March 4, 1930. J. G. KRAMER 1,749,589

VERTICALLY SLIDABLE INWARDLY SWINGING WINDOW

Filed June 28, 1928 3 Sheets-Sheet 1

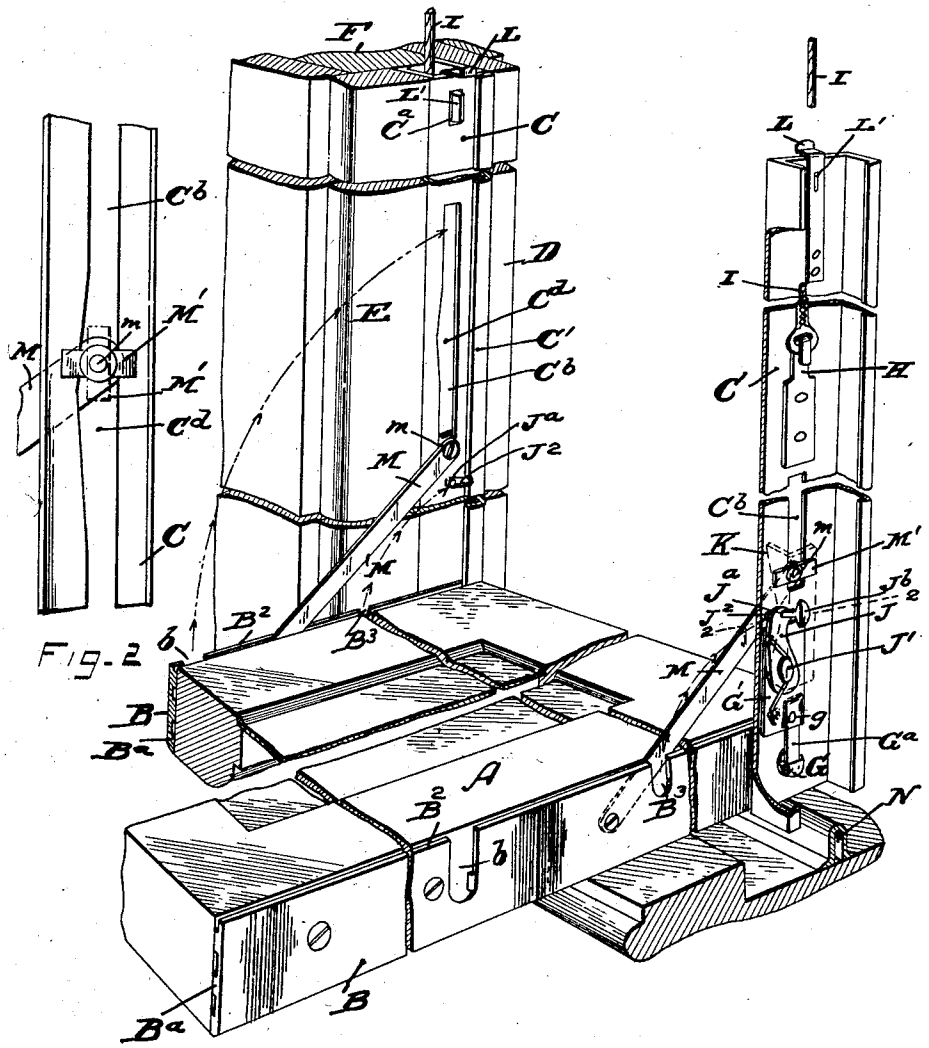


Fig. 2

Fig. 1

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VERTICALLY SLIDABLE INWARDLY SWINGING WINDOW

Filed June 28, 1928 3 Sheets-Sheet 2

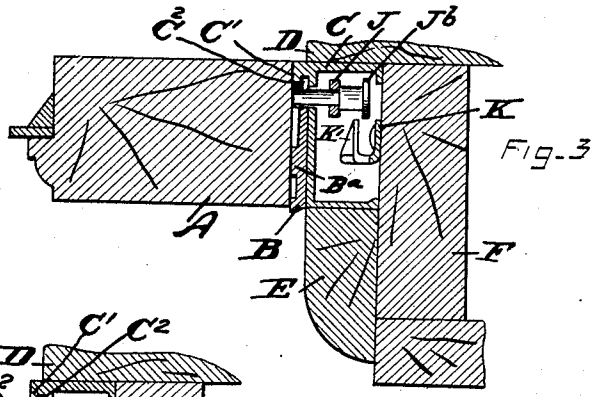


Fig-3

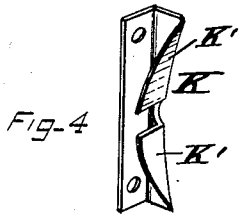


Fig-4

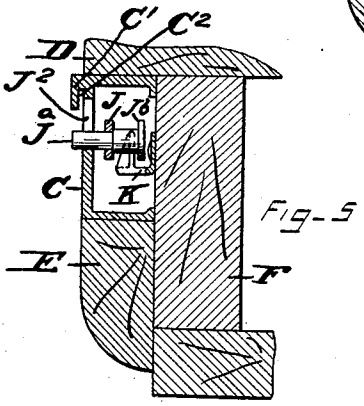


Fig-5

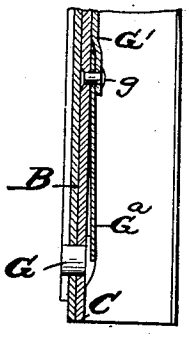


Fig-6

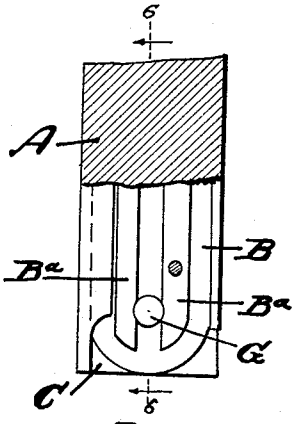


Fig-7.

