No. 777,347. PATENTED DEC. 13, 1904.

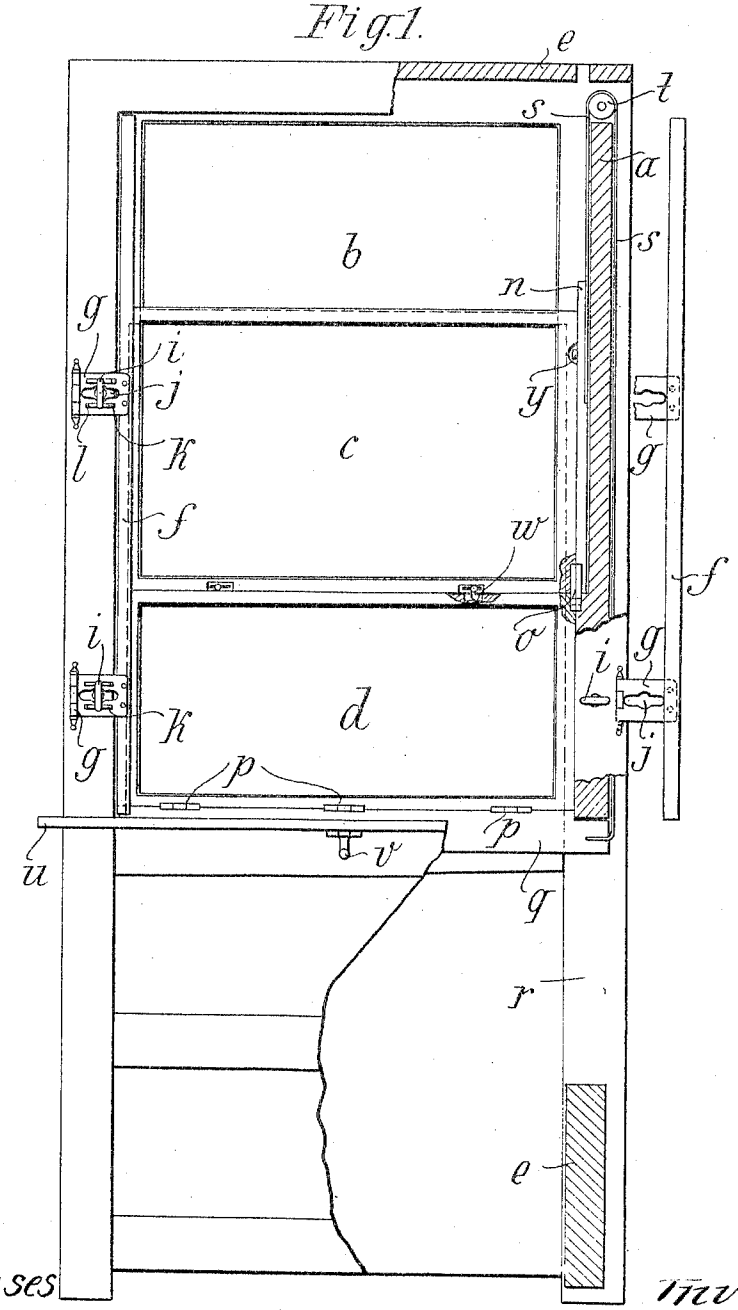
P. KUPELWIESER.

WINDOW WITH SLIDING SASH.

APPLICATION FILED MAR. 2, 1904.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Philip N. Tilden,
W. B. Taylor

Inventor
Paul Kupelwieser
By James L. Norris,
Atty.

No. 777,347. PATENTED DEC. 13, 1904.

P. KUPELWIESER.

WINDOW WITH SLIDING SASH.

APPLICATION FILED MAR. 2, 1904.

NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.

