No. 813,716.

PATENTED FEB. 27, 1906.

W. J. KLEMM.

WINDOW.

APPLICATION FILED OCT. 10, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

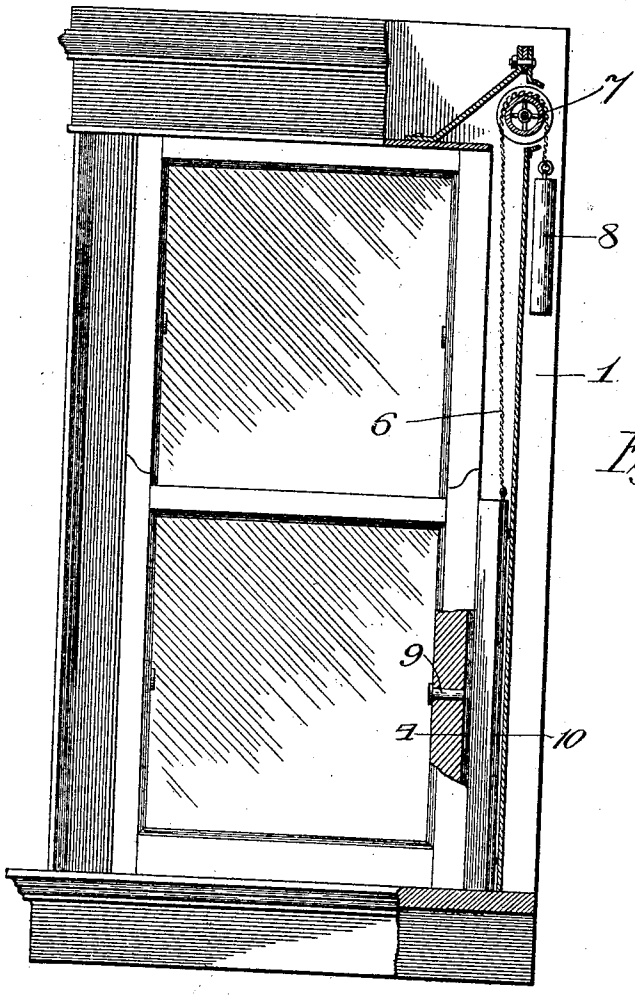


Fig. 2.

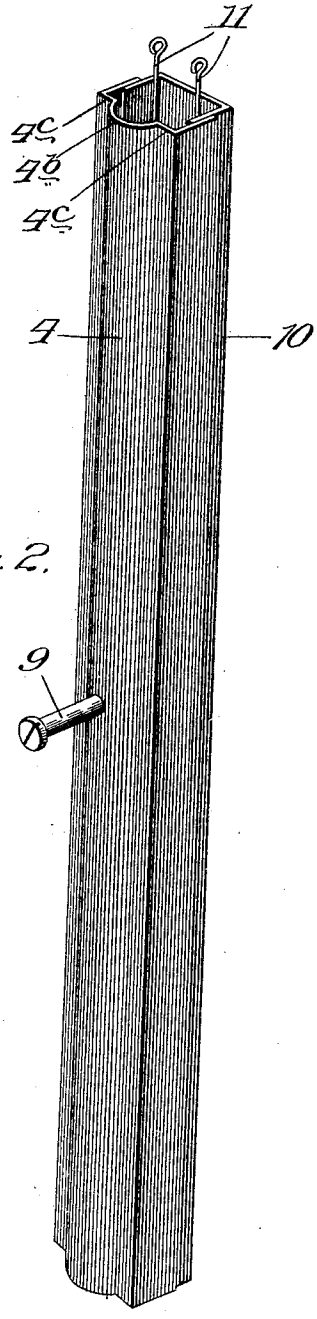
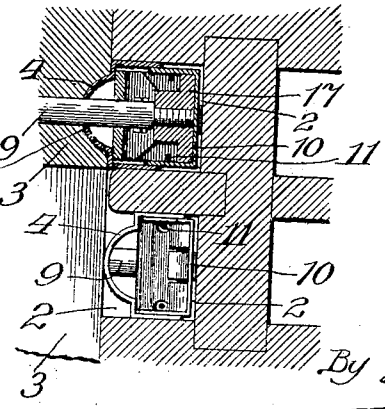


