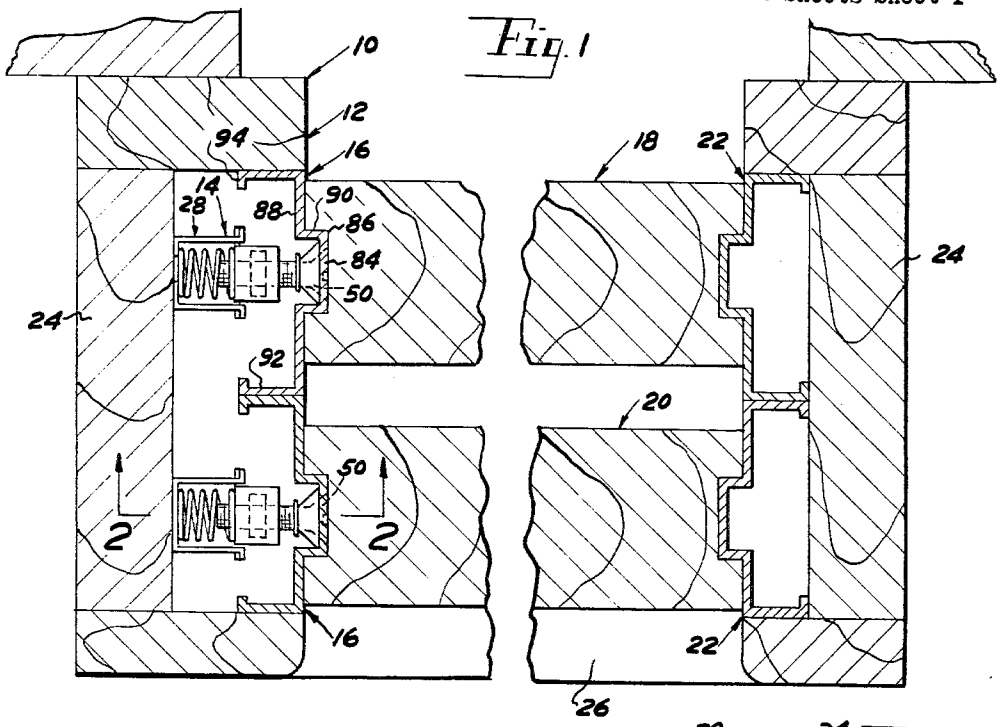
Jan. 11, 1966 D. M. TROUT 3,228,068

ADJUSTABLE RESILIENT SASH GUIDE SUPPORT

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Fig. 1



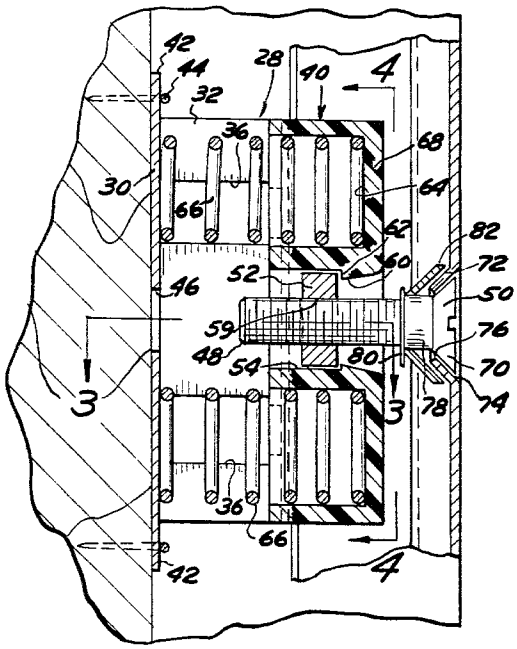
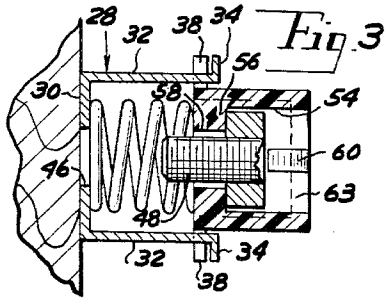