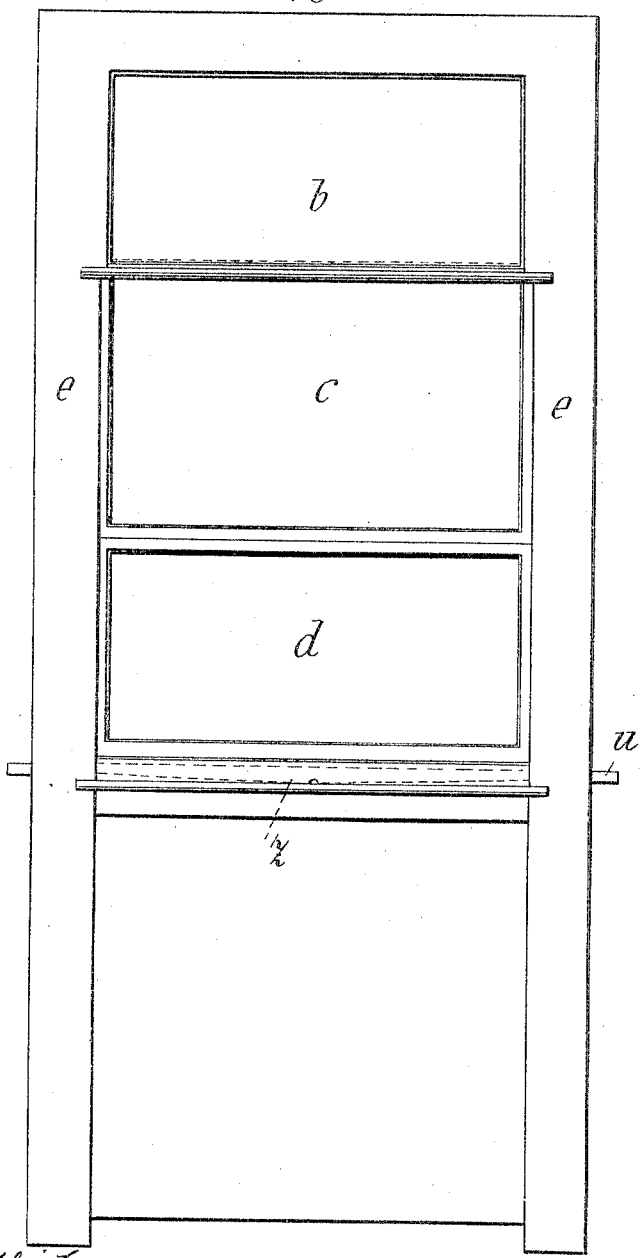
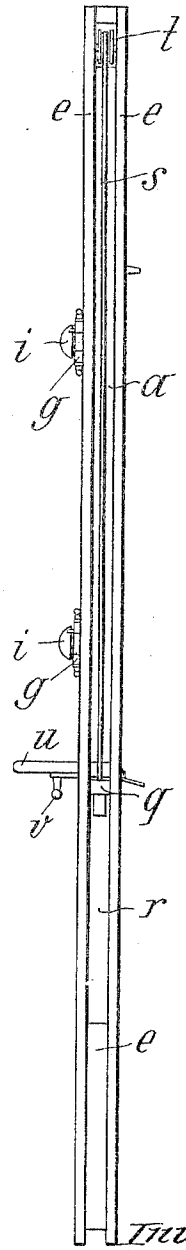


Fig. 3.



Witnesses:
Philip N. Tilden
J. B. Taylor

Inventor
Paul Kupelwieser
By James L. Norris
Atty.

PHOTO LITHOGRAPHED AT SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 777,347. PATENTED DEC. 13, 1904.

P. KUPELWIESER.

WINDOW WITH SLIDING SASH.

APPLICATION FILED MAR. 2, 1904.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 4.

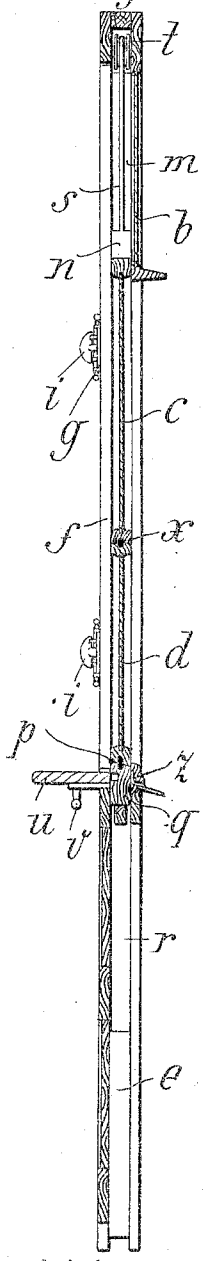


Fig. 5.

