Sept. 25, 1962 L. E. PETERS ETAL 3,055,062

PIVOTED SASH TYPE WINDOW

Filed May 29, 1961 3 Sheets-Sheet 1

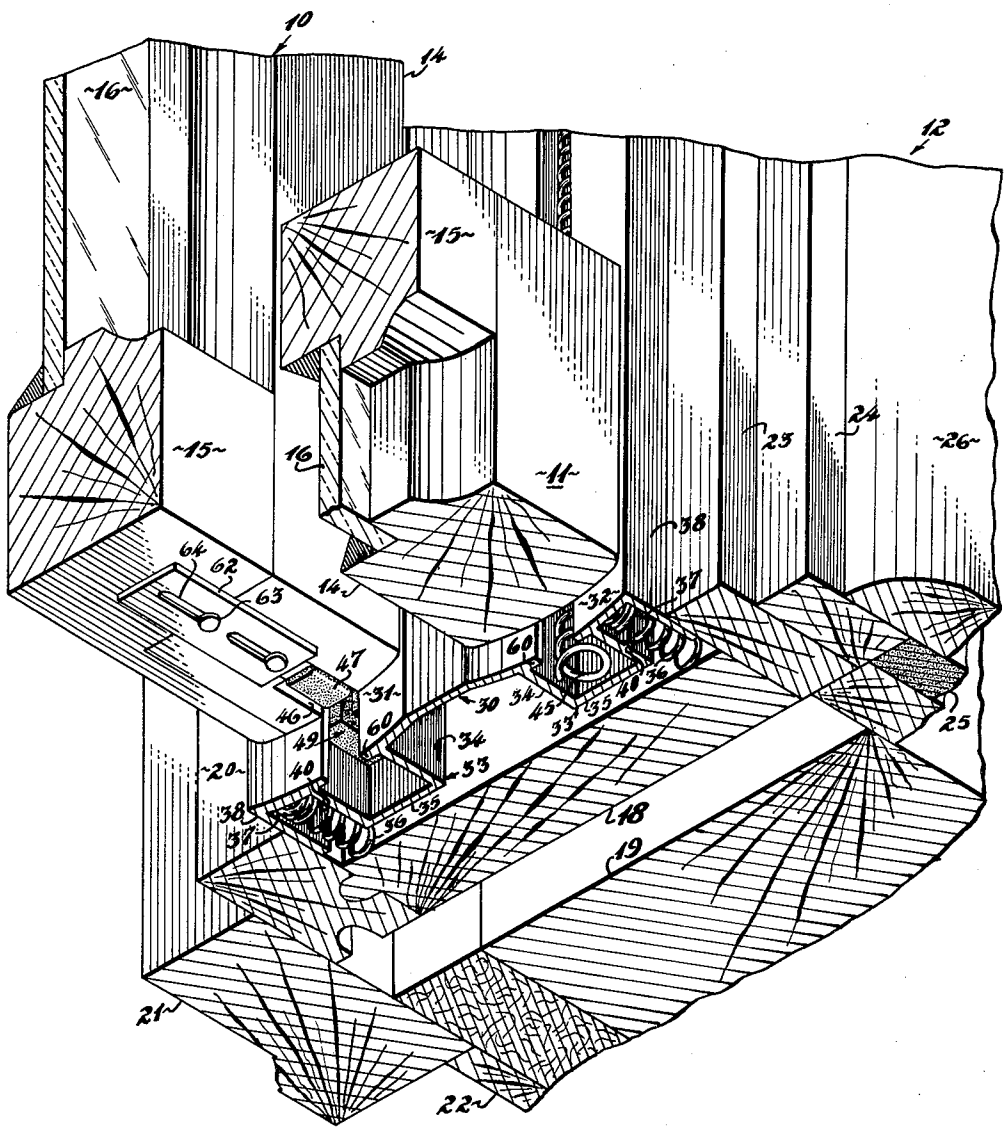

Fig. 1

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Filed May 29, 1961 3 Sheets-Sheet 2