Fig. 2

Fig. 3



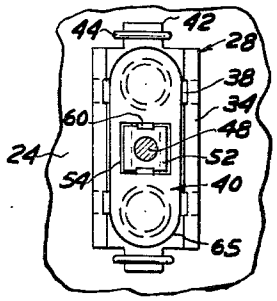


Fig. 4

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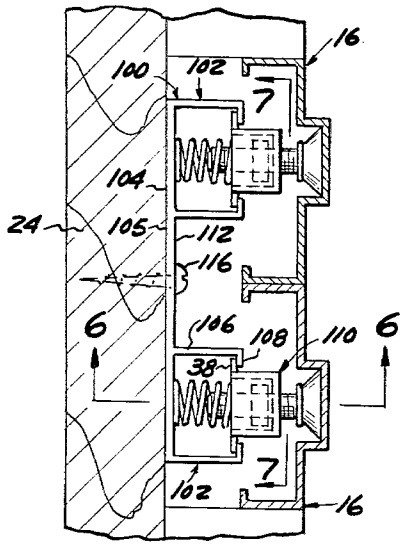


Fig. 5

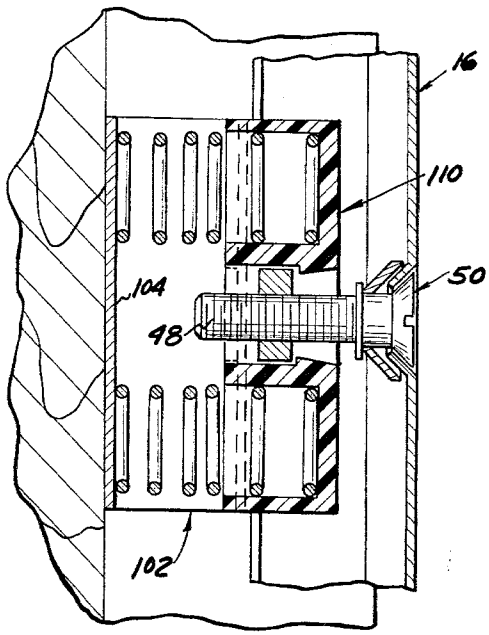


Fig. 6

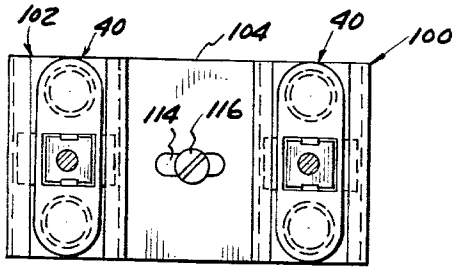


Fig. 7

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ADJUSTABLE RESILIENT SASH GUIDE SUPPORT

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Filed July 3, 1963, Ser. No. 292,640
5 Claims. (Cl. 20—12)

This invention relates to window hardware and, in particular, to adjustable resilient sash guide supports.

One object of this invention is to provide an adjustable resilient sash guide support which is threadedly connected to an elongated sash guide by a screw rotatably mounted therein so as to yieldingly support and urge the sash guide against its respective window sash in a sliding sash window installation, whereby to eliminate the necessity of boring or recessing the window frame in order to mount the support thereon, and consequently eliminating the necessity of accurately positioning and aligning these bores in order that the sash will slide smoothly in the sash guides.

Another object is to provide an adjustable resilient sash guide support of the foregoing character which is of unusually small height or thickness, enabling it to be accommodated within the narrow space available behind the sash guide in a modern double-hung sliding sash window installation.

Another object is to provide an adjustable resilient sash guide support of the foregoing character wherein the support is quickly and easily shifted laterally or longitudinally of the sash guide without requiring the shifting of the mounting screws or other fasteners used therein, any misalignment during mounting being easily corrected by merely moving the support, since there is no bore or hole in the window frame to restrict its lateral or longitudinal motion, as in prior sash guide supports mounted in such holes or bores.

Another object is to provide an adjustable resilient sash guide support of the foregoing character wherein the thrust of the springs in the support is quickly, easily and precisely adjusted merely by rotating an adjusting screw, thereby adjusting the force with which the sash guide frictionally engages the sash.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings, wherein:

FIGURE 1 is a horizontal section through a double-hung sliding sash installation equipped with sash guides mounted on the adjustable resilient sash guide support of one form of the present invention;

FIGURE 2 is an enlarged vertical section taken along the line 2—2 in FIGURE 1;

FIGURE 3 is a horizontal section taken along the line 3—3 in FIGURE 2;

FIGURE 4 is a vertical cross-section upon a reduced scale, showing the sash guide support mainly in front elevation;

FIGURE 5 is a horizontal section similar to the left-hand side of FIGURE 1, but showing a modification of the invention having the sash guide supports of both sashes mounted upon a common base;

FIGURE 6 is an enlarged vertical section taken upon the line 6—6 in FIGURE 5, through one of the two supporting units; and

FIGURE 7 is a vertical section upon a reduced scale, taken along the line 7—7 in FIGURE 5, showing the sash guide support mainly in front elevation.