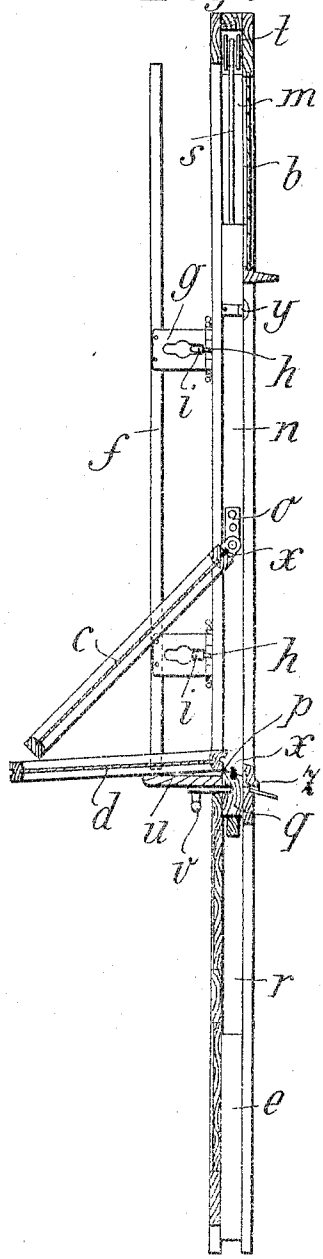


Fig. 6.

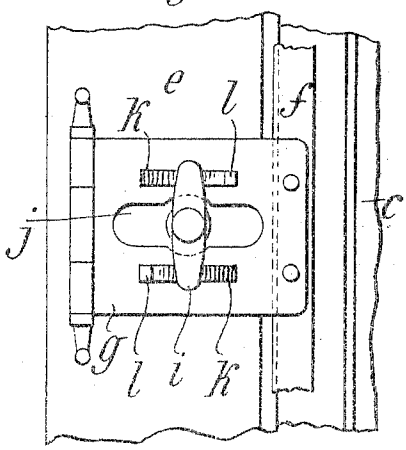
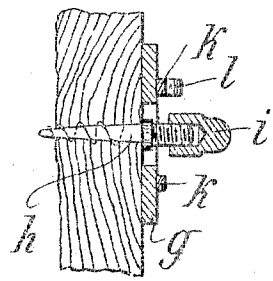


Fig. 7.



Witnesses,
Philip N. Dodson.
H. B. Taylor

Inventor
Paul Kupelwieser
By James L. Norris.
Atty.

No. 777,347. Patented December 13, 1904.

UNITED STATES PATENT OFFICE.

PAUL KUPELWIESER, OF BRIONI, AUSTRIA-HUNGARY.

WINDOW WITH SLIDING SASHES.

SPECIFICATION forming part of Letters Patent No. 777,347, dated December 13, 1904.

Application filed March 2, 1904. Serial No. 196,167. (No model.)

To all whom it may concern:

Be it known that I, PAUL KUPELWIESER, a subject of the Emperor of Austria-Hungary, residing at Brioni, Province of Istria, Empire of Austria-Hungary, have invented certain new and useful Improvements in Windows with Sliding Sashes, of which the following is a specification.

This invention relates to that construction of windows in which an upper sash is fixed, while the lower sash can slide up and down parallel to the upper sash. Window-sashes of this construction are subject to numerous disadvantages, the most important of which consists in the difficult manipulation in opening and closing the window, in particular when the woodwork of the window-frame or of the sash becomes warped or shrunk, also in the imperfect closure of the abutting joints against wind and rain and the difficulty of cleaning the outer surfaces of the glass panes.

