A. P. BURKHART.

WINDOW SASH.

APPLICATION FILED NOV. 9, 1908.

979,423. Patented Dec. 27, 1910.

5 SHEETS—SHEET 1.

Fig. 1.

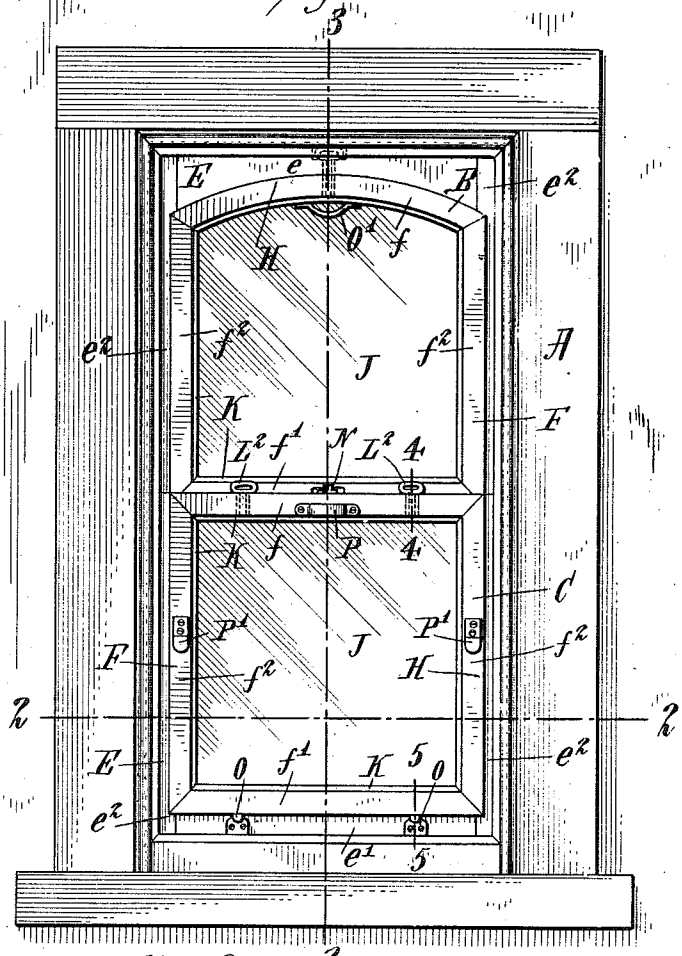
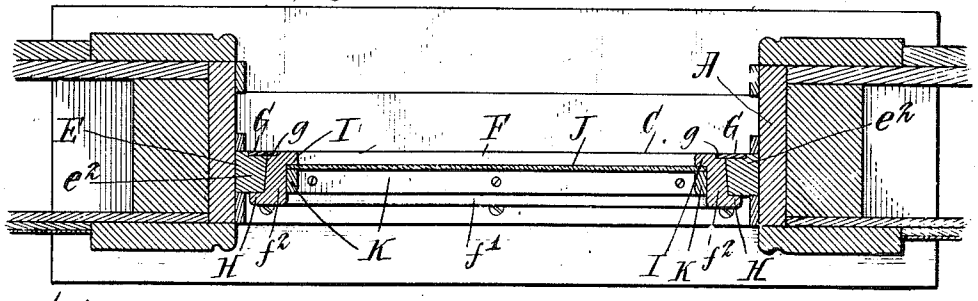


Fig. 2.



Witnesses:
Christ Finle, Jr.
Ella C. Buckhahn

Adam Percival Burkhart, Inventor
By Emil Neuhard
Attorney.

A. P. BURKHART.

WINDOW SASH.

APPLICATION FILED NOV. 9, 1908.

979,423. Patented Dec. 27, 1910.