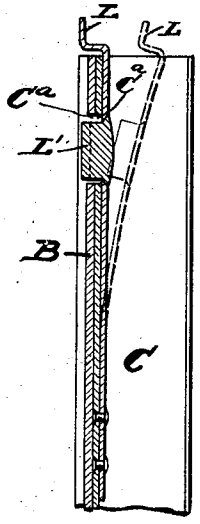


Fig-8

John G. Kramer *Inventor*

By S. E. Thomas *Attorney*

March 4, 1930. J. G. KRAMER 1,749,589

VERTICALLY SLIDABLE INWARDLY SWINGING WINDOW

Filed June 28, 1928 3 Sheets-Sheet 3

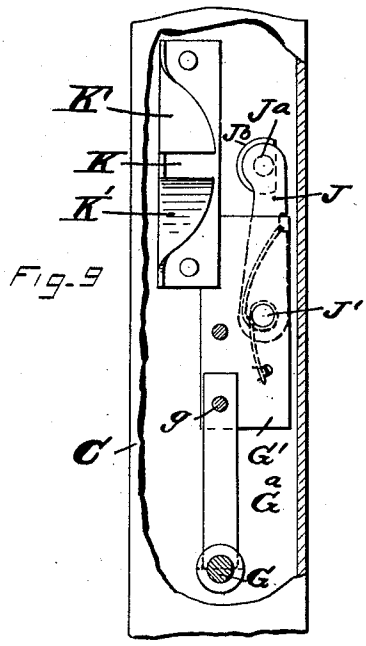


Fig. 9

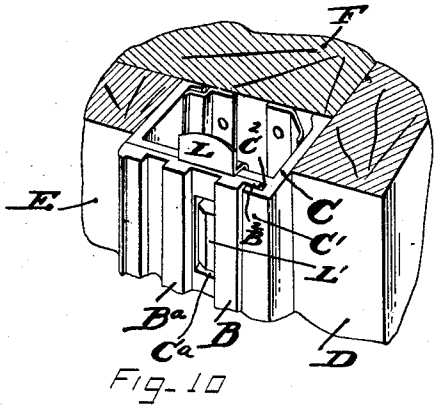


Fig. 10

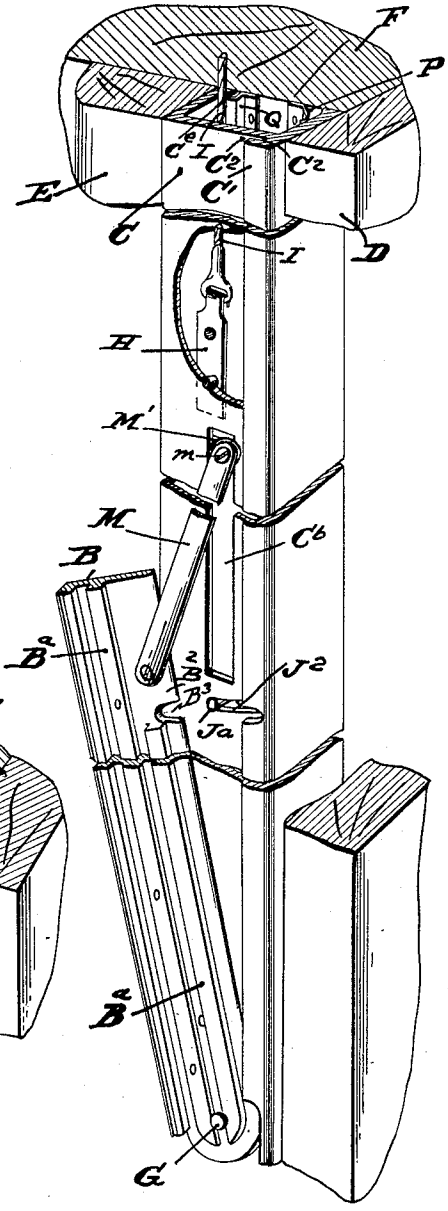


Fig. 11

Inventor

John G. Kramer

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Patented Mar. 4, 1930 1,749,589

UNITED STATES PATENT OFFICE

JOHN G. KRAMER, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CAR-KRA CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN

VERTICALLY-SLIDABLE INWARDLY-SWINGING WINDOW

Application filed June 28, 1928. Serial No. 288,955.

My invention relates to an attachment for vertically slidable inwardly swinging windows, whereby the sash may be swung inwardly for cleaning the outer face of the glass,—or inclined for ventilating purposes, as shown in the accompanying drawings and more particularly described in the following specification and claims.

The problem of cleaning windows in large office and department buildings involves considerable annual expense due to the time required and the hazardous nature of the work. The object of this invention therefore is to provide means whereby vertically movable window sash may be quickly and readily cleaned from the inside of the building, thereby greatly reducing the risk incurred by the party cleaning the windows and the time necessary to do the work.

This invention is designed as an improvement on the device shown in my former Patent, No. 1,628,721, dated May 17th, 1927.

One of the principal objects of the present invention is to provide automatic latching means whereby the swinging sash may be automatically locked in alignment with vertically slidable channel members connected by sash cords with the usual counter-balance weights.

Another object of the invention is to provide a pair of swinging link members respectively pivoted to members secured to the sides of the sash frame, the free ends of the link members being fitted with an enlarged manually rotatable head, slidable in slotted ways formed in the vertically movable channel members, for supporting the sash when swung inwardly for ventilation, or for cleaning the outer face of the glass, the construction being such that the swinging arms fold up with the sash and are concealed between the channel bar and side wall of the sash frame when the window is in its normal vertical position.