The present invention has for its object to obviate the said disadvantages, this being effected mainly by constructing the lower sash of two parts, which can slide to and from each other in the same plane in a vertical direction and the relative heights of which are so proportioned that the horizontal meeting bars thereof do not interfere with the free view of a person either standing at the window or sitting behind the same. The two parts of the divided sash are arranged to turn inward upon horizontal hinges and are connected together by means of flexible devices, such as non-extensible nickel bands, that pass over pulleys in the window-frame and have their one end connected to lateral guide-blocks that can slide in the window-frame and that carry the pivot-pins of the upper part of the sash, while at their other ends the said bands are fixed to a transverse bar that can slide in a well formed by hollow paneling below the window and that is hinged to the bottom of the lower part of the sash. The tight closure of the closed window is effected by means of two lateral bars extending at least to beyond the height of the top of the movable sash and connected by hinge-plates to the window-frame in such manner as to be capable of being turned back away from the sash. When turned forward against the sash, the lateral bars are maintained in close contact with the sash by means of clamping-screws attached to the window-frame and passing through slots in the hinge-plates. By slightly loosening the screws the said bars serve as guides between which and the guide-rails on the window-frame the jointed sash can slide up and down. In order to effect the tightening up of the bars with as small a turning motion of the screws as possible, the latter have heads or screw-nuts formed so as to project over fixed inclines on the hinge-plates, so that on slightly turning the heads or nuts they exercise a wedging action upon the plates, and consequently upon the bars. The horizontal butt-joints of the two parts of the movable sash are made air-tight by means of caoutchouc fillets fitting into grooves in the abutting surfaces, and an outer covering-plate at the window-sill is formed with a channel inclining from each side toward the middle, where a transverse channel opening outward is provided for the escape of any water that may penetrate between the bottom bar of the sash and the said sill-plate. Both parts of the movable sash can be secured either in the closed position or in the opened position by means of spring-catches and locking-bolts, and they can also be secured together by similar fastenings, which at the same time serve as handles for manipulating the parts of the sash.

On the accompanying drawings is shown by way of example a construction of window-sashes according to the present invention.

Figure 1 shows an inside view of the window, partly in section. Fig. 2 is a view from the outside. Fig. 3 is a sectional view taken through the end of the window. Figs. 4 and 5 are vertical cross-sections of the window respectively in the closed position and in the inward-turned position of the sashes for cleaning purposes. Figs. 6 and 7 are detail views, on an enlarged scale, of one of the hinge-plates of the lateral guide-bars, showing the inclined surfaces thereon and the screw-clamps extending through the slots therein

and adapted to ride upon the inclined surfaces for tightening the lateral bars against the sash.

The window-frame *a* carries the upper fixed sash *b* and the movable intermediate and lower sash *c* and *d*. These latter parts slide between the outer guide-rails *e* of the window-frame and the two guide-bars *f*, which extend at least to above the height of the movable sash *c d*. The guide-bars *f* are fixed to plates *g*, hinged to either side of the window-frame, so that they can either be turned forward, so as to lie over the sash *c d*, or be turned back into a lateral position away from the sash. When in the first-named position, the bars are secured against the sash *c d* by means of clamping-screws *h*, the nuts or heads *i* of which project through keyhole-slots *j* in the plates *g* and can be made to bear with greater or less force against the plates, so as either to press the sashes tightly between the bars *f* and the outer rails *e* of the window-frame or to allow sufficient looseness for the sashes *c d* to be slid up and down between *f* and *e*. To enable the bars *f* to be turned back away from the sashes, the screws are turned back into the position parallel with the keyhole-slots of the plates *g*, so that the latter can be turned back in passing over the heads or nuts. In order that the plates and bars may be easily clamped and unclamped by only a slight turning motion of the heads or nuts, the hinge-plates *g* have projecting inclined surfaces *k* formed on each side of the slot in reversed position and having stops *l* at the ends, against which inclines the screw-heads or nuts are made to bear on being screwed up. The arrangement is preferably such as shown at Fig. 7, where a screw-bolt *h* is screwed tight into the window-frame and has a projecting part passing through the slot of the hinge-plate and having a thumb-nut *i* suitably secured to it.