Hitherto, adjustable resilient sash guides have been provided by means of which an elongated metal or plastic sash guide, usually of channel cross-section, has been resiliently and adjustably mounted so that it frictionally

engages the sash of a double-hung sliding sash window installation. Such a device is disclosed and claimed, for example, in the Osten Patent 2,658,242 of November 10, 1953, and another in the Brengman Patent 2,888,719 of June 2, 1959. In such prior resilient sash guide supports, however, it has been necessary to provide bores in the window frame to receive the casings of the supports, and it has been necessary to locate these bores with precision so that they are accurately aligned with the adjusting screws by which they are fastened to the sash guide. If the bores are not accurately aligned, scraping noises arise during the subsequent operation of the window, the adjustment of the spring thrust may become inoperative, and, if the installation is a removable sliding sash installation, the sashes may not even be removable as desired. Moreover, the correction of such misalignment has previously required the removal of the sash guide, the consequent removal of the adjustable resilient support for the sash guide, and the cutting away of one side of the bore in order to enable shifting of the sash guide support casing to bring it into alignment with the sash guide connection screws. Furthermore, the laying out and boring of such holes or bores requires precision and skill on the part of the carpenter or other workman performing the installation, with consequent excessive expenditure of time and high cost of labor. In addition to these disadvantages, these prior adjustable resilient sash guide supports or "spring boxes," as they are sometimes called in the window hardware industry, have been of such great thickness that it is difficult to accommodate them within the limited space available in modern double-hung sliding sash window installations. The present invention provides an adjustable resilient sash guide support which eliminates these disadvantages, in accordance with the objects set forth above.

Referring to the drawings in general, FIGURES 1 to 4 inclusive show a double-hung removable sliding sash installation, generally designated **10**, including a window frame **12** upon which are mounted adjustable resilient sash guide supports **14** which in turn resiliently support channel sash guides **16** in which the upper and lower removable sliding sashes **18** and **20** are slidably mounted and frictionally engaged. The sashes **18** and **20** on their opposite sides are engaged by stationary or fixed channel sash guides **22**. The constructions of the window frame **12**, channel sash guides **16** and **22**, and sashes **18** and **20** are conventional and their details are beyond the scope of the present invention.

Referring to the drawings in detail, the window frame **12** is shown diagrammatically in FIGURE 1 as including upright side jambs **24** interconnected at top and bottom by the usual header (not shown) and sill **26**, and mounted in the usual opening in the building wall. Each resiliently-mounted sash guide or channel **16** is provided with several of the adjustable resilient sash guide supports **14** spaced vertically apart from one another behind their respective sash guides **16**, a minimum of three such supports **14** being ordinarily used. Each support **14** includes an elongated channel-shaped casing, generally designated **28**, of stamped sheet metal having a base plate portion or bottom wall portion **30** and spaced parallel side walls **32** (FIGURE 3) terminating at their outer edges in outwardly-bent flange portions **34**. Each of the opposite side walls **32** is provided with a pair of guide slots **36** (FIGURE 2) which serve to receive and slidably guide laterally-projecting lugs **38** upon a thrust block, generally designated **40**. The base plate **30** of the casing **28** at its opposite ends is provided with extensions **42** (FIGURE 2) projecting beyond the ends of the side walls **32** and adapted to be engaged by fasteners **44**, such as staples, by which the casings **28** are secured to the side jambs **24**.

In place of the staples 44, screws or nails may obviously be used. The midportion of the base plate 30 is provided with a hole 46 aligned with the shank 48 of an adjusting screw 50 threaded through a square nut 52 which is seated in a correspondingly-shaped recess 54 against a bottom wall 56 containing an enlarged central hole or slit 58 through which the shank 48 passes.

