Sept. 22, 1959 A. T. HAGERTY 2,904,855

WINDOW MOVEMENT LIMITING DEVICE

Filed Oct. 26, 1956

Fig-1

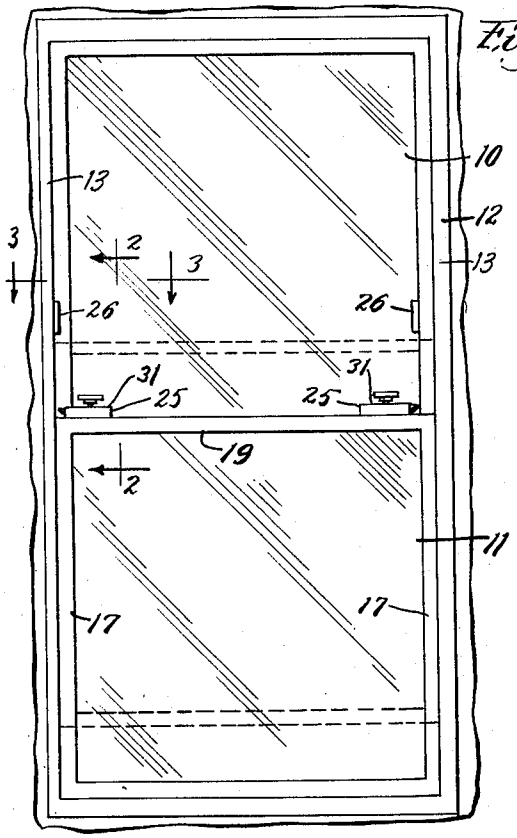


Fig-2

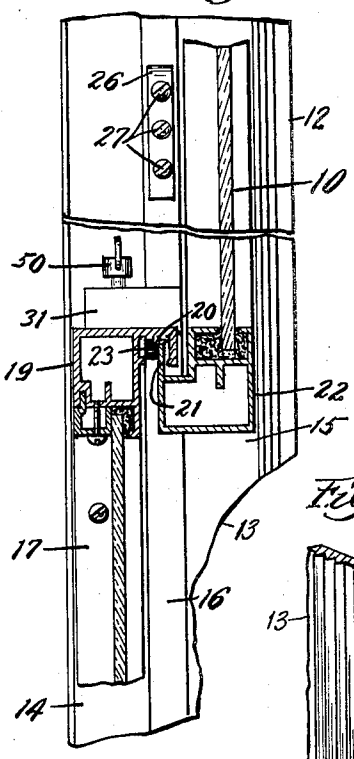


Fig-6

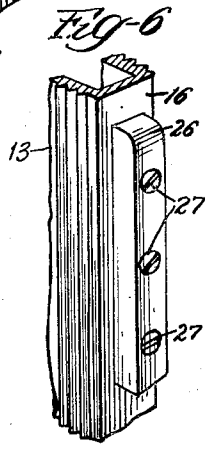


Fig-3

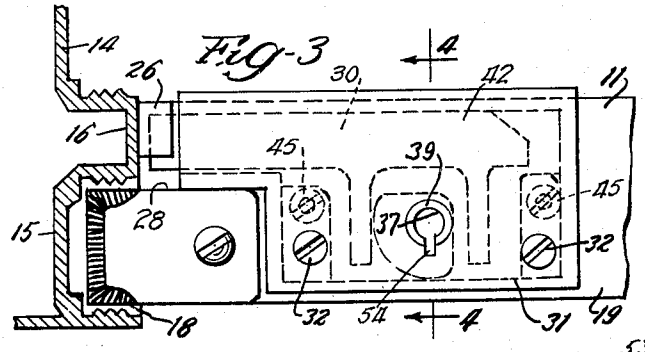


Fig-4

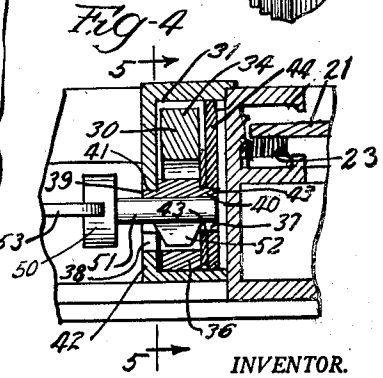
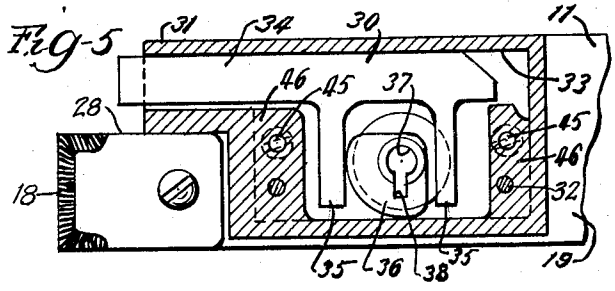


Fig-5



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United States Patent Office 2,904,855 Patented Sept. 22, 1959

2,904,855

WINDOW MOVEMENT LIMITING DEVICE

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Application October 26, 1956, Serial No. 618,523

9 Claims. (Cl. 20—52)

This invention relates to window constructions and is more particularly concerned with improvements in a device which is employed to limit the opening movement of a sliding sash relative to the supporting frame in which it is mounted.

In connection with the installation of double hung windows, it is frequently desirable to provide a device for limiting the opening movement of the bottom sash. Such devices generally comprise a fixed stop member on the frame and a cooperating stop member on the sash, the stop members being arranged to normally prevent the sash from being opened beyond a predetermined distance, usually less than the distance required to permit a person of normal size to use the window as an entrance or exit. Devices of this general character, which have heretofore been provided, have not been entirely satisfactory, and it is a general object of the present invention to provide an improved sash movement limiting device which comprises cooperating abutment stop members adapted to be affixed to the side members of the supporting frame and to the sliding sash, respectively, with the stop member on the sash being mounted for ready and easy key operated adjustment into and out of a position where it projects from the frame of the sash and is carried by opening movement of the same into engagement with the stop member which is fixed on the supporting frame, so that the device may be rendered inoperative only by a person having a key as when the outside of the window is to be cleaned or the like.

