate resilient blocks 60 and 61 at the upper and lower ends thereof, as best shown in Figs. 2 and 3 to 6, inclusive. The blocks 60 and 61 are preferably formed of sponge rubber and in normal position of the guide member 15 fill the space between the inner face 10 of the jamb 2 and the outer faces of the web portions 33 and 34. The resilient blocks 60 and 61 are of a length to fill in the space between the ribs 41 and 42, as shown in Fig. 3. When the parts are in position in the recess 12 and the edges of the sash are in the channels 40 and 20 and 39 and 21, the rib portion 56 of the spring element 55 forms a contact seal with the inner face of the jamb and the outer edges of the wings 57 and 58 provide sealing contact with the webs 33 and 34 of the movable guide member 15 to cooperate with the resilient blocks 60 and 61 at the ends of the spring element 55 for forming a weathertight seal between the guide 15 and the jamb 2 which is enhanced by contact of the flanges 35 and 36 with the inner faces of the stops 6 and 7, as best shown in Fig. 3.

The balancing elements for the respective sash each include a tube 62 forming a housing for a coil spring 63. The tube for the balancing unit of the lower sash extends from a point slightly spaced below the header jamb into the upper end of the groove 51 when the lower sash is in lowermost position to protect and conceal the spring 63. The upper end of each tube 62 is connected with the upper end of the respective web portions of the guide by a fastening device 64, which is preferably a tubular rivet extending through suitable openings in the tube and a registering opening in the web of the guide, the ends being flanged as indicated at 65. The rivet thus forms a single pivot on which the tube is adapted to swing in conformity with movement of the sash when the sash is raised and lowered in the guide or when it is removed and replaced, as later described. The rivet 64 also provides an anchor for the coil spring 63, the connection being made when the spring is inserted in the tube with a hook end 66 thereof registering with the openings so that when the rivet is passed therethrough it also passes through the hook to secure that end of the coil spring. The movement of the tubes is limited transversely of the guide by means of tongues 67 that are struck from the metal of the lower end of the tube and passed through slots 68 in the web portions 33 and 34 of the guide member, after which the tongues are bent retractively against the outer face of the web, as shown in Figs. 4 and 6. The slots 68 extend transversely of the web portions and are of slightly greater length than the width of the tongues to allow the desired movement of the tubes 62 on the tubular rivets. The lower end of each coil spring 63 also has a hook 69 for attaching a gripping element 70, later described. The balancing mechanism for the upper sash likewise includes a tube 71, spring 72 and gripping element 70, and the parts are assembled and secured to the web portion 33 of the guide member in the same manner as the parts of the spring balance for the lower sash.

The gripping elements 70 for the respective sash are of like construction and each includes a jaw carrier 74 having a back wall 75 and downwardly converging sides 76 and 77. The sides 76 and 77 have laterally extending flanges 78 and 79 to cooperate with the back wall 75 in forming a wedge-shaped pocket 80 for containing a pair of jaws or slips 81 and 82 (see Figs. 12 to 16, inclusive). The back of the carrier has a central vertical slot 83 opening downwardly through the lower end of the back wall 75. The upper portions of the flanges 78 and 79 have inturned ears 84 which substantially meet at the center of the carrier, but the lower portions of the flanges 78 and 79 have ears 85 which are spaced apart substantially according to the width of the slot 83. The lower edges of the ears 85 and the slot 83 curve outwardly and downwardly to provide a relatively wide entrance throat 86. The carrier also has lugs 87 on the respective sides of the throat 86 to support the jaws 81 and 82 in their lowermost position, as shown in Figs. 14 and 15. Extending upwardly from the back wall portion of the carrier is an ear 88 having an aperture 89 for connection with the hook 69 of the spring 63. Sleeved on the ear 88 of the carrier is a stop 90. Each stop 90 includes a plate portion 91 adapted to engage the lower end of a tube. The plate portion of the stop also has a boss 92 having an upwardly tapering periphery for engaging within the lower open end of the tube when the plate portion comes into stopped engagement therewith.