The nuts 52 contains a central threaded bore or hole 59 threadedly receiving the shank 48. The side walls of the recess 54 are provided with inwardly-projecting tapered or wedge-shaped prongs 60 (FIGURES 2 and 3) having shoulders 62 past which each nut 52 is forced by pressing it inward through the mouth 63 of the recess 54. The thrust block 40 has rounded opposite ends 65 and is formed of material such as nylon, which is sufficiently resilient to yield when the nut 52 is pushed through the mouth 64 of the recess 54, yet causes the prongs 60 to first yield and then spring back into the positions shown in FIGURE 2, whereby their shoulders 62 engage the outer face of the nut 52 as detents to prevent the nut 52 from coming out of the recess 54.

The thrust block on each side of the recess 54 is provided with a cup-shaped socket 64 which serves to receive the outer end of one of a pair of compression springs 66. One end of each of the compression springs 66 engages the thrust block end wall or top wall 68 which thereby constitutes an outer spring abutment. The later is urged outward away from the casing 28 by the springs 66, the inner ends of which engage the base plate portion or bottom wall portion 30 of the casing 28 as an inner spring abutment.

The adjusting screw 50 is provided with a frusto-conical head 70 which rotatably engages the frusto-conical wall 72 of a tapered recess or countersink 74 in the sash guide 16, and leading to a central hole 76 through which the unthreaded outer portion 78 of the shank 48 of the screw 50 loosely and rotatably passes. Between the threaded shank 48 and the smooth portion 78 joining it to the head 70 is an annular flange 80 which is formed thereon by cold-heading after the screw shank 48 has been passed through the hole 76 and the head 70 seated in the conical recess 74, and after a frusto-conical washer 82 (FIGURE 2) has been slid onto the smooth portion 78 of the shank 48. The flange 80 serves to retain the washer 82 in position against the outside of the frusto-conical wall 72 to prevent withdrawal of the head 70 of the screw 50 from the conical recess 74, and at the same time to permit free rotation of the screw 50 without any substantial axial or end motion.

The tapered recesses or countersinks 74 are formed in the central wall 84 of a central rib 86 in the resiliently-mounted sash guide 16, which rib is joined to the main wall 88 thereof by opposite connecting walls 90 (FIGURE 1). The sash guide 16 is also provided with side walls 92 terminating in inwardly-projecting flanges 94. The stationary sash guides 22 are of similar construction and similar parts are similarly numbered with reference numerals, but they are firmly and immovably secured to their respective side jambs 24. It will be understood, however, that the resiliently-mounted sash guides 16 may, if desired, be mounted on both of the opposite side jambs 24 rather than on only one of them, as shown for purposes of simplicity of disclosure, especially in large wide windows. It will be further understood that the threaded bore 59 may be formed directly in the thrust block 40 at a slightly greater expense of machining rather than in a nut 52 pressed into a recess 54 in the central portion of the thrust block 40. The construction shown, employing the nut 52, is less expensive to manufacture than the thrust block 40 containing a threaded bore for the same purpose.

The modified dual resilient sash guide support unit, generally designated 100 (FIGURES 5, 6 and 7) includes a pair of channel casings 102 spaced laterally apart from one another and forming parts of a dual casing 104 having a common base plate portion 105 from which project the spaced parallel side walls 106 of the individual casings 102. The side walls 106 have inturned flanges 108 engaging the lugs 38 on thrust blocks 110 of substantially identical construction to the thrust blocks 40 previously described. Accordingly, the component parts of the thrust block 110 are numbered with the same reference numerals as the thrust blocks 40 of FIGURES 1 to 4 inclusive. The casings 102 are without slots in their side walls 106 which are spaced apart a sufficiently great distance to accommodate the lugs 38 engaging the inturned flanges 108 (FIGURE 5). The resiliently-mounted sash guides 16 and adjusting screws 50 are employed in the dual supports 100 and are similarly mounted in the sash guides 16, hence similar reference numerals are employed in FIGURE 6 as in FIGURE 2, and duplication of description is thereby rendered unnecessary.