The intermediate sliding sash *c* is pivotally connected by pivot-plates *o* to two lateral guide-blocks *n*, sliding in vertical grooves *m* in the window-frame. The lower sash *d* is connected by hinges *p* with a transverse bar *q*, extending across the window and into spaces *r* in the well below the window-sill formed by the hollow panel below the window-frame, so as to slide up and down in such spaces when the sash is moved up or down. To the ends of this transverse bar are fixed the ends of two flexible devices *s*, preferably formed of non-stretchable nickel bands, which are led up in grooves in the window-frame and pass over guide-pulleys *t* and then pass down through other grooves *m* and have their other ends attached to the guide-blocks *n*. By this means the intermediate sash *c*, which is more or less balanced by the weight of the lower sash *d*, can be easily raised and pushed up to the top of the window-frame, thereby covering the fixed or upper sash *b*, while the lower sash *d* at the same time sinks down into the well below the window. In this motion the two sashes *c* and *d* will remain stationary in any intermediate position into which they may be brought in consequence of the frictional resistance caused by the pulleys, the guide-blocks *n*, and by the sides of the sashes in moving between the rails *e* and the bars *f*, which are made to press slightly against the sashes. Owing to the lower sash *d* being rotatable on the hinges *p*, it can be turned down inward. For this purpose it is brought in such a position that the hinges *p* are situated just above the sill-plate *u*, as at Fig. 5, whereupon the bolt *v*, on the under side of the latter, is pushed into the transverse bar *q*, so as to fix it. The top rail of the sash *d*, which was previously locked to the bottom rail of sash *c* by means of the hooked spring-catches *w*, is separated by the raising of the latter sufficiently to allow of the sash *d* being turned down on its hinges. When the sash *d* is in the raised position, a water-tight joint is formed between its bottom rail and the bar *q* and between its top rail and the bottom rail of the sash *c* by means of caoutchouc fillets *x x*, fixed, respectively, in the bottom rail of *c* and in the bar *q* and engaging in corresponding grooves in the upper and lower rails of *d*, respectively. The intermediate sash *c* can also be turned down inwardly on its pivots *o* after turning back the bars *f* and releasing it from a spring-catch *y*, fixed to the one guide-block *n*.

In the above described positions of the two parts *c* and *d*, as shown at Fig. 5, the outer surfaces of their glass panes can be conveniently cleaned. When the parts *c* and *d* are turned back into their vertical positions, as at Fig. 4, the catch *y* engages over the edge of the upper part of *c*, so as to hold it, and the bars *f* being then turned forward on their hinges so as to bear against the sash and are secured as above described. After withdrawing the locking-bolt *v* the part *c* can then be brought down close against the top bar of *d*, so that the spring-catches *w* on *c* engage with the slotted plates on *d*, and the combined parts *c* and *d* can then be slid upward or downward, or on disengaging the spring-catches *w* by hand the part *c* can be slid upward and the part *d* downward away from each other for opening the window.

The outer plate *z* of the window-frame which covers the bottom bar *q* has a longitudinal channel formed in its inner surface inclining downward toward the middle, where it communicates with a transverse channel leading outward for the discharge of any rain-water that may have penetrated into the meeting surfaces between *d* and *q*.

In some cases the top sash *b* instead of being fixed can be made to turn down inward on hinges for facilitating cleaning and for affording ventilation when the sash *c* and *d* are closed.

I claim—

1. In a sliding window, in combination with a window-frame having a vertical groove at each side thereof, of a pair of guide-blocks slidable in said grooves, an upper sash pivotally connected at each side to said guide-blocks, a bar extending transversely of the frame, a lower sash hingedly connected to said transverse bar, a well below the sill of said frame to receive said transverse bar and lower sash, a pulley at each side of the upper part of said frame and flexible devices passing over said pulleys, each of said flexible devices connected at one end to one of said guide-blocks and at the other end to one end of said transverse bar.