The front of the plate portion 91 of each stop 90 is rounded in conformity with the tube, but the rear side terminates in a flat edge 93' to slidably engage the inner face of the web of the guide, as shown in Figs. 5 and 6. The coil springs 63 are stretched and the stretch is maintained by engagement of the stops 90 with the lower ends of the tubes. The flat edge 93' of the plate portion 91 of the stops 90 thus holds the stops from turning movement with respect to webs 33 and 34 of the guide member. The boss of each stop has a transverse opening 94 conforming in shape to the cross section of the ears 88 through which the stops 90 are passed over the ears 88 to prevent relative turning movement of the jaw carriers 74. The jaw carriers 74 are therefore retained with the back walls 75 thereof in substantially parallel relation with the webs of the guide member, so as to present the front side thereof for entrance of a prong of the fittings on the sash, as later to be described.

The jaws or slips 81 and 82 are also tapered in that the outer edges 93 converge with respect to the inner serrated edges 94. The lower ends of the jaws or slips taper downwardly and outwardly as indicated at 95 to facilitate entrance of the prong to be gripped therebetween. The upper ends of the jaws have inwardly extending heads 96 to substantially close the space between the jaws when the jaws are in their lowermost position, as shown in Fig. 14.

The fittings on the sashes each include a curved plate portion 97 adapted to fit closely the curvature of the bottom of the grooves in the edges of the respective sash. Struck inwardly from the metal of one side of the plate portion 97 is a part or prong 98 having a width adapted to pass freely through the vertical passageway of the carrier and to engage between the jaws or slips. These portions of the prongs 98 are preferably deeper at their connection points with the plate portion to strengthen the prongs in a vertical direction under weight of the sash and pull of the coil springs. The lower end

of each fitting has an outwardly extending tongue 99 for engaging the bottom edge of the sash to position the fittings vertically in the grooves. The fittings are maintained in the grooves of the sash by fastening devices such as nails 100 that are driven through openings 101 in the plate portions of the fittings and into the wood of the respective sashes.

The movable guide also has a stop 102 (Figs. 1 and 9) at the upper end thereof which is secured to the inner face of the upper web portion to limit the upward movement of the inner sash. The stop 102 is preferably of angle shape and one of the flanges 103 thereof is provided with a longitudinal rib 104 that engages over the rib of the web to retain the other flange 105 in contact with the side of the parting stop. The lower ends of the flanges are connected by a web portion 107 to provide sufficient bearing surface for engaging the upper end of the lower sash. The stop is secured in position by a rivet 106 which is passed through the flange 103 and a registering opening in the web portion 34 of the guide.

The guide and spring balance assembly is arranged to be snapped into position in the front of the recess 12 and the ends thereof supported during sliding movement thereof by upper and lower fasteners 107 and 108. The lower fastener 108 is of generally angular cross section and includes a plate portion 109 adapted to engage the face 10 of the jamb and a flange 110 adapted to seat upon the upper face of the sill. The ends of the flange 109 are provided with upward offsets 111 and 112 to support the lower edge of the guide slidably thereon. The offsets are provided with upwardly extending fingers 113 and 114 for engaging within the lower ends of the ribs 41 and 42.

The upper fastener 107 also includes a plate portion 115 that engages the inner face of the side jamb near the header jamb, and extending from the upper edge of the plate portion 115 is a resilient flange 116 which slopes upwardly therefrom to facilitate passage of the upper end of the guide member thereunder. The ends of the flange 116 are formed to provide downwardly curving fingers 117 and 118 which are adapted to be pressed upwardly on entrance of the guide and spring downwardly into the grooves 43 and 44 that are formed by the ribs 41 and 42. The fasteners are secured in position on the jamb by fastening devices such as nails 119 and 120 that are driven through openings 121 and 122 in the plate portions 109 and 115 of the fasteners.