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

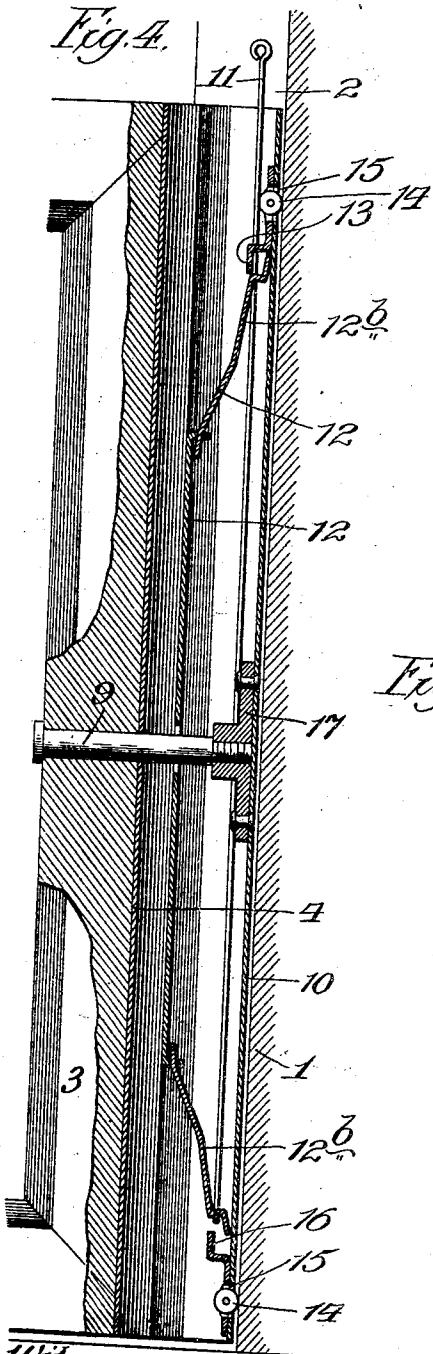
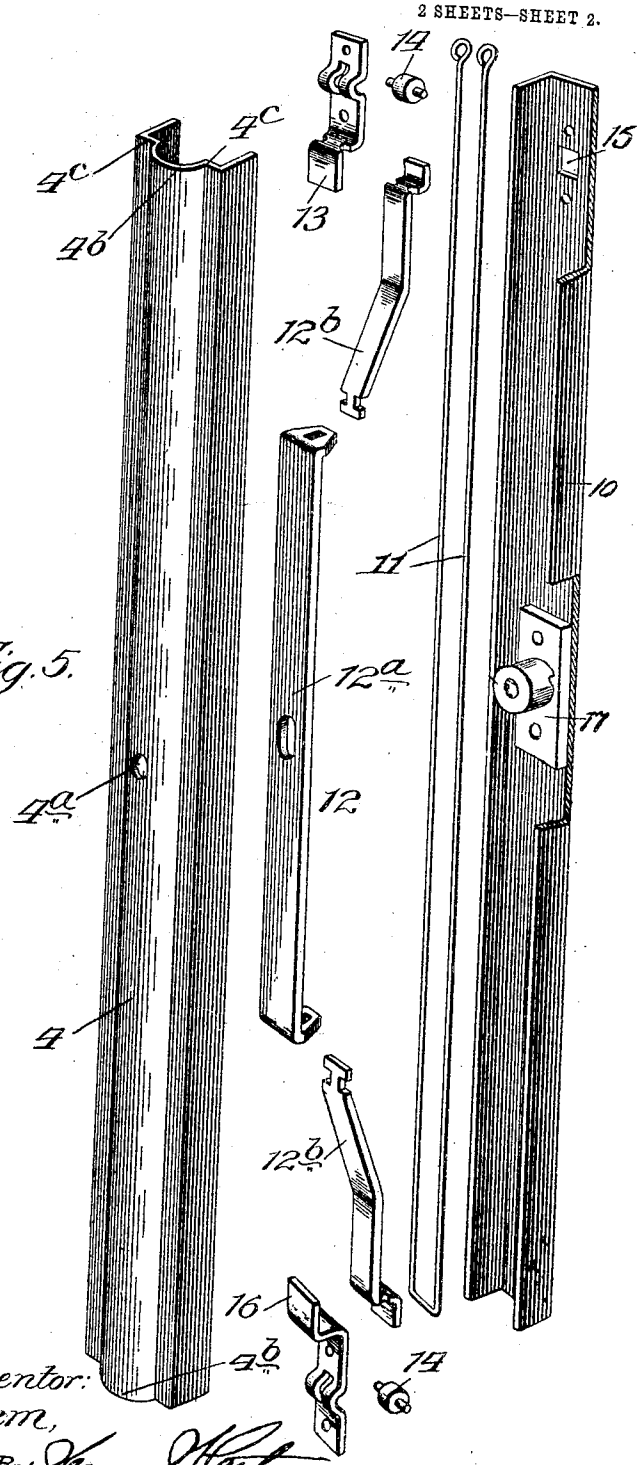