A further object of the invention is to provide means whereby the sash may be quickly and readily removed from the window frame and replaced when making repairs, or for other purposes.

Another feature of the invention consists in means secured to the wall of the window casing adapted to engage the vertically slidable channel members that they may not sag outwardly into the path of the sash frame when the latter is lowered for cleaning the window and thus interfere with the ready return of the sash to its normal vertical position between the channel members.

With the foregoing and other objects in view which will appear as the description proceeds, the invention further resides in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings accompanying this specification:

Figure 1 is a perspective view—with parts broken away and in section—showing the lower sash frame supported horizontally between a pair of vertically slidable channel members to which the sash is pivoted, and also a spring actuated latch pin carried by the channel members engaging an inclined cooperating catch plate—indicated in dotted lines—secured to the window casing for holding the channel members in position to receive the sash when returned to its vertical position.

Figure 2 is a fragmentary elevation of a portion of one of the channel members slidable in the window casing,—viewed from the inside of the channel,—showing a slot in the channel member to receive the rotatable head of a swinging link pivoted to the sash for supporting the latter when cleaning the glass.

Figure 3 is an enlarged cross-sectional view of a detail of the window casing and one of the side bars of the sash frame—taken on or about line 2—2 of Figure 1—the sash being in alignment with the window casing and not as indicated in Figure 1;—showing also the spring actuated pin carried by the channel member released from the locking catch secured to the window frame that the channel may be liberated for vertical movement.

Figure 4 is a perspective view of the locking catch secured to the window frame.

Figure 5 is a cross-sectional view through the window casing and channel member

showing the spring actuated pin carried by the channel member engaged by the locking catch secured to the window frame, as when the sash is lowered to a horizontal position for cleaning—see Figure 1.