In assembly, the coil springs 63 are placed within the tubes 62 so that the hooks 66 of the coil springs register with the apertures in the upper ends of the tubes, after which the tubes are placed in position against the web portions 33 and 34 of the movable guide so that the ends of the rivets pass through the openings in the web portions. The ends of the rivets are then flanged over as shown to retain the tubes against the web portions and to anchor the coil springs. The tongues on the lower ends of the tubes, having been passed through the slots 68, are bent retractively against the outer faces of the web portions 33 and 34.

The jaws 80 and 81 are then dropped into the pockets 80 of the carriers 74 so that the lower ends thereof seat on the lugs 87. The stop members 90 are then passed over the ears 88 of the carrier to seat on the upper ends of the flanges 78 and 79. The hook ends 69 of the coil springs are then withdrawn from the lower end of the tubes and the jaw carriers are fixed thereto. When the springs are released, they draw the stops 90 into position so that the bosses 92 enter within the lower ends of the tubes and the plate portions 91 thereof engage the end of the tube wall, as best shown in Fig. 5. The rubber blocks or seals 60 and 61 are then secured by a suitable cement to the ends of the guide member, as shown in Fig. 2. A spring element 55 is then applied so that the wings 57 and 58 thereof engage the outer face of the web portions 33 and 34, after which it is secured in position by strips of adhesive tape 123 and 124. A set of upper and lower fasteners 107 and 108, two of the fittings 97, together with the nails 119, 120 and 100, screws 28 and 29 and a larger screw 125, are also included with the first assembly to complete a kit necessary for a single double hung window. The kit thus assembled may be packaged and sold separately, or it may be furnished along with the parts making up the frame and sash of a window.

Assuming that the window frame has been assembled and installed in the wall of a building, the sash are hung as follows:

A lower fixture 108 is placed within the bottom of the recess 12 so that the flange 110 seats on the sill and the flange 109 engages the inner face 10 of the jamb 2. The nails 119 are then driven through the openings 121 into the jamb. The upper fastener is applied within the upper end of the recess 12 with the flange 115 engaging the face 10 of the jamb 2, and the flange parts 116 engaging or just clearing the inner face of the head jamb 4, where the fastener is secured by driving the nails 120 through the openings 122 into the jamb 2.

The guide and spring balance assembly is then placed in the window frame so that the lower end of the guide member engages over the fingers 113 and 114 on the side of the jamb, with the fingers entering the lower ends of the grooves 43 and 44. The upper end of the assembly is then pushed under the portions 116 and pushed inwardly of the recess 12 against the fingers 117 and 118. The fingers 117 and 118 straighten out as the upper end of the guide rides thereunder, but as soon as the upper end of the guide passes the latch fingers 117 and 118, the spring action therein returns the fingers to their normal shape, as shown in Fig. 7, to latch within the upper ends of the grooves 42 and 43 of the guide member. Upon release of pressure on the guide member, the spring element 55 comes into action and pushes the guide member outwardly until it is stopped by the fingers 113 and 114 and 117 and 118.

The screw 125 is then inserted through a countersunk opening 126 in the center of the parting stop 32, through an opening 127 in the rib 56 in the spring element 55, and is turned into the wood of the jamb so as to hold the center portion of the guide in proper position. The point of the screw is substantially in alignment with the ends of the check rails 128 of the respective sash, for a purpose later described. The fixed guide member is then applied within the recess 11 and secured by the screws 28 and 29. A fitting 97 is then inserted in the lower end of the grooves 50 and 51 of the upper and lower sash so that the curved plate portions thereof seat within the curved bottoms of the sash grooves 50 and 51. The fittings are shifted so that the lugs 99 thereof engage against the bottom edge faces of the sash, after which they are struck with a hammer to indent them into the wood so that they are flush with the lower edge faces of the sash. The fittings are then in proper position for retention by the nails 100, which are passed through the openings 101 of the fittings and driven into the wood of the sash.

