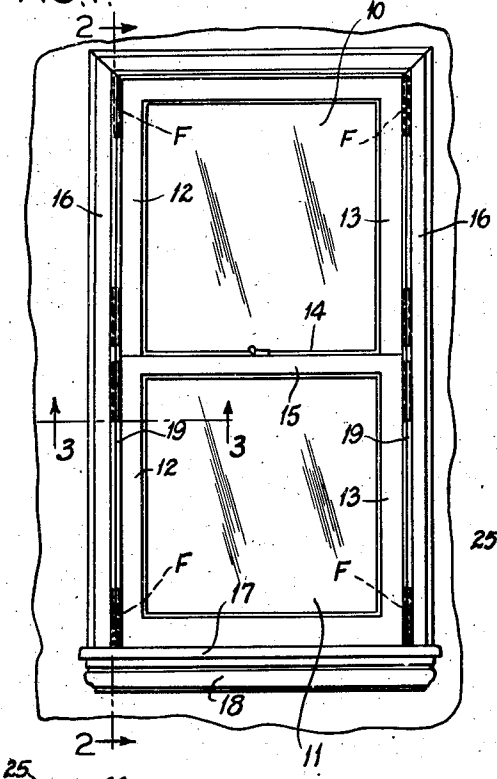
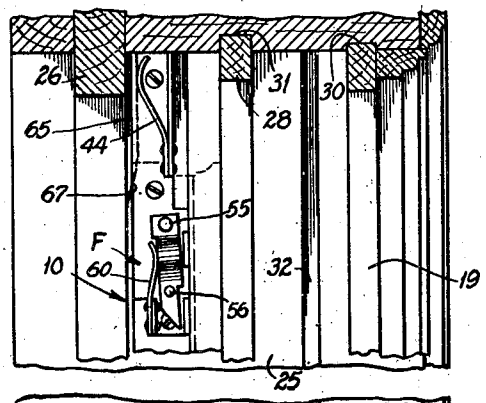
Aug. 26, 1947. E. M. TRAMMELL, SR., ET AL 2,426,474

SASH AND SASH GUIDING MEANS

Filed March 24, 1944 2 Sheets-Sheet 1

FIG. 1.





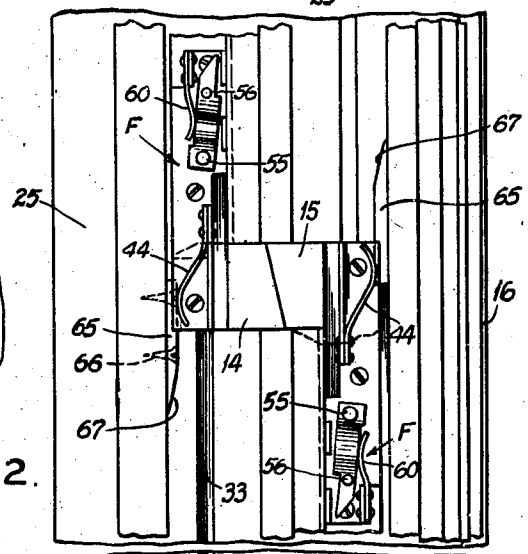


FIG. 2.

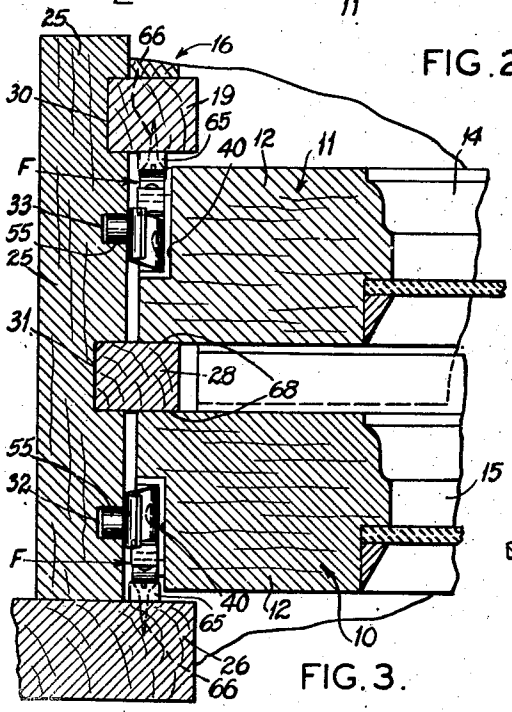
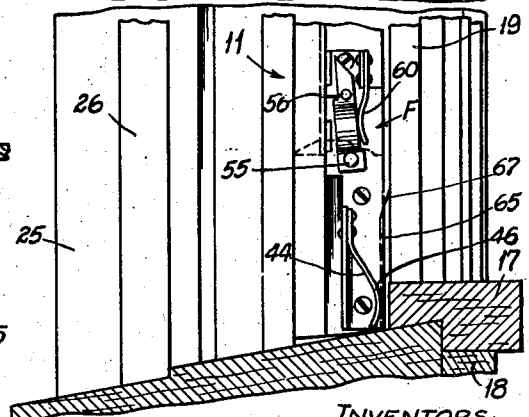


FIG. 3.



