

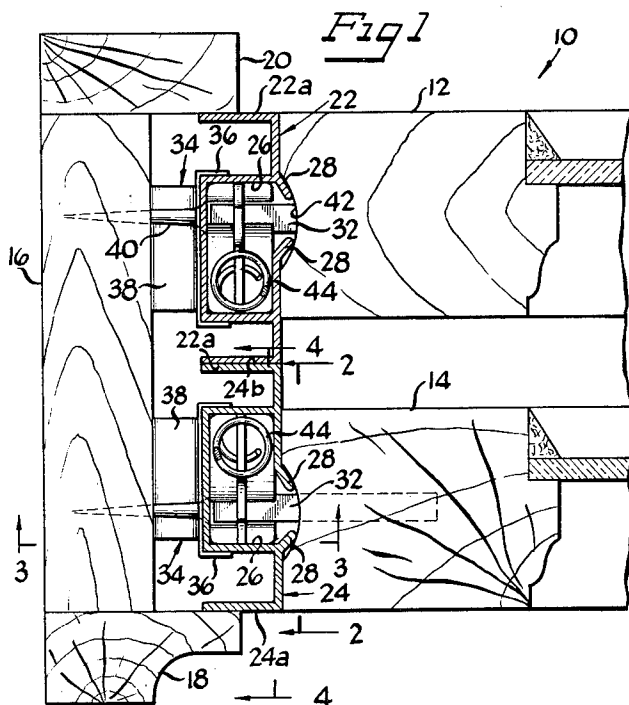
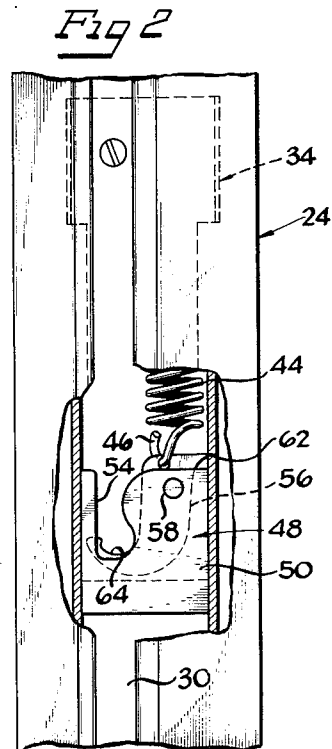
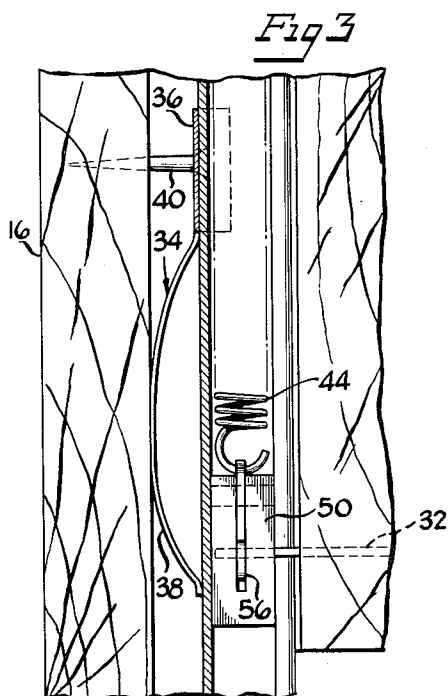
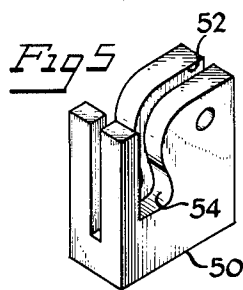
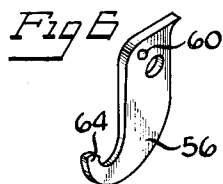
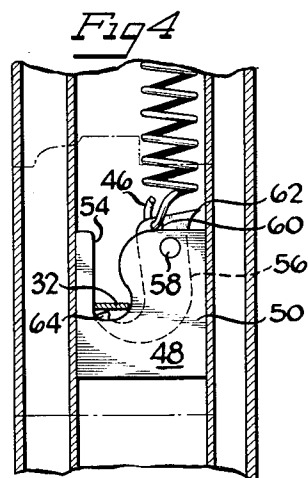
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WINDOW SASH MOUNTING

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WINDOW SASH MOUNTING

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2 Claims. (Cl. 16-197)

The present invention relates generally to window constructions, and is more particularly directed to window sash mountings wherein coil springs are used as the sash balancing means.