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM J. KLEMM, OF CHICAGO, ILLINOIS.

WINDOW.

No. 813,716. Specification of Letters Patent. Patented Feb. 27, 1906.

Application filed October 10, 1904. Serial No. 227,827.

To all whom it may concern:

Be it known that I, WILLIAM JOHN KLEMM, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windows, of which the following is a specification.

This invention relates to improvements in windows of that class in which the sash are capable of both the usual vertical sliding movement and of a pivotal movement by which they may be turned over for cleaning and other purposes.

The object of the invention is to provide an improved construction in windows of this character; and it consists in the matters hereinafter described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of a window provided with my improvement. Fig. 2 is a perspective detail of my improved construction of supporting and weather bars which more particularly constitutes the present improvement. Fig. 3 is an enlarged view taken horizontally through the window-casing and showing said supporting weather-bars in section and in two positions. Fig. 4 is a vertical section of the supporting and weather bars as applied to the sash in place in the window. Fig. 5 is a perspective detail of the several parts of the supporting and weather bars separated from each other.

In said drawings, 1 designates the window-casing, which can be of any desired construction, having grooves or channels 2 to serve as guides for the sash 3. Each of the latter is vertically movable in the usual manner along the grooves 2; but in order that it may be capable of pivotal as well as vertical movement the sash does not itself extend into grooves or channels, but is made just wide enough to swing freely within the casing. The window is then rendered storm and weather proof by weather-bars 4, which fit movably into the grooves 2 in the casing and are pressed yieldingly outwardly so as to normally engage corresponding grooves 5 in the edges of the sash. The weight of the window is carried, as usual, by counterbalancing chains or cords 6, which are herein shown as passing up over pulleys 7 at the top of the casing and as attached at their outer ends to weights 8 in a familiar manner. In my improved construction, however, the weather-bars 4 in themselves constitute no part of the supports for the sash and are not connected in any way either directly or indirectly with the counterbalancing chains or cords 6. Instead the sash is hung pivotally on bolts 9, which project loosely through apertures 4^a in the weather-bars from supporting-bars 10 that are inserted in the grooves 2 in the casing back of the weather-bars. The counterbalancing chains or cords 7 are connected in a peculiar manner to these supporting-bars and exert a continuous upward pull upon them, just sufficient to overcome the downward pull of the sash on the pivot-bolts, so that said sash can be slid up or down at will without serious effort.

The manner of connecting the counterbalancing chains or cords to the supporting-bars 10 constitutes, in connection with the provision of the independent supporting and weather bars, the essential feature of this improvement, said connection being such that the pull of the chains or cords upon the supporting-bars reacts laterally to force the weather-bars 4 against the sash and normally into the grooves 5 of the latter, so as to make the window weather-tight. To this end each chain or cord is attached, through a wire link 11, to the lower end of a jointed strut 12, which consists of an elongated middle section 12^a and slightly angular upper and lower end sections 12^b and 12^c. Of these the upper end of the upper end section 12^b is inserted beneath a clip 13, that is riveted or otherwise made fast to the inner face of the supporting-bar 10 at its upper end, while the lower end of the lower end section 12^c is secured to the lower end of the link 11, which reaches up to the counterbalancing chain or cord. The pull of the latter reacting against the weight of the sash, exerted on the supporting-bars 10 through the pivot-bolts 9, thus serves to force the middle section 12^a of the strut outwardly toward the sash, and consequently against the weather-bar 4, which is adjacently inserted loosely in the groove 2, as stated, and is consequently forced against the sash and into the groove 5 of the latter with a greater or less pressure, according to the proportions chosen for the jointed strut.