The grooved side of the upper sash is then placed within the channel 39 of the movable guide member so that the projecting prong 98 of the fitting 97 is below the gripping element in that channel. Pressure is then applied to the sash from the opposite side to cause the movable guide to move into the recess 12 against action of the spring element 55 until the opposite side of the sash can clear the stop 8 and parting stop 19. That side of the sash is then pushed into the frame, after which the spring element 55 causes the sash to enter the channel 21 of the fixed guide. The sash is then moved upwardly in the channels to cause the prong 98 to pass into the slot of the carrier and enter between the jaws 81 and 82 of the gripping element, as shown in Fig. 15. During this movement the jaws are lifted upwardly within their car-

rier but the toothed edges remain in contact with the prong **98**. This is important because the upper half of the sash is then in position to engage the head jamb. A firmer set of the jaws is made by pulling the sash downwardly, after which the coil spring is effective in balancing the sash and it can be raised and lowered in the guide channels with ease.

The lower sash is applied in like manner by passing the grooved edge of the sash into the channel **40** of the movable guide anywhere along the length where the prong **98** of the fitting **97** thereon is below the gripping element of the spring balance **54**. The sash is then shifted toward the movable guide with the spring element **55** yielding sufficiently to pass the opposite edge of the sash, across the stop **8** and into position to enter the channel **20** of the fixed guide. In this position the spring element **55** returns the movable guide so that the window sash is gripped in an edgewise direction between the guides. During the action of the movable guide member, the parting stop portion thereof merely slides upon the shank of the screw **125** and the lower ends of the guide member move along the offsets **111** and **112** of the lower fastener and under the flanges **116** of the upper fastener. The lower sash is then lifted in the channels of the guide to bring the prong **98** into engagement with the jaws of the gripping element of the spring balance **54**. The sash is then drawn downward to set the teeth of the jaws relatively to the prong **97**. The coil spring **63** for the spring balance is now securely connected and is effective in balancing the sash.

When the sash are in closed position and locked with a conventional sash lock (not shown), the ends of the check rails **128** are in registry with the head of the screw **125**, so that the sash cannot be shifted laterally to permit removal thereof. The sash can only be removed when the sash have been moved sufficiently to bring the check rails out of registry with the head of the screw.

To remove the sash for cleaning of the glass thereof, the lower sash may be readily removed by lifting it upwardly within the channels of the guide members until the check rail thereof clears the screw **125**. The sash is then shifted toward the movable guide against action of the spring element **55** until the sash is moved a sufficient amount to permit passing of the stop **8**, after which the sash may be withdrawn from the window opening. It is to be noted that during this movement the coil spring is effective to raise the lower corner of the sash to which it is connected until the stop **90** engages the end of the tube of the balance **54**. The prong **98** is now readily disengaged from the teeth of the jaws in withdrawing the sash from the window. The upper sash is removed in a like manner and after the glass panels of the sash have been cleaned, the sash are replaced as above described.

What we claim and desire to secure by Letters Patent is:

1. A combined window seal and balance for a removable sash window including a guide for the sash of the window, a balancing spring, means securing the balancing spring to the guide, a gripping device connected to the spring, and a fitting for attachment to the sash and having a part projectable into the gripping device, said gripping device having gripping means automatically yieldable to pass the part into the gripping device when the sash is inserted in the guide and moved in a direction to bring said part into engagement with the gripping means.

2. A combined window seal and balance for a removable sash window including a guide for the sash of the window, a balancing spring, means securing the balancing spring to the guide, a gripping device and having jaws connected to the spring, and a fitting for attachment to a sash and having a part adapted to be removably engaged by said jaws to effect a connection with the balancing spring, which connection is effective during both raising and lowering the sash.