There are presently available a wide variety of window sash assemblies which utilize a preformed sash guide and weather-stripping assembly and wherein the counter-balance provided for the window sashes is in the form of an elongated coil spring which is fixed at the upper end of the sash guide and extends downwardly through a channel or housing formed in such guide for attachment through a suitable hanger with the lower portion of the window sash. In order to facilitate assembly of the window sash unit and, also, to make it easy to remove the individual window sash for cleaning or repair, at least one side of the window unit has its pre-formed guide spring biased to permit lateral movement of the guide and thereby provide for removal of the window sash. In such an arrangement, it is desirable to have the hanger at the lower end of the balance spring remain fixed in position within the spring housing when the window sash is removed, and various means have been designed to effect this purpose. The present invention is particularly directed to a novel and advantageous form of sash guide and a hanger element which cooperates with the guide and sash so as to remain in position within the guide when the sash is removed.

It is, therefore, a primary object of this invention to provide a new and improved form of window sash guide. A further object is to provide a novel form of window sash hanger which is retained in position within the sash guide when the window sash is removed. Still another object of the invention is to provide a novel form of self-locking hanger element which is particularly adapted for use with a tilt-out type of window sash. Other objects and advantages will be apparent from the following description of the selected embodiment of this invention illustrated in the drawings, wherein:

FIGURE 1 is a cross-sectional view of a window sash assembly, illustrating one side thereof;

FIGURE 2 is a fragmentary view taken along the line 2-2 in FIGURE 1, with parts omitted or broken away in order to more clearly illustrate the sash guide and hanger construction;

FIGURE 3 is a sectional view taken along the line 3-3 in FIGURE 1;

FIGURE 4 is a sectional view taken along the line 4-4 in FIGURE 1;

FIGURE 5 is an enlarged, perspective view of one part of the hanger assembly; and

FIGURE 6 is an enlarged, perspective view of the remaining part of the hanger assembly.

As illustrated particularly in FIGURES 1 and 2, the selected embodiment of the invention comprises a double hung window sash unit 10 having upper and lower sashes 12 and 14, respectively, fitted within the usual frame structure including a pair of vertical wooden frame members and an upper and lower sill member defining the opening for the window unit. Since the frame construction comprises no part of the present invention, it is believed that a complete showing of the frame and the double hung window unit is unnecessary and, therefore, FIGURE 1 includes only one of the side frame members 16 and the usual trim or stop members 18 and 20 at the

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inside and outside of the window, respectively, defining the channel for receiving the window sash assembly. Within the window frame channel thus defined at each of the opposite sides of the window opening, there is provided a pair of window sash guide strips 22 and 24 which are preformed, preferably of metal, but which may also be plastic or the like. Each of these guide strips include an outer edge portion (22a and 24a) for engagement with the respective stop members on the wooden frame and an inner edge portion (22b and 24b) in abutment with each other, with both the inner and outer edges of the sash guides providing for relative sliding movement of each guide laterally of the window frame.