It is a more specific object of the invention to provide an improved device for limiting the opening movement of a sash of the type which is mounted in sliding relation in a window frame, which device comprises a stop block mounted in a fixed position on the side member of the supporting frame where it normally clears the sash and a cooperating stop bar mounted in sliding relation on the sash and having key operated actuating mechanism associated therewith for moving the same into a position where it will engage with the stop block when the sash is moved a predetermined distance from a closed position toward an open position.

It is a further object of the invention to provide a movement limiting device for a window sash which is mounted in sliding relation in a channel-like supporting frame which device comprises an abutment block fixed on a side member of the frame in which the sash is mounted and normally projecting into a recess in a side member of the sash frame when the latter is moved to an open position, and a latch bar mounted in sliding relation in a housing which is secured on the top rail of the sash and which is provided with a key operated rotatable cam member for positioning the bar to project the end thereof laterally of the sash and into the recess in the side member of the same a sufficient distance to engage in abutting relation with the abutment block when the sash is raised a predetermined distance.

These and other objects and advantages of the invention will be apparent from a consideration of the device

which is shown by way of illustration in the accompanying drawings, wherein:

Fig. 1 is an elevation of the inside of a double hung window construction having a movement limiting device for the lower or inner sash which incorporates the principal features of the invention;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1, on an enlarged scale and with portions broken away;

Fig. 3 is a horizontal section, on a larger scale, taken on the line 3—3 of Fig. 1, and with portions broken away;

Fig. 4 is a cross section taken on the line 4—4 of Fig. 3;

Fig. 5 is a cross section taken on the line 5—5 of Fig. 4; and

Fig. 6 is a fragmentary perspective view, to an enlarged scale, showing the fixed stop block which is secured on the jamb of the supporting frame.