The operation of the window as thus constructed is not materially different from that of other windows of the same general type and will be readily understood. Normally the weather-bars will be forced out into the grooves 5 of the sash and form a weather-proof seal between the sash and casing, and

this condition will obtain no matter to what extent the sash is raised or lowered. At any time, however, the sash may be swung open upon its pivots by exerting enough turning pressure to force the weather-bars out of the grooves in the sash and back into the grooves of the casing, (see lower part of Fig. 3,) whereupon the sash will be free to swing within the casing to any desired extent; but when the sash is swung back into a vertical position once more the weather-bars will again snap into engagement with the grooves of the sash and restore the weather-proof joint with the casing. No springs are required to accomplish this action, and the construction as a whole is of such a simple character as not to be subject to noticeable wear or liable to easily get out of order.

As herein shown and conveniently, both the supporting and weather bars are made of sheet-metal channels, of which the weather-bar is in this instance made slightly wider than the supporting-bar and deep enough in cross-section to telescope over the latter. The front of the weather-bar channel is provided with a convex rib 4^b, which fits into the groove 5 in the sash. The width of this rib is shown as somewhat less than the extreme width of the channel, and the shoulders 4^c on each side of the rib serve as a bearing against which the middle section 12^a of the strut seats itself throughout its entire length.

In order to lessen the sliding friction between the supporting-bar 10 and the back of the grooves 2 in the casing, said bars are herein shown as provided with antifriction-rolls 14, one of which is conveniently mounted in the clip 13 at the upper end of the bar and projects through an adjacent aperture 15 in the bar, so as to engage the back of the groove, while the other is similarly mounted in a clip 16 at the lower end of the bar and projects through an aperture 15 to engage the back of the groove. As a matter of convenience and in order to reduce the number of different pieces in the construction as much as possible the clip 16 is herein shown as made identical with the clip 13, and either end of the weather-bar may consequently be turned uppermost and properly engaged with the jointed strut, as described. The pivot-bolts 9, upon which the sash is hung, are rigidly mounted on the supporting-bars, being herein shown as screwed into socket-pieces 17, that are riveted to the backs of the bars. This prevents any deflection of the pivot-bolts out of a horizontal plane. This construction overcomes one of the principal objections heretofore found to sliding pivotal windows, which has been that when the sash is swung on its pivots into a substantially horizontal position unequal vertical strains upon the two sides of the sash may cause it to tilt sidewise until its connection with the casing is entirely broken, so that the sash will come out of the casing, the supporting-pivots of the windows tilting with the sash under these circumstances to permit of such disconnection. In the improved construction herein described the pivot-bolts being rigidly connected to the supporting-bars cannot be deflected from their normal horizontal position and consequently prevent the sash from being tilted and disengaged from the casing under any circumstances, and this advantage obtains even though the construction be so modified as to provide for the forcing out of the weather-bars by other means than the pull of the counterbalancing cords or chains.

It will be observed, further, that aside from the fact that the normal pull on the weight-cords is utilized to keep the sash-engaging bars normally pressed against the sash a feature of importance lies in wholly supporting the expanding devices upon the sash-engaging supporting-strip, and a further feature lies in employing a comparatively long pressure-bar, as 12^a, whereby an even steady pressure against the sash-engaging strip is maintained.

I claim as my invention—

1. The combination with a window-casing and inclosed sash, of rigid supporting-bars sliding vertically of the casing and between and to which the sash is pivotally hung, the pivots being rigidly attached to the supporting-bar, weather-bars interposed between said supporting-bars and the sash, counterbalancing-cords for sustaining the weight of the sash, and connections between said counterbalancing-cords and supporting-bars acting by the normal pull on the cords upon the weather-bars to press them against the sash, substantially as described.

2. The combination with a window-casing and inclosed sash, of supporting-bars sliding vertically of the casing, pivot-bolts rigidly secured to said supporting-bars and upon which the sash is pivotally hung, weather-bars interposed between the supporting-bars and sash and through which the pivot-bolts loosely pass, counterbalancing-cords for sustaining the weight of the sash, and connections between said counterbalancing-cords and supporting-bars acting by the normal pull on the cords upon the weather-bars to press them against the sash, substantially as described.