5 SHEETS—SHEET 2.

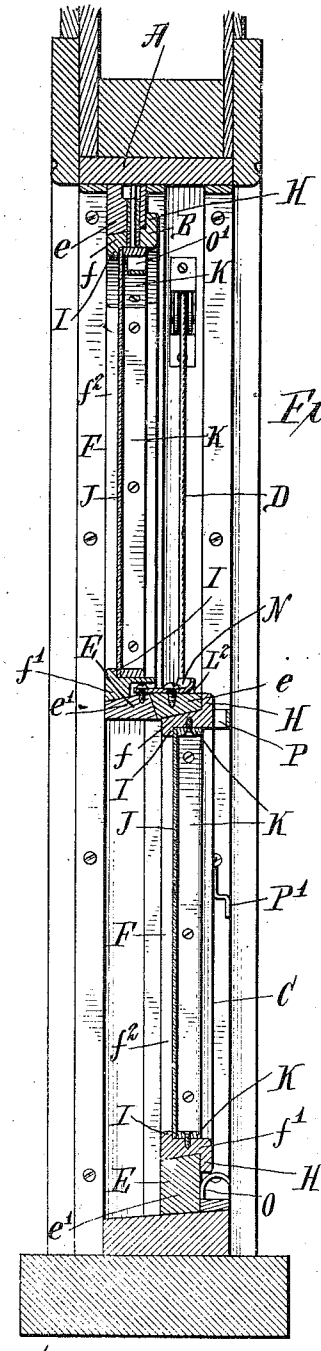


Fig. 3.

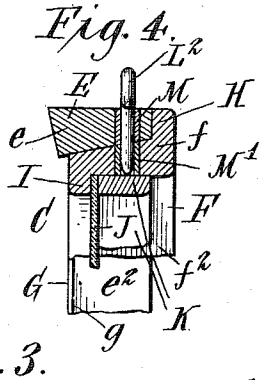


Fig. 4.

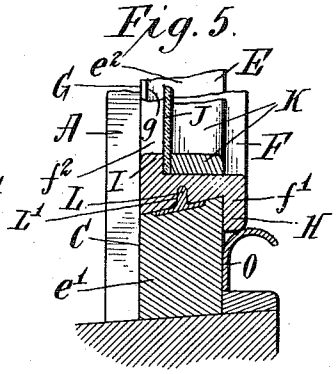


Fig. 5.

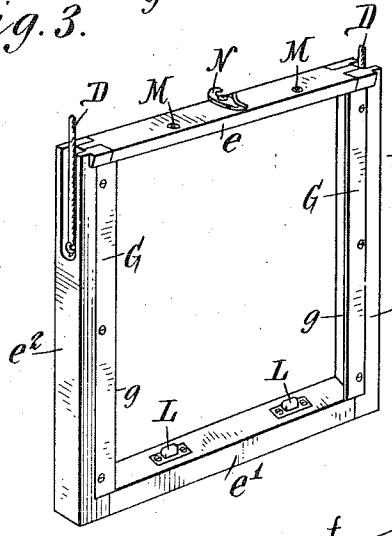


Fig. 6.

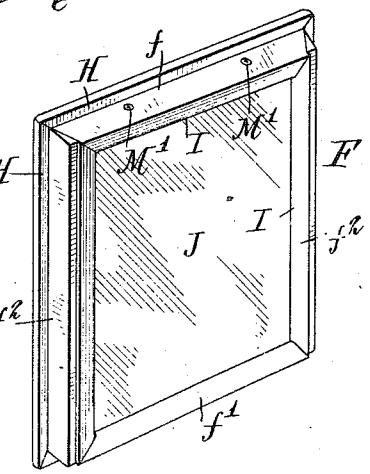


Fig. 7.

Witnesses:
Christ Feinle, Jr.
Ella C. Pluckhahn

Adam Percival Burkhart. Inventor.
By Emil Neuhart
Attorney.

A. P. BURKHART.

WINDOW SASH.

APPLICATION FILED NOV. 9, 1908.

979,423. Patented Dec. 27, 1910.

5 SHEETS—SHEET 3.

Fig. 8.

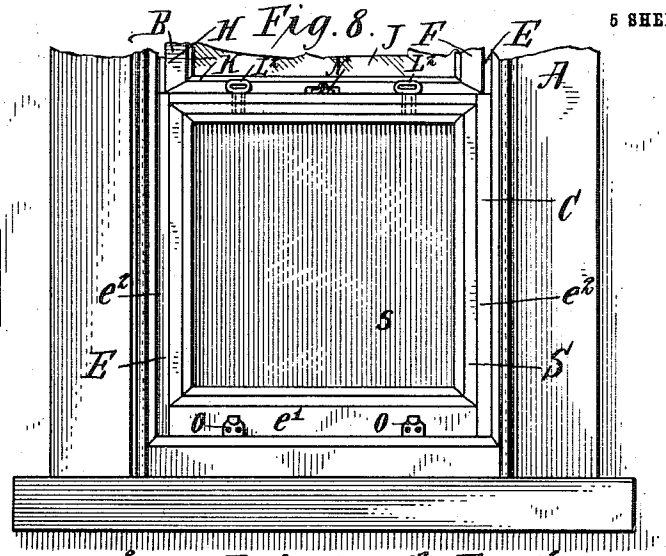


Fig. 9.