2. In a sliding window, in combination with a window-frame having a vertical groove at each side thereof, of a pair of guide-blocks each slidable in one of said grooves, an upper sash pivotally connected at each side to said guide-blocks, a bar extending transversely of the frame, a lower sash hingedly connected to said transverse bar, a well below the sill of said frame to receive said transverse bar and lower sash, a pulley at each side of the upper part of said frame, flexible devices passing over said pulleys, each of said flexible devices connected at one end to one of said guide-blocks and at the other end to one end of said transverse bar, and a locking device adapted when in its positive position to maintain said lower sash above the sill of said frame.

3. In a sliding window, in combination with a window-frame having a stationary sash in the upper part thereof, and a groove at each side parallel to said upper sash, of a pair of guide-blocks, each slidably mounted in each of said grooves, an intermediate sash pivotally connected to said guide-blocks and adapted to swing inwardly from said frame, a bar extending transversely of said frame, a lower sash hinged at its lower edge to said transverse bar and adapted to swing inwardly from said frame, a well below the sill of said frame adapted to receive said transverse bar and lower sash, a pulley at each side of the upper part of said frame, and flexible devices passing over said pulleys, each of said flexible devices having one of its ends secured to one of said guide-blocks and its other end secured to one end of said transverse bar.

4. In a sliding window, in combination with a window-frame and a sash pivotally mounted therein, of a vertically-extending guide-bar adapted to contact with a side rail of the sash to maintain said sash in position, plates connected at one end to said guide-bar and at their other ends pivoted to the inner face of said frame whereby said guide-bar may be swung into and out of contact with the sash, and clamping means carried by the frame to engage said plates to prevent the movement of said guide-bars from contact with the sash.

5. A device for maintaining swinging window-sash in place, comprising a guide-bar adapted to enter a window-frame and contact with a side rail of the sash, plates connected at one end to said guide-bar and having their other ends adapted to be pivoted to the inner face of the frame whereby said guide-bar may be swung into and out of contact with the sash, and clamping means adapted to be attached to the inner face of the frame to engage said plates to prevent the movement of the guide-bars from contact with the sash.

6. In a sliding window, in combination with a window-frame and a sash pivotally mounted therein, of a vertically-extending guide-bar adapted to contact with a side rail of the sash to maintain said sash in position, plates connected at one end to said guide-rails and at the other end hingedly attached to the inner face of the window-frame whereby said guide-bar may be swung into and out of contact with said sash, each of said plates provided with a keyhole-slot and inclined surfaces adjacent to said slot, and clamping-screws arranged upon the inner face of the window-frame and provided with heads adapted to traverse said slots and when turned to ride upon said inclined surfaces to clamp said guide-bar against said sash.

7. In a sliding window, in combination with a window-frame and a sash pivotally mounted therein, of a vertically-extending guide-bar adapted to contact with a side rail of the sash to maintain said sash in position, means hingedly connected at one end to the inner face of the frame and attached at its other end to said guide-bar, whereby said guide-bar may be swung into and out of contact with the sash, said means having a slot and further provided on its outer face with projections, one of said projections arranged on each side of said slot, said projections being inclined in opposite directions with respect to each other and terminating at their highest portions in studs, and a clamp-screw secured to the inner face of said frame and having a head adapted to traverse said slot and when turned to ride up said inclined projections to clamp said guide-bar against said sash.

8. In a sliding window, a window-frame having a well below the sill thereof, a bar extending transversely of said window-frame and adapted to descend within the well, a sash hinged at its lower edge to said transverse bar and a locking device arranged below the sill of said frame adapted when positively operated to engage and maintain said transverse bar in its elevated position.

9. In a sliding window, a window-frame having a well below the sill thereof, a bar extending transversely of said frame, a sash hinged at its lower edge to said transverse bar, said bar and sash adapted to descend within said well, a plate extending transversely of said frame at the outer edge of said well and adapted when said transverse bar and sash are raised

to cover the joint between them, said plate provided with a groove having its bottom sloping from its ends toward the center, said plate further provided with a passage communicating with said groove and leading outwardly for conducting away water which may collect between the plate and sash.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PAUL KUPELWIESER.

Witnesses:
JOSEF RÜBARCH,
ALVESTO S. HOGUE.