Figure 6 is a fragmentary vertical sectional view taken on or about line 6—6 of Figure 7 showing the spring actuated pivot pin carried by the channel member projecting through an aperture in the metallic strip secured to the sash frame.

Figure 7 is a fragmentary elevation of the lower or pivotal end of the metallic strip secured to a sash frame,—a fragment of the sash frame being indicated in cross-section, broken away to disclose the pivotal end of the metallic strip.

Figure 8 is a vertical longitudinal sectional view through one of the slidable channel members and the metallic strip secured to the sash frame, showing also a spring actuated bevel-faced latch secured to the channel member projecting into a slot in the strip carried by the sash frame for normally supporting the sash in vertical alignment with the channel member.

Figure 9 is a fragmentary elevation of one of the channel members with a portion broken away to disclose a spring actuated latch pivoted to the wall of the vertically movable channel members, the pin being shown released from the locking catch plate secured to the window casing, as when the sash is aligned with the channel members for vertical movement.

Figure 10 is a fragmentary perspective view of the window casing showing the upper end of one of the vertically movable channel members,—also a fragment of the cooperating metallic strip secured to the window sash and the bevel-faced automatically actuated spring latch secured to the channel member adapted to project through a slot in the upper end of the metallic strip secured to a sash frame, to secure the latter in alignment with the channel members for vertical movement.

Figure 11 is a fragmentary perspective view of a portion of the window casing and its spaced stop and parting strips, with one of the vertically slidable channel members lodged between the spaced strips—a portion of the channel member being broken away to disclose a hook secured to the inner wall of the channel member for engagement with a cord secured to the usual sash weight—showing also the metallic strip secured to the edge of the sash frame tilted, as when swinging the sash for purposes of ventilation, or to a horizontal position for cleaning the windows.

Referring now to the letters of reference placed upon the drawings:

A denotes a sash frame—to which are secured metallic plates B, ribbed as at B^a to stiffen the strips. C—C are vertically movable channel members lodged between the parting strip D and the stop strip E, secured to the stile F of the window casing. The metallic plates B are detachably pivoted at their lower ends upon a pair of pins G, projecting through apertures in the walls of the vertically movable channel members and the metallic plates secured to the sash frame.

G^a is a spring secured at g to a plate G^1 attached to the channel member,—the spring at its lower end bearing upon the head of the pin G which is recessed to receive the end of the pin to secure it against rotation.

H—H are hook-shaped plates attached to the wall of the channel C to receive an eye attached to the end of the sash cords I, in turn connected with sash weights—not shown—for counterbalancing the window.

J denotes a spring actuated latch pivoted at J^1 to the channel wall and provided at its free end with a pin J^a extending through an arc-shaped slot J^2 in the wall of the channel member. The spring actuated latch pin J^a has an enlarged head J^b, which upon swinging the sash into horizontal position—as indicated in Figure 1—is engaged by the locking latch K—see Figure 4—the inclined walls K^1 drawing the heads of the pins respectively toward the window casing, to overcome any tendency of the channel members to sag away from the window stile into the path of the sash when returned to its initial position between the channels following the cleaning of the window.

The channel members C are provided with an overlapping flange C^1 spaced from the body portion to form a groove C^2, designed to receive the marginal edge B^2 of the strips B when aligned with the vertically movable channel members.

L denotes a spring latch bar secured at one end to the wall of the channel members,—having a beveled-shaped tongue L^1 adapted to enter the aligned slots C^a in the channel members C, and the plates B attached to the sash frame, to lock the sash in vertical alignment with the channel members—see Figures 1 and 10.

M—M designate link bars for supporting the sash in a horizontal position for cleaning the windows,—pivoted at one end to the metallic plates B secured to the sash frame. The opposite or free ends of the link bars are fitted with rotatable heads M^1 slidable in slotted ways C^b formed in the channel members C. The slots C^b in the channel members are relatively wider at a point preferably mid-way of their length,—as indicated at C^d,—so that upon manually turning the heads the links may be detached from the channel members,—as indicated in dotted lines in Figure 2.

N denotes a metallic weather strip secured to the sill adapted to enter a slot—not shown—provided in the lower edge of the sash.

When it is desired to turn the sash hori-

zontally—as shown in Figure 1—it must be raised sufficiently to clear the weatherstrip N before swinging it into the position indicated.

P denotes a weatherstrip secured to the stile of the window casing and bearing against the wall of the vertically movable channel member.