INVENTORS;
EARL M. TRAMMELL SR.
EARL M. TRAMMELL JR.
BY Robert B. Terry
ATTORNEY

Aug. 26, 1947. E. M. TRAMMELL, SR., ET AL 2,426,474

SASH AND SASH GUIDING MEANS

Filed March 24, 1944 2 Sheets-Sheet 2

FIG. 4.

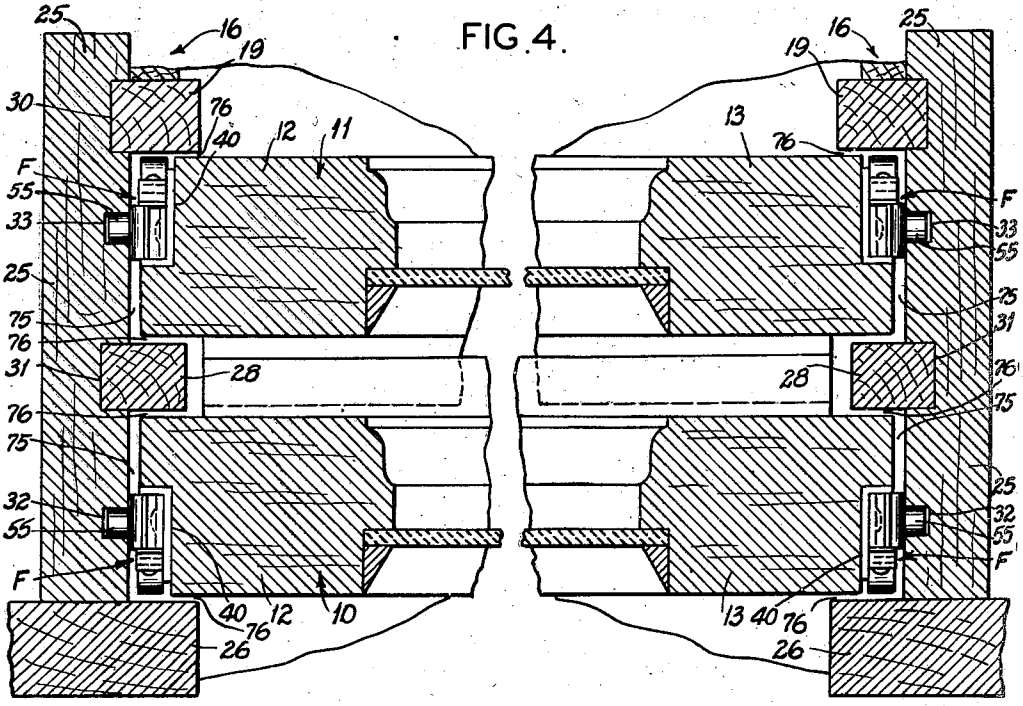


FIG. 5.

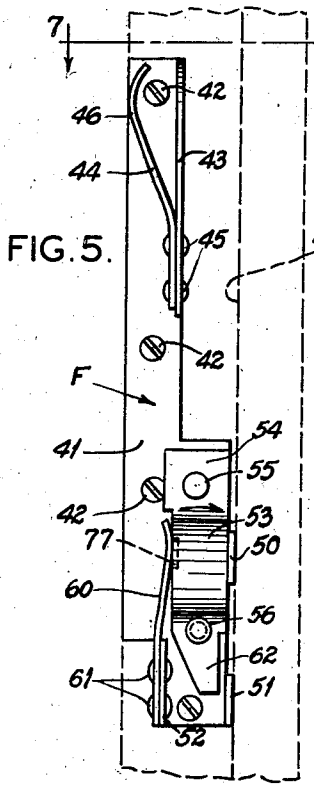


FIG. 6.