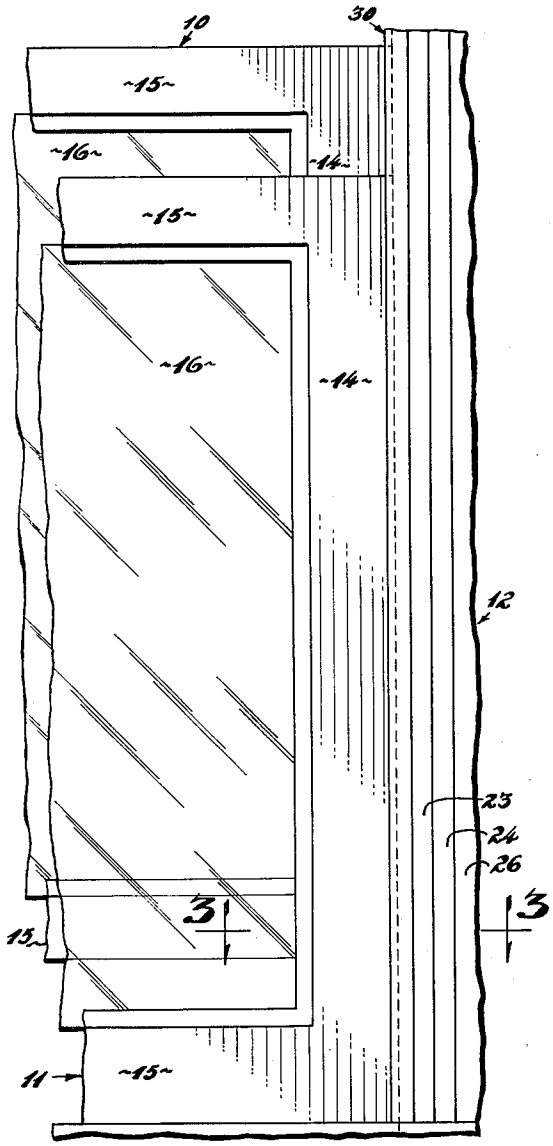

Fig. 2

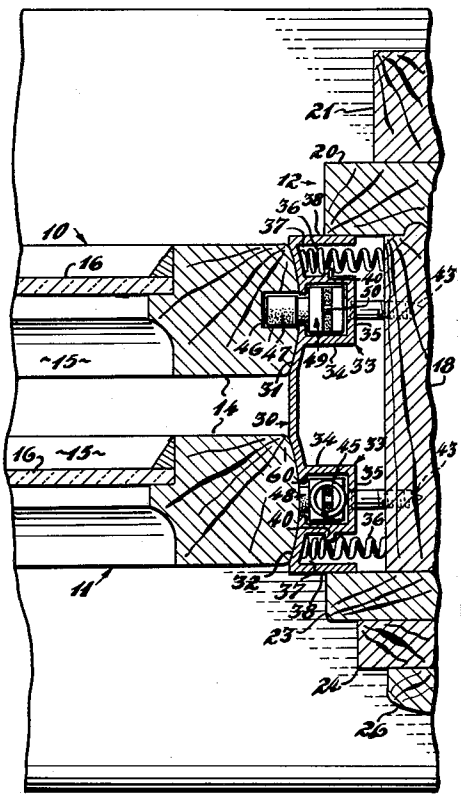

Fig. 3

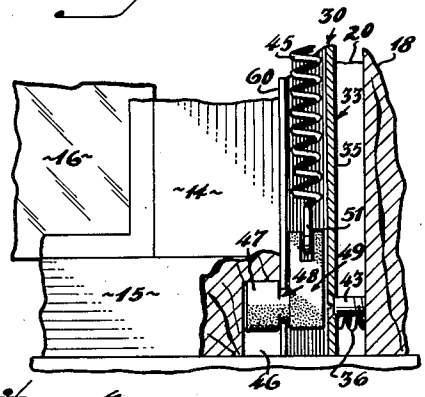

Fig. 4

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PIVOTED SASH TYPE WINDOW

Filed May 29, 1961 3 Sheets-Sheet 3

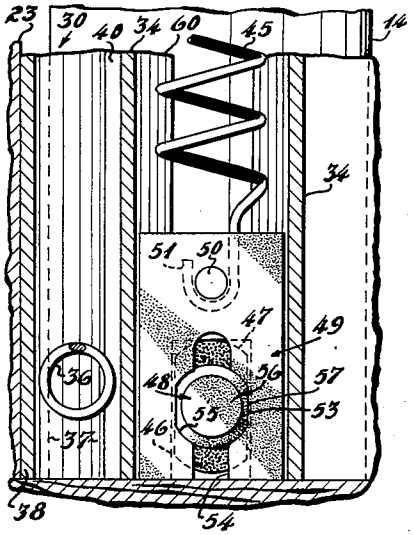

Fig. 6

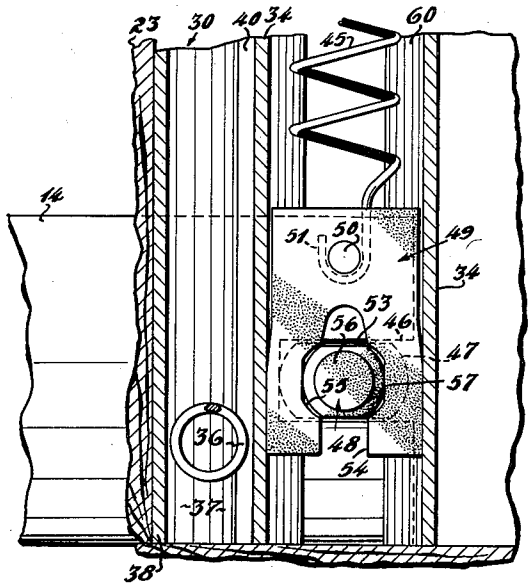

Fig. 7

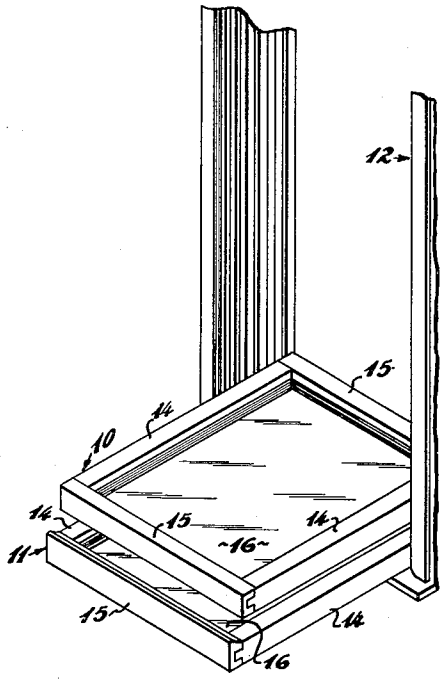

Fig. 5

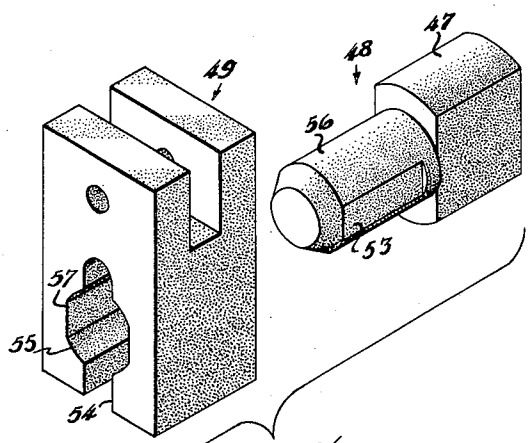

Fig. 8

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United States Patent Office 3,055,062 Patented Sept. 25, 1962

3,055,062
PIVOTED SASH TYPE WINDOW

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Filed May 29, 1961, Ser. No. 113,216
9 Claims. (Cl. 20—42)

This invention relates to a sliding sash type window in which the sash may be tilted or pivoted between vertical and horizontal positions and may be removed from the window rame entirely.

Basically, the pivoted or tilt out sash type window is not a new concept but rather it has its origin at least as early as the nineteenth century. There has been a recent emphasis on such windows and many attempts have been made to provide commercially satisfactory designs. The increased emphasis on this type of sash window has been caused by the need for and the desirability of reducing the time and expense of maintaining clean windows.

The type of window to which the invention is directed is one in which upper and lower sliding sash are normally confined in their vertical planes but are adapted to be released from such plane and rotated through an angle of approximately 90° to a horizontal position. In such a horizontal position the glazing on each sash normally facing the outside of the building may be conveniently washed without requiring a person to be on the outside of the building. Additionally, when both sash are in a horizontal position, almost the complete window frame area is open to permit the circulation of air during warm weather.

When the feature of complete removability of the sash is added to the structure, the structure is even more advantageous at least from the standpoint of the convenience with which broken glazing can be replaced.