The base plate portion 105 of the support unit 100 has a central portion 112 interconnecting the two individual channel casings 102 with their side walls 106, and is provided with an elongated transverse slot 114 (FIGURE 7) for receiving a wood screw or other fastener 116. The construction of FIGURE 5 employing inturned flanges 108 without slots in the side walls 106 enables the thrust blocks 110 to be moved upward or downward in their individual channel casings 102 and the assembly as a whole to be moved laterally by the provision of the elongated slot 114 for the screw 116. This construction facilitates quick and easy mounting, because the screw 116 can be located only approximately in position in the side jamb 24, subsequent alignment with the shanks 48 of the screws 50 being easily made either by sliding the blocks 40 in their respective channel casings 102 in an upward or downward direction or by sliding the entire dual casing 104.

In the operation of either form of the invention, using either the individual adjustable resilient sash guide supports 14 of FIGURES 1 to 4 inclusive or the dual sash guide support units 100 of FIGURES 5 to 7 inclusive, it will be assumed that these have been installed and secured to the side jambs 24 in the manner described above in alignment with the adjusting screws 50 seated in the rib walls 84 of the guide channels 16. In the installation of the individual supports 14, this is done by properly locating the staples or other fasteners 44 when inserting them in the side jambs 24 and, in the case of the dual support units 100, by the screws 116 with subsequent adjustment of the thrust blocks 110 and dual casing 104, as described above.

For a removable sliding sash installation, the sashes 18 and 20 are installed by pressing their grooved side rails against the resiliently-mounted sash guides 16, pushing them inward and compressing their springs 66 in such a manner as to permit the opposite grooved side rail to be installed over the fixed sash guides 22. When the sash is released, the movable sash guide 16 maintains a frictional engagement with the sash 18 so as to maintain a smooth grip thereon while preventing gravity from pulling the sash down or, if balancing springs are used, counteracting their thrust to enable the sash to remain in its attained position until raised or lowered by the operator. Since window frames, being of wood, vary in dimensions and subsequently vary by shrinkage, the provision of the adjusting screws 50 enables the sash guides 16 to be moved outward toward the sashes 18 and 20 or inward away from them to compensate for such variations. If, due to shrinkage or warping of the side jambs 24 of the window frames 12, the sash guides 16 relinquish their intended grip upon the sashes 18 and 20, rotation of the screws 50 in a counterclockwise direction relatively to the nuts 52 causes the sash guides 16 to move outward, taking up the clearance and increasing the grip of the sash guides 16 upon the sashes 18 and 20.

What I claim is:

1. The combination with an elongated sash guide and an adjustment screw rotatably mounted in said sash guide, of an adjustable resilient sash guide support, comprising

an elongated casing having a substantially flat bottom wall including a pair of inner spring abutments substantially co-planar with the remainder of said bottom wall and disposed in laterally-spaced relationship thereon,

an elongated thrust member movably mounted in said casing for shifting toward and away from said inner spring abutments and having a pair of laterally-spaced outer spring abutments disposed substantially in alignment with said inner spring abutments,

said thrust member intermediate said abutments having an intermediate portion offset inwardly toward said bottom wall behind the level of said outer spring abutments and having an internally-threaded bore therein,

and a pair of springs disposed respectively between the pairs of aligned spring abutments in thrust engagement therewith,

said casing having spaced opposite side walls extending outwardly from said bottom wall and having guide slots therein,

said casing also having stop portions extending laterally from the outer portions of said side walls into motion-limiting engagement with said thrust member;

said thrust member having projections thereon extending through said guide slots into motion-limiting engagement with said stop portions.

2. The combination according to claim 1, wherein said stop portions comprise flanges extending laterally in opposite directions from the outer edges of said side walls and wherein said thrust member projections extend into motion-limiting engagement with said flanges.

3. The combination according to claim 1, wherein said thrust member has an outwardly-facing recess therein between the thrust member spring abutments, said recess having an inner end wall with a hole therein for the passage of said adjustment screw, and wherein a nut is secured in said recess in engagement with said end wall, said nut having an internally-threaded bore therein threadedly engaging said adjustment screw and constituting the internally-threaded bore of said thrust member, said recess of said thrust member having side walls with a plurality of laterally-yieldable detent projections extending laterally from said side walls into said recess, said nut being seated in said recess between the bottom thereof and said detent projections.

4. The combination according to claim 1, wherein the thrust member spring abutments comprise the bottoms of spaced recesses disposed in laterally spaced relationship therein.

5. The combination according to claim 3, wherein the outer end of said internally-threaded bore is disposed nearer the casing bottom wall spring abutments than are the thrust member spring abutments.

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