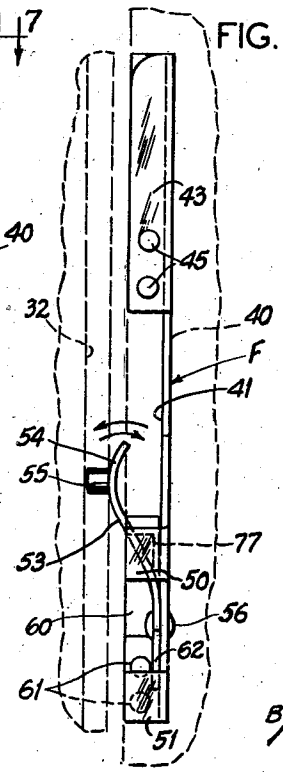
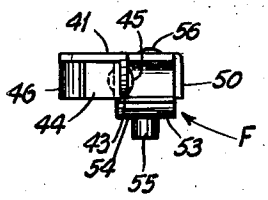


FIG. 7.



INVENTORS:
EARL M. TRAMMELL SR.
EARL M. TRAMMELL JR.
By Robert B. Terry
ATTORNEY

Patented Aug. 26, 1947 2,426,474

UNITED STATES PATENT OFFICE

2,426,474

SASH AND SASH GUIDING MEANS

Earl M. Trammell, Sr., and Earl M. Trammell, Jr., St. Louis, Mo.

Application March 24, 1944, Serial No. 527,930

14 Claims. (Cl. 20—52.4)

1

This invention relates to improvements in sash and sash guiding means, and more particularly to an improved construction of sliding sash, sashway features and sash guiding hardware, all designed particularly to the end of assuring a freely operating sash at all times and under all conditions. The improvements are particularly applicable to the usual sliding, double-hung window sash, with only negligible modification of existing, more or less standard sash and frame structure.

A number of serious shortcomings, evident in standard types of sliding sash, manifest themselves particularly in excessive binding due to unusual or unintended frictional effects, preventing a window sash, for example, from sliding smoothly and without undue effort, in the sashway; a second dominant and prevalent difficulty manifests itself in an inability with prevalent sash and frame constructions to maintain a suitable and satisfactory weather seal between sash and sashway elements without employing complete weatherstrip equipment, and without sacrificing free running operation of the sash in its sashway.

The noted difficulties arise in heretofore prevalent millwork because of two principal factors, viz., an inability of the manufacturer to assure that inside stops and other elements which heretofore have been assembled on the job, are properly and accurately located so as to assure a free running sash, and one which will permanently remain in a fully operative condition. A second important factor, among others, arises from the possibility, in wood sash constructions, that either originally or because of weathering effects, sash stiles and sashway or frame elements will sometimes become warped, so as to preclude smooth operation, or even at times warped to an exaggerated degree such as to preclude any possibility of movement of sash in the sashway without partial destruction or disassembly. Such warping effects at times will result in badly bowed sash stiles or other vertical elements, or occasionally, due to warping, some of the stile elements will become twisted in a manner almost to preclude sliding movement of the sash. A further adverse factor generally to be contended with, particularly in new construction, is the effect of paint, varnish or other finishing materials which,

2

by reason of uneven application or adhesions resulting between relatively slidable elements, will often preclude satisfactory sash operation.

The present invention accordingly has as a general object, a construction of sash and sashway, together with certain sash hardware, all of such nature as fully to obviate the prevalent difficulties above noted, and to assure smooth and easy sash movement at all times and under all conditions, while providing for a dependably tight weather seal about the margins of the sash when in or near closed position.

A further and important object of the invention is attained in improved sash guiding means which provide for a distinct weather sealing displacement of the sash in a direction depthwise of the sashway, incident to sliding movement of the sash as it approaches and attains closed position.

Yet a further important object of the present improvements is attained in a provision for permitting a somewhat more than usual operating clearance between the sides of a sliding sash between the sash and stationary stile elements such as pulley stiles for example, together with improved sash attachments which serve the dual function of tending to center the sash at all times in a direction depthwise of the sashway and which also effect a centering action of the sash laterally, i. e. in its own plane, to right or left, in the sashway.

Yet a further object of the invention is attained in attachment hardware which may be applied to standard sliding sash with but a minimum of wood working operations to effect such attachment.

A further object of the invention is attained in the provision of special fixtures for the purposes noted, such that they may be either applied to standard sash by carpenters at the building, or with equal facility and advantage be applied by the manufacturer with almost no disturbance of existing designs and existing wood working facilities, and yet will serve fully to attain the several objects heretofore expressed.