Q indicates a strip also secured to the window stile overlapping a flange C^e at the edge of the vertically movable channel member to assist in maintaining the walls of the channel adjacent the stile.

It will be understood that the co-ordinating members of the upper sash are similar to those of the lower sash, and therefore it is not considered necessary to duplicate the drawings or description of the same in order to convey a complete understanding of the invention.

Having indicated the several parts by reference letters the operation of the device will be readily understood.

The sash when in normal position is in alignment with the vertically slidable channel members C—C and is secured in alignment by the spring latch bars L carried by the channel members entering slots provided in the metallic plates attached to the sides of the sash frame.

When it is desired to turn the sash for cleaning the outer face of the glass, the tongues of the latch bars L are manually released from the engagement with the metallic plates B of the sash frame that the sash may be swung into a horizontal position, the link bars M serving to support the sash when adjusted for cleaning or ventilating. Upon the sash swinging to a horizontal position—the spring actuated latch J forces the pin J^a extending through the arc-shaped slot J^2 in the channel member into engagement with the locking latches K, secured to the stiles of the window frame. The channel members C—C are thus held against the lifting action of the sash weights connected by cords to the channel members.

The inclined walls of the locking latches K co-operating with the heads of the pins J^a assist in maintaining the channel members adjacent to the stiles that the sash may readily return to its initial position between said channel members without interference caused by the latter sagging into the path of the sash.

The sash being in a horizontal position—see Figure 1—the glass may be readily cleaned and upon returning it to its initial position between the channel members, a notch B^3 in the edge of the members B—B secured to the sash receives the projecting ends of the pins J^a,—and forces the pins out of engagement with the locking latch K. The sash when aligned with the channel members is automatically locked therewith by the latch tongue L^1 and is then adapted to be vertically raised or lowered, as required.

If it should be necessary to remove the sash entirely from the channel members for repairs or other purposes, it is first lowered and swung to a horizontal position—see Figure 1. The pivot pins G supported in the channel members and projecting through apertures in the strips B are then forced backwardly against the urge of the springs G^a out of engagement with the strips B. The rotatable heads M^1 carried by the link bars M—M are then manually turned as indicated in dotted lines of Figure 2 that the links may be detached from the channel bars,—the sash including the links may now be withdrawn from between the channel members.

Upon returning the sash to its normal position between the channels, the pins G again enter the apertures in the plates B under the urge of the springs G^a, when brought into registration. The rotatable heads M^1 of the link bars are now inserted through the slotted ways C^a of the channel members and are then turned to couple the parts together.

The sash having been hinged to the channel members C by the pins G, it is swung into vertical alignment with the latter,—it being noted that the bolts M carrying the rotatable heads M^1 at the end of the link bars connecting the sash with the channel members, enter the grooves *b*—*b* in in the plates B, secured to the side walls of the sash frame.

To provide against the pins G turning in the apertures of the respective channel members, or in the plates attached to the sash frame, the head of the pins are recessed to provide a flat shoulder against which the squared ends of the springs G^a bear,—see Figures 1 and 6.

The sash is automatically locked in vertical alignment between the channel members by the latch L, when in proper position.

Having thus described my invention what I claim is:—

1. In a device of the character described, a pair of vertically movable channel members; a swinging sash frame detachably pivoted to the channel members, whereby the sash frame may be adjusted at an angle to the vertically movable channel members for cleaning, or removed for repairs; means for automatically locking the swinging sash frame in alignment with the channel members for vertical adjustment; a pair of link bars pivoted at one end to the sash frame and fitted with adjustable heads slidable in slots formed in the walls of the channel members,—said heads when adjusted being adapted to release the links from the channel members for the removal of the sash frame.

2. In a device of the character described, a pair of vertically movable channel mem-

ers; a swinging sash frame detachably pivoted to the channel members, whereby the sash may be swung into alignment with the vertically movable channel members or at an angle thereto; means for automatically locking the swinging sash frame in alignment with the channel members for vertical adjustment; and a pair of link bars pivoted at one end to the sash frame and at the other end fitted with manually operable detachable connecting means slidable in slotted ways formed in the channel members and movable to a locking position transversely of the slotted ways and positively retaining the connecting means in the said slotted ways and also movable to a position longitudinally of the slotted ways, whereby the link bars may be disconnected from the channel members for the removal of the sash, said link bars being concealed between the channel members and the sash frame when locked in vertical slidable relation.

In testimony whereof, I sign this specification.

JOHN G. KRAMER.