It has been an objective of the invention to provide a sliding sash type window in which the sash can be pivoted and removed, the window structure being of such an economical design that its cost will not be substantially greater than a sliding sash type window not having the tilting and removability features.

A good sash type window has double sash slidably mounted in side jamb weather stripping which is resiliently biased toward the sash stiles for good weather protection. Balance springs are connected between the window frame and sash to facilitate the raising of the sash. Through a minimum redesign of such elements and through the addition of one other element in the connection of the balance spring to the sash the objectives of the invention can be attained. In this way, economy and simplicity are provided, for the complexity of the window has not been increased. Additionally, reliability of the window has been preserved by maintaining the simplicity of construction.

An important aspect of the invention resides in the structure by which the balance spring is connected to the sash. The connection comprises a resilient block which is snugly slidable in the weather stripping, the block being slotted to receive a pin which is connected to the sash. The balance spring is connected to the block and normally urges the sash in an uppermost position. It can be appreciated that when the sash is tilted through an angle of 90°, the full weight of the window is not applied to the balance spring so that there is a tendency to pull the bottom of the sash upwardly. Also, if the sash is removed, the balance springs will snap upwardly because they are resisted only by the weight of the slidable blocks.

In accordance with the present invention, the connecting pin is T-shaped with the enlarged end disposed in a mating slot in the sash to prevent rotation of the pin with respect to the sash. The smaller portion of the pin is out of round so that when it is rotated in the block, it expands the

block against the walls of the weather stripping in which it is slidably mounted. The dimension of the block may be increased by as much as a sixteenth of an inch for example which is sufficient to provide a considerable braking force of the block with respect to the weather stripping.

It is another feature of the invention to confine the pivot pin within the slot in the corner of the sash by a sliding plate so as to permit the easy withdrawal of the sash away from the pin merely by shifting the sliding plate.

The several features of the invention will become more readily apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view partly in section showing the organization of the elements of the invention;

FIG. 2 is a front elevational view of a window employing the invention;

FIG. 3 is a cross sectional view taken along lines 3—3 of FIG. 2;

FIG. 4 is a front elevational view partly in section of a lower corner fragment of the window;

FIG. 5 is a perspective view illustrating the operation of the invention;

FIG. 6 is a fragmentary cross sectional view partly in section of the sliding block and weather stripping combination;

FIG. 7 is a view similar to FIG. 6 in which the sash has been pivoted to horizontal position; and

FIG. 8 is a diassembled perspective view of the sliding block and pin.

Referring now to the drawings, FIG. 2 shows the general orientation of a double hung window to which the invention pertains. There an upper sash **10** and lower sash **11** are slidably mounted in a window frame **12** to be described in more detail below. Each sash has side stiles **14** and rails **15** which support glazing **16**.

The frame in which the sash are mounted is best illustrated in FIG. 1. On each side of the window a side jamb **18** is secured to studding **19**. The outside edge of the jamb is engaged by a blind stop **20** which in turn is partially covered by a brick mold or exterior casing **21** which abuts against the building siding **22**. On the inside of the window frame jamb liners **23** and **24** are mounted on the jamb, the liner **24** being flush with the inside plaster **25**. The joint between the plaster and the liner is covered by casing **26**.

The sash are removably received in side jamb weather stripping **30** which has a pair of spaced longitudinal grooves **31** and **32** for receiving the upper and lower sash respectively.

The central portion of each of the grooves is depressed as at **33** to form recesses or channels defined by side walls **34** and a bottom wall **35**. The side jamb weather stripping is spring biased away from the jambs **18** by three or four vertically spaced helical springs **36** which are located in a channel **37** formed between a side wall **34** of recess **33** and flange **38** of the side jamb weather stripping. As can be seen in FIG. 3 the side jamb weather stripping is an extrusion which has been formed with ribs **40** projecting in the recesses **37**. The ribs form a mounting means for the helical springs **36**, the springs being secured in the recesses **37** merely by screwing them onto the rib **40**. The weather stripping **30** is secured to each side jamb **18** by a pair of screws **43** in the lower end thereof (FIG. 3) and a similar pair of screws in the upper end thereof not shown. The screws **43** are slidable with respect to holes in the bottom wall **35** of the recesses **33** so that the weather stripping is laterally movable and resiliently biased inwardly against the sash stiles.