The foregoing and still further advantages will more clearly appear from the following detailed description of a single preferred example of the invention as applied to a double-hung standard window sash and frame only slightly modified,

and from the drawings illustrating such embodiment, in which:

Fig. 1 is a front elevation, viewed from the room side, of a double hung sliding sash and frame work constituting a sashway therefor, as installed;

Fig. 2 is an enlarged vertical sectional elevation as viewed along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary horizontal section as viewed along line 3—3 of Fig. 1, illustrating portions of one side of the sash when in closed position;

Fig. 4 is a view taken similarly to Fig. 3 but illustrating the sash, sash fixtures and certain elements of the sashway, when the sash is in open position;

Fig. 5 is a fragmentary view of one edge of one of the sash with a guiding fixture attached, and showing the latter on a somewhat larger scale than in preceding figures;

Fig. 6 is a side view of the fixture and sash portion shown by Fig. 5, the structure of Fig. 6 being viewed at a right angle to that of Fig. 5, and

Fig. 7 is a top view of one of the fixtures as same would appear when viewed from line 7—7 of Fig. 5.

Proceeding now to a description of the selected example by characters of reference to the drawing, the upper sash is indicated generally at 10, and the lower sash at 11. As a prevalent construction, each sash comprises sash stiles 12 and 13, check rails 14 and 15, inside casing 16, stool 17, apron 18, an inside stop 19, together with other of the usual conventional framing and sash elements, as will be readily understood to those familiar with the art.

The sash assembly as manufactured and distributed includes at each side, a vertical stile, sometimes known as a pulley stile, indicated at 25. Secured to the stile 25 at each side of the assembly is a blind stop 26, an inside stop 19 and an intermediate stop usually designated as a parting bead 28. According to usual and heretofore prevailing practice, the inside stop is applied by the carpenter on the job, or at the time of installing the sash at the building. Due usually to lack of proper care or lack of any accurate gauging device, the inside stop is often set too tightly against the bottom sash, with the effect that, after painting, or due to moisture absorption, or for other reasons, the sash becomes tight and fails to slide freely in the guide grooves therefor. This difficulty has been obviated by routing a recess 30 within which is firmly set the inside stop 19, at the factory, rather than on the job. Even though later applied on the job, the location of the stop 19 is fixed by the recess 30. This has an advantage, as will later more readily appear, of providing for a definite width of sashway, particularly for the lower sash. Similarly the parting bead 28 is inset into the stile 25, for which purpose there is provided a groove 31, this being in keeping with prevailing practice.

It will have appeared that the elements 25, 26, 19 and 28 are duplicated on the opposite side of frame assembly, and as will appear from their relation to the sash elements 10 and 11 serve collectively to constitute a guide at each side of each sash which guides are, for brevity hereinafter collectively referred to as a sashway. It should here be noted that the vertical (pulley) stile 25 on each side, is provided with a longitudinal groove 32 substantially midway between the inside stop 19 and parting bead 28, and with a similar such groove 33 about midway between the parting stop 28 and the blind stop 26. As will later more clearly appear, these grooves cooperate with certain of the sash guiding fixtures to be described, in keeping the sash centered, each in its sashway as the sash is raised or lowered.

Although it is desired, at least for the present, to disturb as little as possible, present trade expectations and manufacturing practices, it is nevertheless an extreme preference to provide a substantially greater clearance for the sash, in a direction depthwise thereof, than is prevalently provided by millwork manufacturers, in fact it has been found by trials that double the prevalent clearance, will not be excessive from either an operative point of view, or that of appearance. Similarly, we regard it as of importance and contributing materially to best results with the present improvements, to provide considerably more than usual clearances between sash stiles and adjacent pulley stiles, at each edge margin of the sash. By preference the usual total clearance is augmented, in fact doubled, being at least ¼ inch in windows of conventional residence sizes, and may be increased to an even greater extent if desired.

The present improvements contemplate the provision of at least two, but by preference four guiding and sash sealing fixtures for each sash of a double hung window assembly, these being generally indicated by location, at F in Fig. 1, there being, for each sash, one fixture F near each opposite upper corner and one at each opposite lower corner. A further departure from conventional sash construction incident to present improvements, will perhaps best appear from Figs. 2 and 4 wherein it is seen that the sash stiles are each rabbeted longitudinally over at least one-half their thickness, thus resulting in the undercut portions or recesses 40, these being relatively oppositely located as will appear from Figs. 3 and 4, these rabbeted portions serving substantially to contain the fixtures F except for certain guiding projections to be described.