3. A combined window seal and balance for a removable sash window including a guide for the sash of the window, a balancing spring, means securing the balancing spring to the guide, a fitting for attachment to a sash and having a part projecting therefrom, a jaw carrier connected with the spring, and jaws movable in the jaw carrier to grip said part therebetween for connecting the balancing spring with the sash.

4. A combined window seal and balance for a removable sash window including a guide for the sash of the window, a balancing spring, means securing the balancing spring to the guide, a fitting for attachment to a sash and having a part projecting therefrom, a jaw carrier connected with the spring and having a downwardly opening slot for passage of said part in the carrier on respective sides of the slot, said jaws having wedging engagement with the carrier for effecting a gripping engagement of the jaws with said part when the said part enters the slot upon initially raising the sash in said guide.

5. A combined window seal and balance for a removable sash window including a guide, a tubular spring housing, means fixing the spring housing to the upper end of the guide, a coil spring in the spring housing and having an upper end fixed with respect thereto, a gripping device fixed to the lower end of the spring, a stop on the gripping device and abutting the lower end of the tubular housing to maintain the spring under tension, said griping device having gripping means therein and an entrance to the gripping means and a fitting for attachment to a sash and having a part adapted to pass through said entrance and be engaged by the gripping means when the sash is raised in the guide for connecting the sash with the coil spring.

6. A combined window seal and balance for a removable sash window including a guide, a tubular spring housing, means fixing the spring housing to the upper end of the guide, a coil spring in the spring housing and having an upper end fixed with respect thereto, a gripping device fixed to the lower end of the spring, a stop on the gripping device and engaging the tube to maintain the spring under tension, said gripping device having a wedge-shaped pocket and having tapered jaws slidable in said pocket, and a fitting for attachment to a sash and having a part adapted to be engaged between the jaws upon an initial upward movement of the sash to make a connection between the sash and spring.

7. A combined window seal and balance for a removable sash window including a guide, a tubular housing, a coil spring in the tubular housing having hooks on the respective ends thereof, a fastening device extending through the tubular housing near one end thereof and through one of the hooks and through the guide for providing a pivotal connection for that end of the tubular housing, said guide having a transverse slot at the other end of the tubular housing, a tongue on the said other end of the tubular housing and extending loosely through the transverse slot in the guide to provide limited pivotal movement of the tubular housing on the fastening device, a gripping device connected with the other of said hooks, a stop on the gripping device for engaging the tubular housing to maintain said spring under initial tension, and a fitting adapted for attachment to the sash and having a part engageable with the gripping device for connecting the sash with said spring.

8. In an apparatus of the character described, a sash guide member adapted for movable support in a vertical recess in the side jamb of a window frame, a fastener adapted for attachment to the lower end of the jamb and having a part adapted to engage the lower end of the guide member, a fastener adapted for attachment to the upper end of the jamb and having a latch part yieldable to pass the upper end of the guide member and to spring into position for engaging over the upper end of the guide member to cooperate with said part on the lower fastener for limiting outward movement of the

guide member, and a resilient element seated in said recess of the jamb and engaging the guide member to yieldingly retain the guide member in yielding contact with said parts of said fasteners.

9. In an apparatus of the character described for removably and resiliently mounting window sash in a window frame, a sash guide member adapted to movable support in a vertical recess in the side jamb of the window frame, a fastener adapted for attachment to the lower end of the jamb and having a part adapted to engage the lower end of the guide member, a fastener adapted for attachment to the upper end of the jamb and having a latch part yieldable to pass the upper end of the guide member and to spring into position for engaging over the upper end of the guide member to cooperate with said part on the lower fastener for limiting outward movement of the guide member, a resilient element having a central portion in said recess and engaging the jamb and having wings engaging the guide member to yieldingly retain the guide member in yielding contact with said parts of said fasteners, and resilient blocks extending across the guide member at the ends of the resilient element to cooperate with the resilient element in sealing the guide with respect to the jamb.