Each sash has a balance spring **45** secured to each of

its lower corners the spring being mounted in the recess 33. The upper end of each balance spring 45 is secured to the side jamb weather stripping.

The balance springs are secured to the lower corners of each sash by the pivot pin mechanism shown in FIGS. 4, 6, 7 and 8.

As shown in FIG. 4, the lower corner of each sash has a slot 46 which receives the head 47 of a T-shaped pivot pin 48. The smaller portion of the pin is received in a sliding block 49 mounted in the recess 33. A pin 50 is secured in the upper end of the block 49 and receives the lower end 51 of the balance spring 45.

The enlarged head 47 of the pin 48 is of rectangular cross section, the smaller dimension being approximately the same as the smaller dimension of slot 46 in the corner of the sash as shown in FIG. 3. The cooperation of slot 46 and head 47 prevents the rotation of the pin 48 with respect to the sash although the pin is slidably removable from the slot.

As shown in FIGS. 6, 7, and 8, the block 49 has a slot 54 in the lower portion thereof, the slot being recessed as at 55 to receive the smaller portion 56 of pin 48. The pin is of generally circular section except that it is out-of-round by the flattened areas 53. Similarly the recesses 55 are generally circular but are flattened as at 57 to match the configuration of the smaller portion 56 of the pin. By comparing FIGS. 6 and 7 it can be seen that by rotating the pin 48 through an angle of approximately 90°, it is possible to expand the block 49 from the dimension shown in FIG. 6 to the dimension shown in FIG. 7 in which the sides of the blocks are pressed tightly against the side walls 34 of recess 33.

The block 49 is confined within the recess 33 by overhanging flanges 60 which form a portion of the grooves 31 and 32. The pin 48 is confined within the slot 46 of the sash by a slide plate 62 which is secured by screws 63 passing through slots 64 in the plate.

As best shown in FIGS. 1 and 3, the grooves 31 and 32 of the side jamb weather stripping are arcuate. In the preferred form of the invention the grooves are arcs of an approximately two inch radius circle. Similarly the side stile edges are of circular section of substantially the same radius. Thus, when the sash are in position the side stiles mate with the side jamb weather stripping to form a snug substantially weather tight fit.

In the operation of the invention, the sash slides up and down in the usual manner, the balance springs 45 serving to overcome the resistance of the weight of the sash to upward movement.

When it is desired to tilt out the sash to wash the glazing for example, the following sequence of steps may be followed: The lower sash, when it is in its lowered position, is grasped by its upper rail (bottom check rail) and pulled toward the inside of the building. Thereafter, the top sash is lowered and similarly pulled toward the inside of the building through an angle of approximately 90° until both sash assume the position shown in FIG. 5.

In pulling the sash through an angle of 90°, each pin at each corner of each sash is caused to rotate through an angle of approximately 90°. In rotating through the angle of 90°, the sliding blocks 49 are expanded to the configuration shown in FIG. 7 in which they brake against the side walls 34 of the recesses 33 in which they are slidably mounted. The gripping action of the blocks against the recessed walls prevents the blocks from being drawn upwardly by the force of the balance springs 45.

If it is desired to remove the sash, the slide plates 62 at each corner are slid away to expose the pins 48. Thereafter each sash can be removed simply by pulling away from the window frame. The braking action of the slide blocks retain the pins 48 in the proper position for convenient return of the sash to the window frame.

We claim:

1. A tilt out sash window comprising a frame including side jambs, at least one sash having side stiles, side jamb weather stripping secured to said side jambs, said weather stripping being configurated to receive said sash side stiles in sliding engagement, springs between said side jamb and said weather stripping resiliently biasing said weather stripping toward said side stiles, a longitudinal channel in said weather stripping on each side of said frame, a resilient block slidable in each said channel, a slot in said block, an out-of-round pin in said slot, one end of said pin being mounted in a lower corner of said sash and fixed against rotation therein, said pin, upon rotation through approximately 90°, expanding said block against the walls of said channel to fix said block against sliding movement.

2. A tilt out sash window comprising a frame including side jambs, at least one sash having side stiles, side jamb weather stripping secured to said side jambs, said weather stripping being configurated to receive said sash side stiles in sliding engagement, a longitudinal channel in said weather stripping on each side of said frame, a resilient block slidable in each said channel, a slot in said block, an out-of-round pin in said slot, one end of said pin being mounted in a lower corner of said sash and fixed against rotation therein, said pin expanding said block against the walls of said channel to fix said block against sliding movement.