The intermediate portion of each window sash guide strip is formed to provide a channel or housing 26 extending the entire length of the strip. The sash edge-engaging portion of each strip is preferably generally flat but includes a pair of inwardly projecting, spaced-apart marginal edge portions 28 generally centrally of the guide strip. Such edge portions define an elongated slot 30 in the sash guide so as to permit vertical sliding movement of a hanger-engaging strip or bar 32 which is fixed to each sash adjacent its lower end portion and which projects inwardly into the counter balance spring housing portion through the slot 30. The spring housing portion of the guide strip is preferably rectangular in order to facilitate manufacture and also so as to fixedly receive two or more leaf springs 34 which provide for biasing the sash guide into pressing engagement with the edge of the window sash. In the illustrated embodiment, each of these springs comprises a generally channel-shaped portion 36 engaging the back of the balance spring housing, and a bowed or curved, resilient part 38 adapted to be disposed between the side frame member 16 and the window sash guide. The springs 34 are fixed in position along the length of the window sash guide by suitable fastening means, such as a screw 40 which also extends through the sash guide and maintains the latter in position. It is to be noted that the screw 40 is disposed so as to place the sash guides 22, 24 a suitable distance outwardly from the frame 16 to properly tension the leaf spring and to permit inward movement of the sash guide toward the vertical frame member. The sash includes the usual longitudinally grooved portion 42 extending along its opposite side edges for cooperation with the projecting marginal portions on the sash guide to maintain the window sash in position while permitting relative sliding movement between the window sash and the guide.

The counter balance mechanism for each window sash comprises an elongated coil spring 44 which is suitably fastened adjacent its upper end to the upper end of the respective window sash guide. This connection may be made by a suitable fastening means or it may simply consist in placement of the upper coil of the spring over the upper edge of the housing portion of the sash guide strip. It is to be noted that the balance spring 44 is positioned off-center with respect to the hanger opening 30 and, consequently, the spring is concealed from view.

The lower end coil 46 of the counter balance spring 44 is twisted into a generally vertical plane so as to receive and support the novel hanger assembly 48 seen particularly in FIGURES 2-6. This hanger assembly comprises a hanger element 50 (FIGURE 5) which is generally rectangular and of a thickness and width to conform generally with the cross-sectional internal dimensions of the counter balance spring housing 26, while permitting easy, relative sliding movement therein. The central portion of the hanger element 50 is cut out or otherwise formed to provide a slot or groove 52 extending across its width, and such element is further formed to provide a second groove 54 extending a substantial

portion of the depth of the element and transversely of the first groove. With respect to the second groove 54, it will be noted that one side of such groove is generally straight and the other side provides a curved configuration.

Within the first groove 52 of the hanger element 50 there is pivotally mounted a locking element 56, as by means of a pin 58 extending through aligned openings in the hanger element. This locking element 56 is generally S-shaped and is supported intermediate its opposite end portions so as to permit rocking movement about the pin 58. The upper end of the locking element includes an opening 60 for receiving the lower coil 46 of the balance spring, and such upper end also includes a sharp or pointed corner 62 adapted to engage the side wall of the balance spring housing 26. The lower portion of the locking element 56 is curved or otherwise formed to provide a ledge 64 for engagement by the pin or bar 32 projecting outwardly from the window sash edge. Preferably, this projecting bar 32 is relatively flat and dimensioned so that it is normally held in place within the bottom of the groove 54 in the hanger element when the window sash is slidably mounted in its guides, but as the window is tilted inwardly the bar is rotated to enable it to be moved upwardly and out of the groove in the hanger element. The hanger element 50 may be of metal, plastic or other suitable material, and the locking element 56 is preferably of metal so that the pointed upper end portion 62 thereof will penetrate the side wall of the balance spring housing and thus hold the hanger assembly and balance spring against vertical movement when the window sash is removed.

With particular reference to FIGURES 2 and 4, it is to be noted that the locking part 56 of the hanger assembly 48 is constructed and arranged with respect to the hanger block 50 so that the tension of the balance spring is effective to cause the point 62 of the lock to penetrate the housing wall when the sash is removed from between opposing guide strips. This is provided generally by the particular disposition of the opening 60 relative to the pivot pin 58 and the end 64 of the locking element which is engaged by the bar 32 on the sash. With the opening 60 generally vertically aligned with the pivot pin 58, the point 62 of the lock is in its guide strip penetrating position (FIGURE 2). However, when the weight of the sash is placed on the hanger (FIGURE 4), the lock part 56 is rotated about the pivot pin 58 so as to free the locking point 62 and allow sliding movement of the hanger within the channel 26.