10. In an apparatus of the character described for removably and resiliently mounting window sash in a window frame, a sash guide member adapted for movable support in a vertical recess in the side jamb of the window frame, a fastener adapted for attachment to the lower end of the jamb and having a part adapted to engage the lower end of the guide member, a fastener adapted for attachment to the upper end of the jamb and having a latch part yieldable to pass the upper end of the guide member and to spring into position for engaging over the upper end of the guide member to cooperate with said part on the lower fastener for limiting outward movement of the guide member, a resilient element having a central portion in said recess and engaging the jamb and having wings engaging the guide member to yieldingly retain the guide member in yielding contact with said parts of said fasteners, resilient blocks extending across the guide member at the ends of the resilient element to cooperate with the resilient element in sealing the guide with respect to the jamb, said guide member having sash channels on the respective sides of a parting stop for engaging sides of the sashes, spring balances having upper ends fixed in said channels, gripping means on said springs, and means adapted for attachment to the sash for removable engagement by the gripping device.

11. A combined window seal and balance for removable sliding sash windows wherein the sash are balanced in any position and automatically released when the sash is to be removed, including a guide, a tubular housing, means for securing the tubular housing to the guide, a coil spring in the tubular housing having hooks on upper and lower ends thereof said upper hook being fixed with respect to said housing, a gripping device suspended from the lower hook, a stop on the gripping device for abutting the end of the tubular housing to maintain said spring under initial tension, and a fitting adapted for attachment to the sash and having a part adapted to be gripped by the gripping device when the sash is moved upwardly in said guide to bring said part into engagement with the gripping means.

12. A combined window seal and balance for removable sliding sash windows wherein the sash are balanced in any position and automatically released when the sash is to be removed, including a guide, a tubular housing, means for securing the tubular housing to the guide, a coil spring in the tubular housing having hooks on the respective ends thereof, a gripping device connected with the coil spring, a stop on the gripping device for engaging the tubular housing to maintain said spring under initial tension, a fitting adapted for attachment to the sash and having a part engageable with the gripping device for removably connecting the sash with said spring, and means for resiliently backing the guide to retain sealing contact of the guide with the sash and said means being yieldable to facilitate disconnection of the sash from the gripping device.

13. A combined window seal and balance for removable sliding sash windows wherein the sash are balanced in any position and automatically released when the sash are to be removed, including spaced apart guides for the sash, a coil spring balance having one end fixed to one of the guides, a gripping device connected with the other end of the coil spring balance, means on the sash having a part engageable with the gripping device for removably connecting the sash with the coil spring balance, means for yieldably supporting said one guide for yielding contact with the sash for maintining seal of the side edges of the sash with said guides, and means for retaining said one guide and engageable by a part of the sash when the sash is in closed position to prevent movement of the said one guide against action of said supporting means, but said one guide being movable in other positions of the sash to permit withdrawal of the edge of the sash from the other guide and the other edge of the sash from said one guide for withdrawal of said part from the gripping device when the sash is to be removed.

14. A combined window seal and balance for removable sliding sash windows, wherein the sash are balanced in any position and automatically released when the sash are to be removed, including laterally spaced sash guides, a tubular housing, means for securing the tubular housing to one of the guides, a coil spring in the tubular housing having hooks on upper and lower ends thereof, said upper hook being anchored with respect to said securing means, a gripping device supported from the hook on the lower end of the coil spring, a stop on the gripping device for engaging the lower end of the tubular housing to maintain said spring under initial tension, a fitting adapted for attachment to the sash and having a part engageable by the gripping device for automatically connecting the sash with the coil spring, means for resiliently backing said one guide to retain sealing contact of the guides with edges of the sash and yieldable to facilitate removal of the sash from said guides and withdrawal of said part from the gripping device, and means engageable with a part of the sash when the sash is in closed position to prevent any movement of the sash against said resilient backing means and leading toward removal of the sash.

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