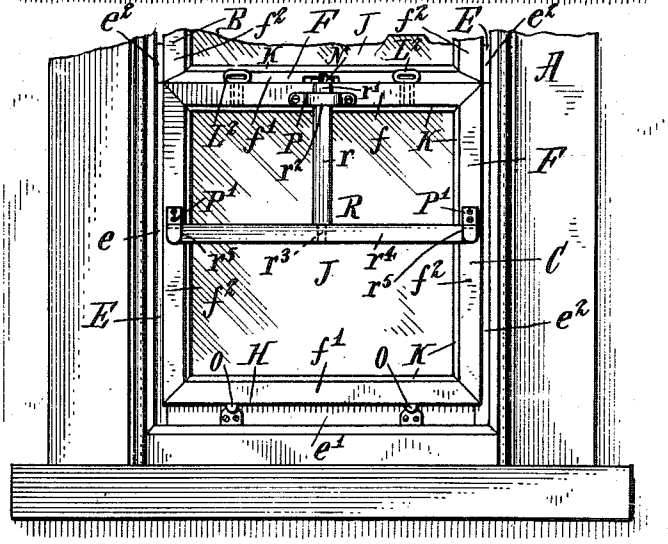
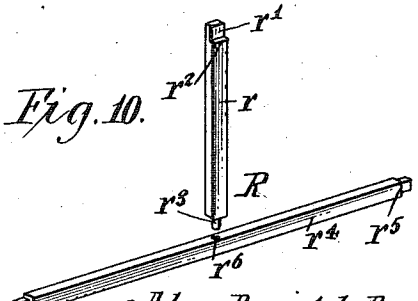


Fig. 10.



Witnesses:
Christ Feinle, Jr.
Ella C. Buckhart.

Adam Percival Burkhart Inventor.
By Emil Neuhart
Attorney.

A. P. BURKHART.

WINDOW SASH.

APPLICATION FILED NOV. 9, 1908.

979,423. Patented Dec. 27, 1910.

5 SHEETS—SHEET 4.

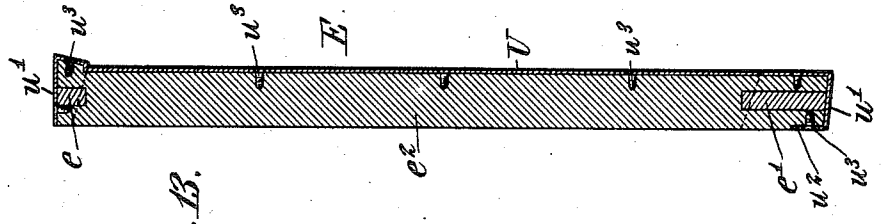


Fig. 13.

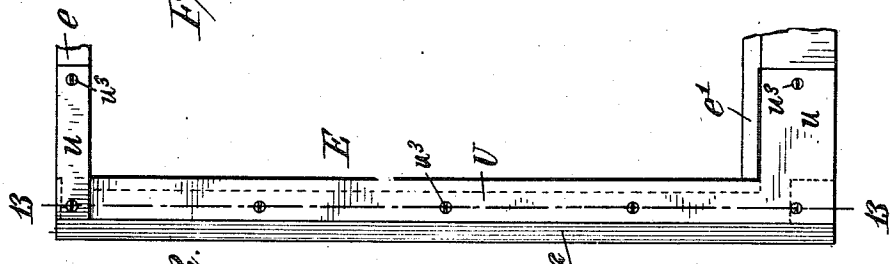


Fig. 12.