3. The combination with a window-casing and inclosed sash, of supporting-bars sliding vertically in the casing and between which the sash is pivotally hung, weather-bars interposed between said supporting-bars and the sash, counterbalancing-cords for sustaining the weight of the sash, and connections between said counterbalancing-cords and supporting-bars comprising jointed struts interposed between the counterbalancing-cords

and supporting-bars and acting upon the weather-bars to press them against the sash, substantially as described.

4. The combination with a window-casing and inclosed sash, of supporting-bars sliding vertically of the casing and between which the sash is pivotally hung, weather-bars interposed between said supporting-bars and the sash, jointed struts interposed between the supporting and weather bars and engaging the supporting-bar at its upper end, and counterbalancing-cords applied to the lower end of the strut to simultaneously support the weight of the sash and force the weather-bars against the sash, substantially as described.

5. The combination with a window-casing and inclosed sash, of supporting-bars sliding vertically in grooves in the casing, weather-bars sliding vertically in the grooves in the casing and normally projecting into grooves in the sash, pivot-bolts mounted in the supporting-bars and projecting loosely through the weather-bars to pivotally support the sash, counterbalancing-cords or the like for sustaining the weight of the sash, and connections between said counterbalancing-cords and supporting-bars acting upon the weather-bars to press them against the sash, substantially as described.

6. The combination with a window-casing and inclosed sash, of supporting-bars sliding vertically in grooves in the casing, weather-bars sliding vertically in the grooves in the casing and normally projecting into grooves in the sash, pivot-bolts mounted in the supporting-bars and projecting loosely through the weather-bars to pivotally support the sash, counterbalancing-cords or the like for sustaining the weight of the sash, and connections between said counterbalancing-cords and supporting-bars comprising jointed struts interposed between counterbalancing-cords and supporting-bars and acting upon the weather-bars to press them against the sash, substantially as described.

7. The combination with a window-casing and inclosed sash, of supporting-bars sliding vertically in grooves in the casing, weather-bars sliding vertically in the grooves in the casing and normally projecting into grooves in the sash, pivot-bolts mounted in the supporting-bars and projecting loosely through the weather-bars to pivotally support the sash, counterbalancing-cords or the like for sustaining the weight of the sash, jointed struts interposed between the supporting and weather bars and engaging the supporting-bar at its upper end, and counterbalancing-cords applied to the lower end of the strut to simultaneously support the weight of the sash and force the weather-bars against the sash, substantially as described.

8. The combination with a window-casing and inclosed sash, of supporting-bars sliding vertically in grooves in the casing, weather-bars sliding vertically in the grooves in the casing and normally projecting into grooves in the sash, pivot-bolts mounted in the supporting-bars and projecting loosely through weather-bars to pivotally support the sash, counterbalancing-cords or the like for sustaining the weight of the sash, jointed struts interposed between the supporting and weather bars and consisting of middle sections bearing against the supporting-bars and end sections of which the upper sections engage the supporting-bars while the lower sections engage counterbalancing-cords which simultaneously support the weight of the sash and force the middle section of the strut against the weather-bars and toward the sash, substantially as described.

9. In combination, a casing, supporting-bars slidable therein and each carrying a pivot, a sash swung on these pivots, sash-engaging bars, a yielding pressure device between each supporting-bar and each sash-engaging bar, this pressure device embodying a vertical flat bar bearing yieldingly against the sash-engaging bar and provided with a hole through which the pivot passes.

10. In combination, a window-casing grooved vertically, supporting-bars slidable vertically in said grooves, a sash swung to and between said supporting-bars, sash-engaging bars, yielding devices inclosed between each sash-engaging bar and supporting-bar and supported on the latter, weight-cords, and connections between the weight-cords and said yielding devices whereby the normal pull on the cords will expand said devices and press the sash-engaging bars against the sash.

11. In combination, a casing, supporting-bars slidable therein and each carrying a pivot, a sash swung on these pivots, sash-engaging bars, a yielding pressure device between each supporting-bar and each sash-engaging bar, this pressure device embodying a vertical flat bar bearing yieldingly against the sash-engaging bar, for the purpose set forth.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 24th day of September, A. D. 1904.

WILLIAM J. KLEMM.

Witnesses:
HENRY W. CARTER,
K. A. COSTELLO.