It is thought best conducive to a full understanding of present improvements, next to describe the fixtures in one presently preferred form, the construction of which will best appear from Figs. 5, 6 and 7. These are made in right and left hand types, and may be utilized in either upright or inverted position as will appear from Fig. 2. Each of the fixtures F is shown as including a base which may consist of a plate element of partly channel form, indicated at 41, and secured in place in the rabbeted recesses therefor, by mounting screws 42, of which any suitable number may be employed and which extend through suitable apertures (not shown) in the base 41. The base includes a relatively narrow upper portion (Fig. 5) one margin of which is upturned at about a right angle to the plane of the base to constitute a flange indicated at 43. This serves as will readily appear, as a support for a relatively heavy highly tempered spring 44, securement of the spring being effected as through rivets 45 to the flange 43. The nose or bearing portion of this element 44 consists of a substantially rounded member 46 carried by the spring 44 as an extension thereof, the elements 44 and 46 constituting a J-shaped spring of fairly substantial loading. The lowermost (Fig. 5) somewhat wider portion of base

41 is provided with an upturned right angular flange portion 50, a second such portion 51 and a third such portion 52. Pivotally connected to the base plate 41 is a bow spring 53 characterized by a substantially rounded outer portion 54, secured to which is a guide projection or lug of substantially cylindrical form 55, which if desired may consist of a roller mounted on a headed pin. The bow spring 53 is secured pivotally to the plate through a pivot pin 56, about which the spring 53 is free to move as a lever, arcuately within limits, being normally held in a position substantially parallel with and lengthwise of the base plate 41 by engagement with the stop constituted by the upturned flange or lug 50. Pivoted member 53—54 is yieldably biased into this position, as shown by Fig. 5, by means of a leaf spring 60 secured, as by rivets 61 to the flange 62. It will now have appeared that the spring 53 when moved slightly counterclockwise (Fig. 5) about the pivot 56, will serve to load or stress the spring 60, and when not subjected to any such turning moment, the spring 60 will serve to keep the J-spring 53—54 centered between spring 60 and stop 50. Extreme counterclockwise movement of the pivoted member is precluded by abutment of a tail extension 62 with the flange 51, which serves as a stop or limiting member for this purpose.

To complete the sash guiding and biasing hardware there is provided, one for each of the fixtures F, a biasing block or camming element 65. There are necessarily structurally separate from, but functionally closely cooperative with the fixtures F, and are located in the sashway, by preference secured to the inside stop 19 for the lower sash, and to the blind stop 26 for the upper sash, in positions such that each of the camming blocks is adapted for wiped engagement by and in biasing cooperation with the associated J-spring 44—46. In construction each of the blocks 65 consists of a somewhat elongate member depthwise perforated for the reception of fastening screws 66, and provided at one end with a nose portion 67 of reduced thickness continuing into a wedge surface, thence merging into a portion of uniform depth, each block being for example, of a length of 1¾″ to 2¼″ for windows of usual or standard dimensions.

The manner of installation of the several fixtures F will readily appear from Figs. 2, 3 and 4, installation being easily directed by a suitable paper template packaged with each set, or a standard metal template of permanent construction. Their function and operation will first be discussed in reference to the coaction of the J-springs 44—46 in cooperation with the biasing or camming elements 65. There has heretofore been noted the more than usual depthwise clearance provided facewise along the margins of the sash, in the sashway. Considering first Fig. 4 showing the sash in open position, it will appear that since the guide grooves 32 and 33 are substantially rectilinear, the centering action of springs 60, considered depthwise of the sash, will serve through the engagement of projections or lugs 55 in the grooves 32 and 33 when the sash is open, to keep it substantially with a uniform working clearance on both inside and outside margins of the sash stiles working between the stops. This condition will readily appear from Fig. 4. Assuming now for example, that the lower sash is brought to approach a closed position, its rounded portions 46 will first engage the reduced ends 67 of the camming or biasing member 65, with the

effect that, as the sash is brought farther toward closed position, it is then cammed or biased toward the parting bead 28. Due to the substantial loading of spring 44, this effect, preferably imparted at both top and bottom of the sash, serves to bring it firmly and snugly into weather sealing relation in the joint 68 between the sash stile and parting bead. As soon however, as the sash is moved out of closed position, upwardly if the lower sash, or downwardly if the upper, within the first inch or slightly more, of opening movement, the loading of spring 44 through engagement of member 46 by the camming element 65 is released, and the sash is again permitted to move away from contact with the parting stop, under which conditions the rounded member 46 works entirely free of the adjacent stop element.