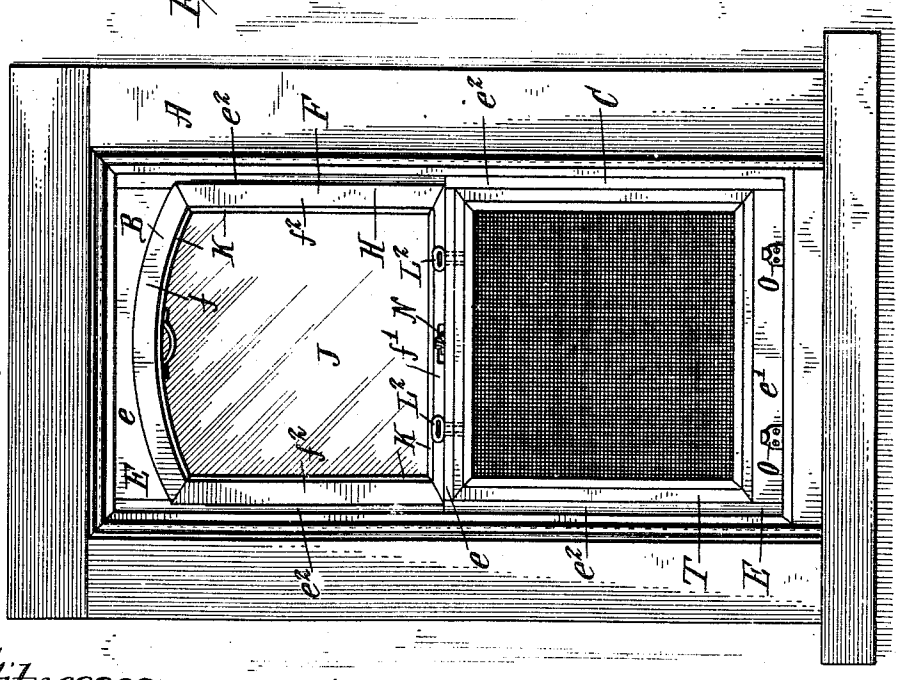


Fig. 11.

Witnesses:
Christ Feinle, Jr.
Ella C. Burkhart.

Adam Percival Burkhart, Inventor.
By Emil Neuhart
Attorney.

A. P. BURKHART.

WINDOW SASH.

APPLICATION FILED NOV. 9, 1908.

979,423. Patented Dec. 27, 1910.

5 SHEETS—SHEET 5.

Fig. 14.

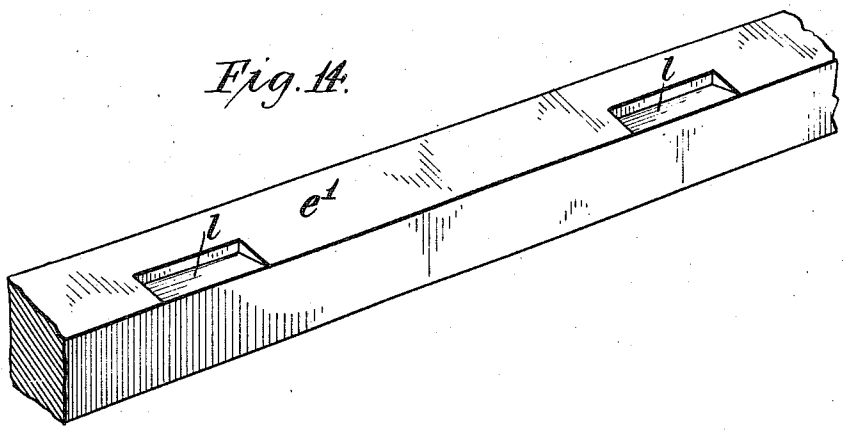


Fig. 15.

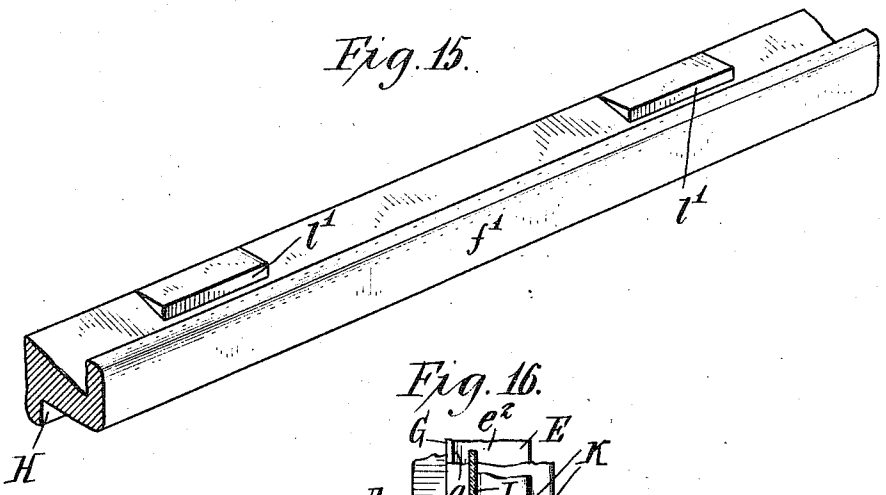
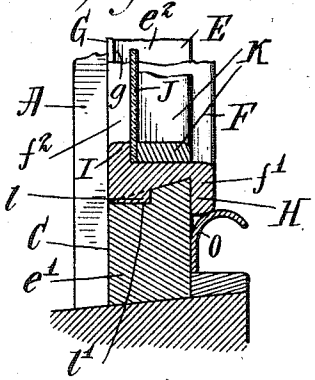


Fig. 16.