3. A tilt out sash window comprising a frame including side jambs, at least one sash having side stiles and slots in the lower corners thereof, side jamb weather stripping secured to said side jambs, said weather stripping being configurated to receive said sash side stiles in sliding engagement, a longitudinal channel in said weather stripping on each side of said frame, a resilient block slidable in each said channel, a slot in said block, a T-shaped pin having an out-of-round end rotatably mounted in said slot, and an enlarged end of rectangular section mounted in said corner slot, the end of said pin mounted in a lower corner of said sash being against rotation therein, said pin, upon rotation with respect to said block, expanding said block against the walls of said channel to fix said block against sliding movement.

4. A tilt out sash window comprising a frame including side jambs, at least one sash having side stiles and slots in the lower corners thereof, side jamb weather stripping secured to said side jambs, said weather stripping being configurated to receive said sash side stiles in sliding engagement, a longitudinal channel in said weather stripping on each side of said frame, a resilient block slidable in each said channel, a slot in said block, a T-shaped pin having an out-of-round end rotatably mounted in said slot, and an enlarged end of rectangular section mounted in said corner slot, the end of said pin mounted in a lower corner of said sash being against rotation therein, said pin, upon rotation with respect to said block, expanding said block against the walls of said channel to fix said block against sliding movement, and a slide plate normally confining said pin within the slot in said sash corner, said slide plate plate being movable to permit said sash to be withdrawn with respect to said pin.

5. In a tilt out window, a sash pivot comprising, a channel member on each side of said sash, a resilient block snugly mounted in said channel member for sliding movement with respect thereto, and an out-of-round pivot pin connecting said sash to said block, said pivot pin expanding said block against said channel upon rotation of said pin with respect to said block.

6. In a tilt out window, a sash balance and pivot comprising, a channel member on each side of said sash, a resilient slotted block snugly mounted in said channel member for sliding movement with respect thereto, a balance spring connected at one end to said channel member and at the other end to said block, and an out-of-round pivot pin rotatably mounted in the slot in said

block and connecting said sash to said block, said pivot pin expanding said block against said channel upon rotation of said pin with respect to said block.

7. In a tilt out window, a sash pivot comprising, a channel member on each side of said sash, a resilient slotted block snugly mounted in said channel member for sliding movement with respect thereto and an out-of-round pivot pin rotatably mounted in the slot in said block and connecting said sash to said block, said pivot pin expanding said block against said channel upon rotation of said pin with respect to said block.

8. A tilt out sash window comprising a frame including side jambs, side jamb weather stripping secured to said jambs and having two spaced parallel grooves of shallow arcuate section, upper and lower sash, each said sash having side stiles of shallow arcuate section to mate with said grooves, springs urging said weather stripping toward said stiles, the central portion of said grooves being depressed to form longitudinal slide block channels integral with said weather stripping and co-extensive with said grooves, a resilient block snugly slidable in each said channel, a helical balance spring in said channel connected at an upper end to said jamb and at the lower end to said slide block, a slot in each said block, an out-of-round pivot pin disposed in each said slot and adapted, upon rotation to expand said block against said channel to brake same, said pin projecting into a slot in the lower corner of each said sash and being fixed

therein against rotation, and releasable means confining each said pin within said sash, whereby said sash can be tilted through approximately 90°, and removed from said frame with said slide blocks and springs remaining in fixed position.

9. A tilt out sash window comprising a frame including side jambs, side jamb weather stripping secured to said jambs and having two spaced parallel grooves of shallow arcuate section, upper and lower sash, each said sash having side stiles of shallow arcuate section to mate with said grooves, springs urging said weather stripping toward said stiles, the central portion of said grooves being depressed to form longitudinal slide block channels integral with said weather stripping and co-extensive with said grooves, a resilient block snugly slidable in each said channel, a helical balance spring in said channel connected at an upper end to said jamb and at the lower end to said slide block, a slot in each said block, and an out-of-round pivot pin disposed in each said slot and adapted, upon rotation to expand said block against said channel to brake same, said pin projecting into a slot in the lower corner of each said sash and being fixed therein against rotation, whereby said sash can be tilted through approximately 90° with said slide blocks and springs remaining in fixed position.

No references cited.