Referring now to the function of the lateral balancing features including the pivoted spring 53—54 and the guide projection or lug 55 carried thereby, it will appear that the member 53 is free to be flexed toward and away from the plate 41 as shown by the arrows (Fig. 6) while also permitting a pivoting action at a right angle to this direction of movement as shown by the arrows of Fig. 5. The function of spring 60 having been heretofore noted, it is now seen that the member 53 serves in effect as a compound spring, since it is capable of independent motion in either of two planes at a right angle to each other.

When the sash is in open position, the parts will appear substantially as shown by Fig. 4, wherein is observed the unusual clearance along each side margin of the sash, as indicated at 75. Similarly, the abnormal working clearance between the sash stiles and stops, in a direction depthwise of the sash, as indicated at 76. Under these conditions the lugs or projections 55 of each of the fixtures will ride smoothly in the grooves 32—33 therefor and the rounded element 54 of each of the spring assemblies 53—54 will bear against the inwardly facing vertical surface of the sashway, specifically as shown, the vertical or pulley stile 25. It will appear that this condition obtains normally in all positions of the sash in the sashway except during the last inch or two of sash closing or first sash opening movement. It will also have appeared that, due to the elaborate clearance provisions, in case of any warping of the sashway elements or sash stiles, there is still permitted at least an adequate working clearance in spite of any local dimunition thereof because of warping effects. In numerous experiments over a number of months, and in sash actually produced, it has been found that the present improvements serve to provide a sufficient operating clearance with free sash operation even under the most extreme conditions encountered by reason of warping effects or inaccurate assembly.

When the sash is in substantially open position, in spite of the clearances provided both depthwise of the sash opening and laterally in the plane of the sash proper, there will nevertheless be exhibited no undesirable looseness of the sash in the sashway such as might cause rattling and unwarranted noise. Such effects are assured against chiefly by two provisions, namely, the fact that the sash is centered depthwise of the opening due to the engagement or projection of lugs 55, in the grooves 32, etc., therefor. Also, the effect of springs 60 in biasing each of the springs 53 about its pivot against the stops 50 will at once indicate that the sash cannot be moved depthwise in one direction and can only be moved

depthwise in the opposite direction by loading the springs **60**. Similarly, any chattering or rattling of the sash in its own plane, in the sashway is precluded by the fact that the springs **53**, being in effect oppositely biased bow springs and of virtually equal loading, will keep the sash centered in its own plane.

There remains to be considered in operation, the function and effect of the springs **53**, considered as levers pivotal about elements **56** against the biasing or loading of springs **60**, particularly when the sash is brought first to approach, thence fully into closed position. As heretofore described the entire sash will be cammed or biased into sealing relation against one of the stops, in the example shown toward the parting stop **28**. It being a preference that spring **44** be of considerably greater loading than spring **60** of each fixture F, the spring **44** is flexed only to a minor extent as the sash is closed. However, in accordance with preference the guide grooves **32—33** are rectilinear throughout their lengths, being vertical or substantially so. Thus when the sash is cammed or biased into sealing relation with the parting bead, there results a movement of spring **53** to a slight extent in a counterclockwise direction (Fig. 5) against the loading of the associated spring **60**, which being lighter in loading than spring **44**, will be predominantly stressed, it being noted that spring **60** bears against a downturned lip or flange **71** on the spring **53**. Thus, when the sash is again opened to such an extent that the rounded portion **46** clears the camming plate or block **65**, springs **60** will again serve to coact in the centering action of the sash depthwise of the sashway.

It will have been observed that when the sash is closed there is produced an effective weather seal in each of the zones **68** (Fig. 3) along the vertical margins of the sash. The slope usually given to the horizontal rails of the lower sash, for example where the bottom rail bears against or upon the sill, will produce an effective weather seal along the lower horizontal margin. Similarly, according to usual practice the check rails of a double hung sash being sloped, or chamfered to mate along a plane at an acute angle to the horizontal, will create an effective seal therebetween, since the sash are biased toward each other in a zone intermediate of the window opening. However, if and as desired, a weather strip of suitable form may be employed between the check rails of the sash, being mentioned herein merely for completeness but as constituting per se, no part of present improvements.

The foregoing description of parts and operation has been directed principally to parts, fixtures, matters of clearance and actuation of the lower sash of a double hung sash assembly. The description applies equally to the upper sash, which accordingly will require no further detailed description. It is of course well known in the art that in double hung sash of the general type selected for exemplification of the improvements, the upper sash will close incident to full upward movement instead of full downward movement. It will have appeared also that the fixtures F are, in their present form, preferably produced in both right and left handed types, and may be used either in a relatively upright or relatively inverted position, as will clearly appear from Fig. 2 wherein those at the lower extremities may be said to be inverted relative to those near the upper extremities of each sash.