It is seen, therefore, that the window sash is installed between facing sash guide strips by tilting the sash so that one projecting bar 32 can be moved downwardly through the hanger slot 54 into the enlarged, lower end portion of one hanger, then pushing the guide strip laterally against the springs 34 to permit similar entry of the bar 32 on the other edge of the window into its hanger 48. The sash is then tipped upwardly until the edge grooves 42 are disposed in guided relation with the marginal projecting edges 28 on the sash guide. At this point, the supporting bars 32 will be generally horizontal, as shown in FIGURE 4, and the weight of the window sash will rotate the locking elements 56 to free the pointed ends 62 from the housing wall. The sash can now be moved vertically as desired. In removing the sash, it is only required to grasp the upper edge of the sash and pivot the sash inwardly about the axis of the supporting bars 32. Such movement will cause the springs 34 on opposite sides to yield and permit passage of the grooves 42 past the projecting marginal portion of the guide unit. When the supporting bars 32 are rotated sufficiently to permit passage upwardly through the groove 54 of the hanger elements, the window sash can be removed, it being further necessary to depress the sash guide and springs 34 along one edge to permit withdrawal of the supporting bar 32 from the opposite hanger element. Complete removal of the sash is necessary, of course, only for

repair. In cleaning the window, the outside surface is readily made available by simply tilting the window as described.

Although shown and described with respect to a particular embodiment, it will be apparent that various modifications might be made without departing from the principles of this invention. Further, although shown in conjunction with a tilt-out type of double hung sash window unit, certain principles of the invention are also of advantage with respect to the ordinary double hung sliding window sashes which do not permit tilting of the individual sashes.

What is claimed is:

1. A hanger for use in a window sash assembly for interconnecting a supported sash and a supporting sash balancing means which is disposed within a housing formed by a sash guide unit, said hanger comprising a part adapted to be slidably received within the housing in the sash guide for vertical movement relative thereto, said hanger having a first slot formed therein across its width, a locking element pivotally supported intermediate its ends on said hanger part for movement within said first slot, said locking element including adjacent one end means for connection with the sash balancing means and a pointed section for penetrating engagement with the wall of the housing for the sash balancing means, and said locking element also including adjacent its other end means for providing supporting engagement with a window sash, said hanger part having a second slot disposed generally vertically and transversely of said first slot with the supporting means on said other end of said locking element being accessible through said second slot, said sash balance connection means, pointed section and sash support means being arranged so that when a sash is supported by the latter means said pointed section is drawn out of engagement with the balance housing wall, and when the weight of the sash is removed from the sash support said pointed section is caused to move into engagement with the housing by the tension of the sash balancing means.

2. A hanger for use in a window sash assembly for interconnecting a supported sash and a supporting sash balancing means which is disposed within a housing formed by a sash guide unit, said sash including hanger engaging means projecting from opposite side edges thereof, said hanger comprising a part adapted to be slidably received within the housing in the sash guide for vertical movement relative thereto, said hanger having a first slot formed therein across its width, a locking element pivotally supported intermediate its ends on said hanger part for movement within said first slot, said locking element including adjacent one end means for connection with the sash balancing means and a pointed section for penetrating engagement with the wall of the housing for the sash balancing means, and said locking element also including adjacent its other end means for providing supporting engagement with a window sash, said hanger part having a second slot disposed generally vertically and transversely of said first slot with the supporting means on said other end of said locking element being accessible through said second slot, said second slot being formed with a curving edge portion to provide a relatively narrow width upper portion and a relatively enlarged width lower portion for the slot and cooperating with the hanger engaging means on the sash to require tilting movement of the sash relative to said window sash housing in engaging and disengaging with respect to said locking element, said sash balance connection means, pointed section and sash support means of said locking element being arranged so that when a sash is supported by the latter means said pointed section is drawn out of engagement with the balance housing wall, and when the weight of the sash is removed from the sash support said pointed

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section is caused to move into engagement with the housing by the tension of the sash balancing means.

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