Witnesses:
Christ Feinle, Jr.
Edw. C. Plueckhahn.

Adam Percival Burkhart, Inventor.
By Emil Neuhardt
Attorney.

UNITED STATES PATENT OFFICE.

ADAM PERCIVAL BURKHART, OF BUFFALO, NEW YORK.

WINDOW-SASH.

979,423. Specification of Letters Patent. Patented Dec. 27, 1910.

Application filed November 9, 1908. Serial No. 461,743.

To all whom it may concern:

Be it known that I, ADAM PERCIVAL BURKHART, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Window-Sashes, of which the following is a specification.

My invention relates to window-sashes, and it has for its primary object the production of a two-section sash, one placed within the other and being readily removable therefrom, said removable section being glazed so that the outer side of the window-pane or panes, as the case may be, may be easily cleaned without the necessity of sitting or standing upon the window-sill.

Another object of my invention is to hang the outer section of each sash upon cords or their equivalents so that the sash may be elevated or lowered in the usual manner.

A further object is the construction of a two-section sash whereby cold-air is positively prevented from entering between the sections.

A further object is the provision of simple means to retain the sections in connected condition without being affected by wind storms or jars of any kind and to so construct the sections that the inner section will not bind or lock itself within the outer section by swelling of the wood.

Further objects are to provide a screened supplemental inner section which may be substituted for the glazed inner section during warm weather, and a light inner closure-section to be placed within the outer section in cold weather after having removed the glazed inner section to clean the window pane or panes thereof; to provide the outer section with abutments on their outer sides against which the inner sections are held and to provide the inner sections with marginal overlapping weather-flanges which bear against the inner sides of the outer sections; to provide simple and effective means for conveniently handling the inner sections when removing the same from the outer sections; to construct the sections that they are interchangeable; and to otherwise improve on window-sashes, as will appear hereinafter.

To these ends my invention consists in the construction, arrangement, and combination of parts to be hereinafter described and particularly pointed out in the subjoined claim.

Reference is to be had to the accompanying drawings forming an inseparable part of this specification, corresponding letters of reference referring to corresponding parts in the several figures.

Figure 1 is an inner elevation of a window showing my improved sash forming part thereof. Fig. 2 is an enlarged horizontal section taken on line 2—2, Fig. 1. Fig. 3 is an enlarged vertical section taken on line 3—3, Fig. 1. Fig. 4 is an enlarged vertical section through the upper end of the lower sash, taken on line 4—4, Fig. 1. Fig. 5 is an enlarged vertical section taken on line 5—5, Fig. 1. Fig. 6 is a perspective view of the outer section of the lower sash. Fig. 7 is a perspective view of the glazed inner section of the lower sash. Fig. 8 is an inner elevation of the lower portion of a window showing a closure section placed within the outer section of the lower sash. Fig. 9 is an inner elevation of the lower portion of a window showing the appliance for removing the inner sections of large and heavy sashes. Fig. 10 is a perspective view of the appliance for removing the inner sections. Fig. 11 is an inner elevation of a window showing an inner screened section substituted for the glazed inner section of the lower sash. Fig. 12 is an outer view of a portion of the outer section of a sash showing a modified form of abutment. Fig. 13 is a vertical section taken on line 13—13, Fig. 12. Fig. 14 is a perspective view of a portion of the lower rail of an outer section showing the same mortised or notched, which notches serve as one of the coöperating parts of a modified form of retaining-means for retaining the lower end of the inner section within the outer section. Fig. 15 is an inverted perspective view of the lower rail of an inner section showing the same provided with integral tenons or projections adapted to enter the mortises or notches shown in Fig. 14. Fig. 16 is a vertical section through the lower portion of a window with the modified form of retaining-means shown in Figs. 14 and 15.