It is contemplated that the fixtures as heretofore noted may be and preferably are factory installed; it is however equally within the purview of the developments that the fixtures be produced, packaged and sold as such. Although operative in a single pair for each sash, distinctly best operation is attained by the use of two along each lateral margin of each sash, thus indicating as preferable a packaged article containing eight of the fixtures F together with the same number of the camming blocks **65**, together with screws **42** and **66** in required number.

It will now have appeared that the present invention serves fully to attain each of the several objects specifically above enumerated, and others implied from the description of operative combinations. Although the invention has been described by making reference in detail to a single preferred embodiment, the detail of description is to be understood solely in an illustrative sense, numerous variants being possible within the scope of the claims hereunto appended.

We claim as our invention:

1. In a slidable sash assembly, a sash, stops and stiles forming a sashway of substantially greater depth than the thickness of the sash stiles, the assembly including a projecting member carried by one of the vertical elements of the assembly, and a channeled member substantially vertically disposed along the sashway with the projecting member guidedly operable in and along the channeled member, one of said members being pivotally supported and resiliently positioned to permit a yielding displacement of the sash, in a direction depthwise thereof, in substantially any position of the sash along the sashway.

2. In a window and sash assembly, a slidable sash, stops including a parting bead, and stiles forming a sashway of substantially greater depth than the thickness of the sash stiles, and of substantially greater width than the sash, a fixture at each side of the sash, a spring pressed element carried by the fixture, a camming member in the sashway adapted to be engaged by the spring urged element in one position of the sash, and positioned to urge the sash toward the parting bead when the sash is in said position, and spring means carried by each fixture, and coacting with the stiles to center the sash between the stiles.

3. In a sash construction including a slidable sash with stops and stiles forming a sashway, the sashway being of appreciably greater width and depth than the sash proper, resilient sash-centering elements between the fixed stile members at opposite sides of the sashway, and the adjacent vertical sash stiles, the centering elements being so located between the fixed stile members and sash stiles as to tend to bias the sash to a substantially centered position in the plane of the sash and laterally within the sashway, whereby to maintain substantially an equal working clearance edgewise of and on opposite vertical margins of the sash, the vertical stiles at each side of the sashway being vertically grooved, and a guide pin carried by each of the sash-centering elements, and extending into the adjacent stile groove.

4. In a window construction including a slidable sash, stops and stiles forming a sashway of substantially greater depth than the thickness of the sash stiles and of substantially greater width than that of the sash, a pair of curved

spring elements carried on opposite margins of the sash, and cooperating camming blocks, each adapted to coact with one of the spring elements when the sash is in and near closed position, for biasing the sash into sealing relation with certain of the stops, a pair of resilient sash-centering elements, located one at each side of the sash and mounted thereon, being biased outwardly toward the vertical stiles of the sashway and tending to bias the sash to a substantially centered position in the plane of the sash, laterally within the sashway, said vertical stiles being provided with vertical channels, and a lug carried by each of said resilient elements, and projecting horizontally therefrom so as to extend into and operate along the channels as the sash is opened and closed.

5. In combination in a sash and sashway, a sash fixture adapted for guiding and centering the sash in the sashway therefor, the fixture including a mounting base, a normally horizontal guiding projection, and spring means through which the projection is yieldably connected to the base and biased relatively thereto, both along the plane of, and depthwise of the sash.

6. A fixture for application to the edge face of a sliding sash in a sashway therefor, the fixture including a mounting base, a guide pin projecting outwardly of the base and adapted to work along a channel provided therefor in the sashway, and spring means tending to hold the guide pin in a normal position on the base, but permitting a yielding displacement of the pin across the base.

7. A sash guiding fixture adapted normally to maintain a sash centered laterally in its own plane, in a sashway, the fixture including a base for securement to a vertical sash stile, a spring carried by and projecting outwardly of the base, a projection carried by substantially the outermost portion of the spring and adapted to function as a guide element for the sash when extended into a cooperating guide channel, the projection and spring being pivotally mounted on the base to permit a compound movement of the projection relative to the plate and sash by which it is carried.