Referring to the drawings, a double hung window is illustrated which comprises an upper outer sash 10 and a lower inner sash 11 which are mounted in a surrounding frame 12, the latter being secured in an opening in a vertical wall. The supporting frame 12 and the sash 10 and 11 comprise frame members which are formed preferably of sections of extruded metal, such as aluminum, stainless steel or the like.

The supporting frame 12 comprises oppositely disposed upright side or jamb members 13 which are formed with side-by-side inner and outer vertical guide channels 14 and 15 and a vertical parting strip formation 16 which separates the same.

The upper sash 10 is mounted in the outer guide channel 15, while the lower sash 11 is mounted in sliding relation in the inner guide channel 14. Weatherstripping 18 is provided on the side frame members 17 of the lower sash 11. The top cross rail or meeting rail 19 of the sash 11 has an outwardly extending flange section providing a downwardly opening channel or recess 20 for cooperation with an upstanding flange 21 on the inner side of the meeting rail 22 of the upper sash 10 to provide a weather seal between the two sash 10 and 11 when they are closed as in Fig. 2. The channel 20 is preferably provided with weatherstripping 23.

The upper sash 10 is fixed in position in the frame 12 or it may be mounted for sliding movement therein and provided with inside locking devices (not shown) to prevent it from being lowered or opened from the outside. The lower sliding sash 11 is provided, preferably at both sides thereof, with a movement limiting device 25 which may be adjusted to prevent opening movement of the sash 11 beyond a predetermined distance but which may be rendered inoperative, when desired, to permit full opening movement of the sash 10.

The stop device 25 comprises an elongate stop block 26 of generally rectangular cross section which is secured by screws 27 to the parting strip formation 16 of the side or jamb member 13 of the supporting frame 12 at a predetermined distance above the top cross rails 19 and 22 when the sash are in the closed position. The stop block 26 is positioned so that it is aligned with a recess 28 formed by notching the outer corner of the top rail 19 of the sash 11 and normally does not interfere with vertical or opening movement of the sash 11.

A slide plate forming a movable stop bar 30 is mounted on the top cross rail 19 of the inner sash 11 in a housing 31 which is secured to the rail 19 by screws 32. The housing 31 is formed on the inside thereof to provide a generally L-shaped recess 33 which is adapted to receive the slide bar 30. The slide bar 30 has a slide portion 34 of generally rectangular shape and cross section with longitudinally spaced laterally extending arms 35 adjacent the inner end thereof which are spaced a distance apart sufficient to straddle a rotatable barrel-like cam member

36. The cam member 36 has a bore 37 with an axially and radially extending slot 38 and with trunnion forming hub formations 39 and 40 at opposite ends thereof. The hub formation 39 is rotatably received in a bore 41 in the upper wall 42 of the housing 31 and the opposite hub formation 40 is received in an aperture or bore 43 in a bottom cover plate 44 which is secured on the bottom of the housing 31 by screws 45. The bores 41 and 43 are, of course, aligned to receive the hub formations 39 and 40. The housing 31 has shoulder formations 46 in which the screws 45 are received and the space between the same is sufficient to accommodate the arms 35 and the cam member 36 which are positioned for movement therein. The peripheral surface of the cam member 36 is eccentric relative to the axis of rotation of the member so that rotation of the cam member 36 in the space between the arms 35 on the latch or stop bar 30 slides the bar 30 in one direction or the other.

A key 50 is provided for operating the cam member 36 which has a stem 51 with a radially projecting plate-like tongue 52 at one end which is adapted to be received in the slot 38 in the cam member 36 when the stem 51 is positioned in the bore 37. A handle forming cross piece 53 is provided at the other end of the stem 51 of the key 50. The bore 41 in the wall 42 of the housing is only slightly larger in diameter than the stem 51 of the key 50 and is provided with a radially outwardly extending slot 54 corresponding to the slot 38 in the cam member 36 so that when the key 50 is inserted in the bore 37 of the cam member 36 and turned, it cannot be removed until it is rotated to align the tongue 52 with the slot 54.

In using the mechanism described, the movable stop members are assembled with the bottom sash 11 at opposite ends of the top rail 19, each housing 31 being secured on the end of the top surface of the rail 19 so that when the slide bar 30 is in extended or operative position, the end thereof will project across the recess 28 in the rail and toward the parting strip formation 16. The fixed stop blocks 26 are permanently secured on oppositely disposed portions of the inner surfaces of the parting strip formations 16, at the desired height so that each one projects inwardly into the path of the projected end of a slide bar 30 when the sash 11 is raised a predetermined distance, thereby providing a limit to the upward movement of the same. The slide bars 30 may be retracted by rotation of the key 50 to enable the sash to be raised without interference by the fixed stop blocks 26, as, for example, when it is required to clean the outside of the sash. The key 50 cannot be removed while the slide bar 30 is retracted but it may be removed only when the slide bar 30 is in extended or operative position. The mechanism is normally in operative position with the key removed and the sash cannot be fully raised either from the inside or the outside. With this arrangement the window washer or other person having a key for operating the mechanism is not likely to leave the sash in the open position beyond the limit of the stop blocks 26 but will be reminded to restore the sash to its normal condition before removing the key.

While specific materials and particular details of construction are referred to in describing the illustrated form of the window movement limiting device, it will be understood that other materials and other details of construction may be resorted to within the spirit of the invention.

I claim:

1. A movement limiting device for a window sash which is mounted in sliding relation in a supporting frame, said sash having side members and connecting top and bottom cross rails, said supporting frame having side members with opposed side guideway forming recesses which are adapted to receive the marginal portions of the sash side members in sliding relation therein, the top rail of said sash having a greater width than the side members and said top rail being notched at the outer corners thereof, said device comprising a stop block mounted on the said supporting frame adjacent a guideway forming recess and projecting toward the interior of said supporting frame, said stop block being positioned in spaced relation above the top rail of the sash and projecting into the notched corner of the top rail of the sash when the sash is raised, a latch bar, a housing in which said latch bar is mounted for sliding movement therein, means securing said housing on the top rail of the sash in position for the end of the latch bar to project over the notched corner thereof when the bar is moved to an outwardly extended position, and a manually operable key member engageable with the latch bar for moving it to and from extended position where it is engaged by the stop block when the sash is raised a predetermined amount.

2. A movement limiting device for a window sash which is mounted in sliding relation in a supporting window frame, said sash having side members and connecting top and bottom cross rails, said supporting frame having opposed side members with guideway forming recesses adapted to receive the marginal portions of the sash side members in sliding relation therein, the top rail of the sash having a width greater than the width of the side frame members and said top rail being notched at an outer corner thereof, said device comprising a stop block mounted on the said supporting frame adjacent a guideway forming recess and projecting toward the interior of the frame, said stop block being positioned in spaced relation above said sash and projecting into the notched corner of the top rail of the sash when the sash is raised, a latch bar, a housing having an internal guideway in which said latch bar is mounted for sliding movement so that the end thereof may be projected beyond the housing, means securing said housing on the top rail of the sash in position for the end of the latch bar to extend over the notched corner thereof when the latch bar is moved to an extended position, and a cam member in the housing which is engageable with the latch bar for moving it to and from extended position where it is engaged by the stop block when the sash is raised a predetermined amount.