8. In a fixture for guiding a slidable sash, a base adapted for mounting the fixture in a sashway, a guide lug adapted to enter and cooperate with a longitudinal sash guiding channel, and spring means through which the lug is swingably assembled to the base, in a manner tending to maintain a predetermined relation of the lug to the base, yet permitting a yieldably controlled arcuate movement of the lug across the base as well as toward and away from the base.

9. In a fixture for guiding a slidable sash, a base adapted for mounting the fixture on a sash, a guide lug adapted to enter and cooperate with a longitudinal sash guide channel, a spring by which the lug is carried and secured to the base and yieldably urged outwardly of the sash, the spring being pivotally connected to the base, a second spring carried by the base and serving to bias the first said spring toward a centered position on the base, and stop means on the base for limiting pivotal movement of the spring.

10. In an attachment fixture for sliding sash, a base adapted for attachment to a vertical stile of the sash, a sash centering spring pivotally mounted on the base, a lug carried by the spring and thereby urged outwardly of the base and adapted for sash guiding operation in an adjacent longitudinal stile channel, a second spring on the base serving yieldably to maintain the first said spring and lug in a centered position on the base, and a third spring carried by the base and mounted for flexure in a direction at a right angle to the direction of flexure of the first said spring and adapted for cooperation with a camming element in the sashway to bias the sash into weather sealing relation in a sashway when the sash is in or near closed position.

11. In a window construction including a slidable sash, together with stops and stiles assembled to constitute a sashway for guidingly retaining the sash for vertical sliding movement, the sashway being of appreciably greater width and depth than the sash proper, the sashway including vertical pulley stiles each of which is provided with a rectilinear guide channel substantially centrally disposed, depthwise of the sashway, resilient sash centering elements of which at least one is disposed at each side of the sash between fixed stile members and sash stiles, the centering elements being carried by the sash and each characterized by an outward bias in the plane of the sash whereby to maintain substantially an equal working clearance marginally of and in the plane of the sash, spring means coacting with the centering elements and tending therewith, to maintain the sash in a free-sliding, centered relation depthwise of the sashway, and a projection on each of said resilient centering elements, and adapted to work along and in the guide channels.

12. In a window construction including a slidable sash, together with stops and stiles assembled to constitute a sashway for guidingly retaining the sash for vertical sliding movement, the sashway being of appreciably greater width and depth than the sash proper, and provided with a vertical channel, sash centering elements of which at least one is disposed at each side of the sash between fixed stile members and sash stiles, the centering elements being carried by the sash and each characterized by an outward bias in the plane of the sash whereby to maintain substantially an equal working clearance marginally of and in the plane of the sash, spring means coacting with the centering elements and tending therewith, to maintain the sash in a free-sliding, centered relation depthwise of the sashway, the sash centering elements further each including a bow spring and a lug projecting substantially horizontally therefrom, and means whereby the lug may be yieldably displaced from a normally centered position depthwise of the sash, as the sash encounters any inequalities in the sashway incident to movement therein.

13. In a slidable sash assembly, a sash stop and stiles forming a sashway of substantially greater depth than the thickness of the sash stiles, the assembly including a guide lug carried by and extending at about a right angle to a sash stile, the sashway being provided with a guide track along which the lug is guidedly operable as the sash is raised and lowered, yieldable means, including a lug-carrying arm, coacting with the lug to permit a relative displacement of the guide lug and sash in a direction depthwise of the sashway, and means positioned to act upon the sash at one extreme of its range of sliding movement, to displace the sash depthwise of the sashway and against one of the stop elements of the sashway.

14. In a window and sash assembly, a slidable sash, stops, including a parting bead, and stiles forming a sashway of substantially greater depth

than the thickness of the sash stiles, and of substantially greater width than the sash, a fixture carried laterally by the sash, a spring pressed element carried by the fixture, a camming member in the sashway adapted to be engaged by the spring pressed element in one position of the sash, and positioned to urge the sash toward the parting bead when the sash is in said position, and additional spring means carried by the sash and coacting with the stiles tending to center the sash between the fixed stiles.

EARL M. TRAMMELL, SR.
EARL M. TRAMMELL, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,345,273	Macklanburg	Mar. 28, 1944
2,188,054	Madsen	Jan. 23, 1940
2,183,476	Feiler	Dec. 12, 1939
1,642,177	Schnake	Sept. 13, 1927
1,357,569	Jones	Nov. 2, 1920
674,301	Lucke	May 14, 1901
392,924	Klein	Nov. 13, 1888

FOREIGN PATENTS

Number	Country	Date
221,141	Great Britain	Sept. 4, 1924
24,514	Great Britain	1912