3. A movement limiting device for a window sash which is mounted in sliding relation in a supporting frame, said sash having side members and a connecting top cross rail, said supporting frame having side members with opposed side guideway forming recesses which are adapted to receive the marginal portions of the sash side members in sliding relation therein, the top rail of said sash being notched at an outer corner thereof, a stop block mounted on the said supporting frame adjacent a guideway forming recess and projecting toward the interior of said supporting frame, said stop block being positioned in spaced relation above the top cross rail of the sash and projecting into the notched corner of the top rail of the sash when the sash is raised, an elongate latch bar, a housing in which said latch bar is mounted for sliding movement therein, means securing said housing on the top rail of the sash in position for the end of the latch bar to project over the notched corner thereof when the bar is moved to an outwardly extended position, said latch bar having a side recess at its inner end, a cylindrical cam member rotatably mounted in said housing and received in said side recess, an axial and radial slot in said cylindrical cam member, a key member engageable within said cam member, said key member having a tongue engageable in said slot for rotating said cam member to move said latch bar to and from extended position where it is engaged by the stop block when the sash is raised a predetermined amount, and said housing having a key-hole slot whereby to permit insertion of the key when the slots are aligned and to permit removal of the key only when the cam member is rotated to move said latch bar to its extended position.

4. A movement limiting device for a window structure wherein a sash is mounted in vertical sliding relation in a supporting window frame, said supporting frame comprising opposed side members having guideway forming recesses adapted to receive the marginal portions of the sash side members in sliding relation therein, said sash having side members and connecting top and bottom cross rails with the top rail of the sash having a greater width than the side members thereof and said top rail being notched at an outer corner thereof adjacent the end of a side member, said device comprising a stop block adapted to be mounted in fixed relation on the said supporting frame along the side of a guideway forming recess and projecting inwardly of the supporting frame in spaced relation above the top rail of the sash when the sash is in its lowermost position, said stop block projecting in non-interfering relation into the notched corner of the top rail of the sash when the sash is raised, an elongate latch bar having laterally extending longitudinally spaced arms, a housing having an internal recess in which the arm carrying portion of said latch bar is mounted for sliding movement to shift the latch bar into and out of an extended position, means for securing said housing on the top rail of the sash in position for the outer end of the latch bar to extend over the notched corner thereof when the bar is moved to the extended position, a cylindrical cam member rotatably mounted in the recess in the housing and between the arms on said latch bar, and a key member engageable with the cam for moving the latch bar to and from extended position.

5. A movement limiting device for a window sash which is mounted in the lower portion of a supporting frame, said device comprising elongate stop blocks mounted in oppositely disposed fixed position on said supporting frame and projecting inwardly thereof, said sash having a top rail provided with recesses at its opposite ends which normally accommodate the stop blocks to permit free vertical movement of the sash in said supporting frame, and a pair of movable stop bar devices mounted on the ends of the top rail of said sash for cooperation with said stop blocks, each of said stop bar devices comprising a housing mounted on said top rail, a sliding bar in said housing with one end thereof mounted so that it may be extended to project across said end recess toward said supporting frame, a cam member rotatably mounted in said housing and engaging said sliding bar, and a key member adapted to be engaged with said cam member to rotate the same and position the end of the sliding bar across said end recess for engagement with the fixed stop block on the supporting frame thereby to limit the opening movement of the sash.

6. Means for limiting the movement of a window sash which is mounted in sliding relation in a supporting window frame, said sash having side members and connecting top and bottom cross rails, said supporting frame comprising opposed side members having guideway forming recesses adapted to receive the marginal portions of the sash side members in sliding relation therein, the top rail of the sash having a greater width than the side members thereof and said top rail being recessed at the outer corners thereof adjacent the ends of the side members, said movement limiting means comprising stop blocks adapted to be mounted in fixed relation on said supporting frame adjacent the guideway forming recesses and projecting inwardly of the supporting frame in spaced relation above the top cross rail of the sash, said stop blocks being positioned to project into the notched corners of the top rail when the sash is raised, cooperating movable stop bar devices adapted to be mounted at each end of the top rail, each of said movable stop bar devices comprising an elongate bar member having laterally extending longitudinally spaced arms, a housing having an internal recess in which the arm carrying portion of said bar member is mounted for sliding movement to and from an extended position, means for securing said housing on the top rail of the sash in position for the outer end of the bar member to extend over the notched corner thereof when the bar member is moved to the extended position, a cylindrical cam member rotatably mounted in the recess in the housing and between the arms on said bar member, and a key engageable with the cam for moving the bar member to and from extended position.

7. Means for limiting the movement of a window sash which is mounted in sliding relation in a supporting frame, said sash having side members and a connecting top cross rail, said supporting frame having side members with opposed side guideway forming recesses which are adapted to receive the marginal portions of the sash side members in sliding relation therein and the top rail of said sash being notched at an outer corner thereof, said movement limiting means comprising a stop block adapted to be mounted on the said supporting frame above the top cross rail of the sash and adjacent a guideway forming recess and to extend toward the interior of said supporting frame, said stop block being positioned to project into the notched corner of the top rail of the sash when the sash is raised, an elongated latch bar, a housing in which said latch bar is mounted for sliding movement therein, means for securing said housing on the top rail of the sash in position for the end of the latch bar to project over the notched corner thereof when the bar is moved to an outwardly extending position, said latch bar having a side recess at its inner end, a cylindrical cam member rotatably mounted in said housing and received in said side recess, an axial and radial slot in said cylindrical cam member, and a key member engageable within said cam member, said key member having a tongue engageable in said slot for rotating said cam member to move said latch bar to and from extended position where it is adapted to be engaged by the stop block when the sash is raised a predetermined amount.

8. A movement limiting device for a window sash which is mounted in vertical sliding relation in a supporting frame, said sash having side members and connecting top and bottom cross rails, said supporting frame having side members with opposed side guideway forming recesses which face inwardly of the frame and which are adapted to receive the marginal portions of the sash side members in vertical sliding relation therein, the top rail of said sash having a greater width than said guideway forming recesses and said top rail being notched at an outer corner thereof, said device comprising a stop block mounted on the supporting frame adjacent the guideway forming recess and projecting inwardly of said supporting frame, said stop block being positioned in vertically spaced relation above the top rail of the sash when the sash is closed and projecting into the notched corner of the top rail of the sash when the sash is raised, a latch bar, a housing in which said latch bar is mounted for sliding movement therein, means securing said housing on the sash in position for the end of the latch bar to project over the notched corner of the top rail when the bar is moved to an outwardly extended position, and a key member for moving the latch bar into and out of extended position so that the latch bar, when in extended position, will be engaged by the stop block upon raising the sash a predetermined amount.

9. A movement limiting device for a window structure which is characterized by an exterior frame having vertical recesses forming side guideways in oppositely disposed relation and a sash mounted in said exterior frame with the side edges thereof received in sliding relation in said guideways, said device comprising a stop block mounted on said frame in fixed position adjacent a side guideway and in vertically spaced relation above the top of the sliding sash, said sash having a top rail member which overhangs the outerside of the sash and which is notched at the outer corner, the stop block being mounted

to project inwardly of the surface of the side member of the frame and the sash being mounted in the frame so that the notched corner of the top rail member normally clears the stop block when the sash is raised and permits free sliding movement of the sash past the stop block, a stop bar, a housing in which the stop bar is mounted in sliding relation, means for securing said housing on the top rail of said sash, with said stop bar positioned so that it may be extended toward the supporting frame to project the end thereof across the notched corner of the top rail, whereby when said stop bar is extended and said sash is moved upwardly the end of said

stop bar will engage with said stop block to limit the upward movement of the sash.

References Cited in the file of this patent

UNITED STATES PATENTS

331,005	Sahr	Nov. 24, 1885
417,388	Hosea	Dec. 17, 1889
483,298	Bruns	Sept. 27, 1892
593,909	Smith	Nov. 16, 1897
1,569,849	Bowles	Jan. 19, 1926
2,651,083	Nardulli	Sept. 8, 1953