The reference letter A designates the frame, B the upper sash and C the lower sash. Each sash is hung on sash-cords D or the like in the usual manner so that they may be raised and lowered. Each sash com-

prises an outer section E and a glazed inner section F removably held within said outer section. The outer section comprises end rails e, e^1, and stiles e^2, the rails having their inner edges similarly beveled and the stiles having their inner edges oppositely beveled; thus gradually and slightly diminishing the dimensions of the opening formed by said rails and stiles from the inner side of the section to the outer side thereof. The stiles e^2 have metallic plates G secured to their outer sides arranged to extend beyond the beveled inner edges of the stiles to form abutments g. These plates are let into the stiles so that they are flush with the outer faces of the same, and when painted, will not be noticeable. The inner sections comprise rails f, f^1, and stiles f^2, all having their outer edges beveled complementary to the beveled inner edges of the outer sections so that they may be easily placed into the openings of said outer sections and, in the event of the wooden rails and stiles swelling, they will not be bound within the outer sections. Said inner sections are forced against the abutments g and have the outer sides of their stiles rabbeted to receive said abutments, thereby providing a flush and finished exterior surface for the sash. The inner sections are somewhat thicker than the outer sections and have outwardly extending weather-flanges H, either integral or secured thereto, as may be desired; said flanges assuring an air-tight connection between the two sections. Said inner sections are also provided with tongues or flanges I on their inner edges against which the panes of glass J are placed and said panes are fastened with retaining-strips K secured to the rails and stiles of said inner sections.

Secured to the upper or inner edge of the lower rail of each outer section are metallic retainers or projections L that enter notches L^1 in the under or outer edge of the lower rail of the coöperating inner section, thus preventing inward movement of the inner section at its lower end. A modified form of this retaining-means is shown in Figs. 14 to 16, in which the upper or inner edge of the lower rail is mortised or notched, as at l, and the under or outer edge of the lower rail of the outer section has retainers or projections l^1 adapted to enter the mortises or notches l, thus preventing inward movement of the lower end of the inner section.

In order to prevent inward movement of the upper end of each inner section and to lock the same within the outer section, lock-pins L^2 are provided which are passed through metallic bushings M let into the upper rail of the outer section and enter similar bushings M^1 let into the upper rail of the inner section, as best shown in Fig. 4. Outward displacement of the inner section is therefore prevented by the abutments g and the overlapping weather flanges H while inward displacement, such as may be caused by wind-storms, is prevented by the lock-pins L^2 and the retainers L or l^1, as the case may be.

The two sashes are locked against sliding-movement by a sash-lock N in the usual manner.

The several parts of the sash are interchangeable so that when one part is destroyed, another similar part may be substituted therefor without replacing or changing any of the remaining parts in any respect, all parts being finished to exact size and fitting the coöperating parts of a given size sash.

For convenience in raising and lowering the lower sash, the usual sash-grips O are secured to the lower rail thereof, and with a view of providing a convenient means for raising and lowering the upper sash, a curved handle O^1 is secured to the inner edge of the upper rail thereof.

When embodying this invention in large windows, such as are used in office buildings, public buildings, and the like, I provide the upper rail of the inner section with a metallic strap P and the stiles with metallic hooks P^1. Coöperating with said strap and hooks is a lifting-device R comprising a vertical bar r cut away at its upper end, as at r^1, to form a shoulder r^2 and provided at its lower end with a tenon or stud r^3, and a horizontal bar r^4 having its ends reduced to form shoulders r^5 and provided with a mortise or aperture r^6 adapted to receive the tenon or stud r^3 of the vertical bar. When using this lifting-device to more conveniently remove the inner section from the outer section, the upper reduced end of the vertical bar r is placed between the strap P and the upper rail of the inner section with the shoulder r^2 against the lower edge of the strap; the horizontal bar r^4 is then placed in position so that the tenon or stud r^3 of the vertical bar enters the mortise or aperture r^6 of said horizontal bar and so that the reduced ends of the latter fit behind the hooks P^1 with the shoulders r^5 against the inner edges of said hooks. By exerting pressure on the horizontal bar in an upward direction and simultaneously drawing the inner section inward, the latter may be easily removed and lowered to the floor, the shoulders r^5 of the horizontal bar preventing lengthwise movement of said bar and also prevent swaying of the section. While I have shown the strap P and hooks P^1 on the lower sash only, the upper sash may be similarly equipped.

If desired the entire sash may be made of sheet metal, in which event, the abutments g need not be separate pieces secured to the stiles of the inner section, since they may be easily formed integrally with said stiles.

When removing an inner section for cleaning the pane of glass in cold weather, it is of considerable advantage to prevent the cold air entering the room, and for this purpose I have devised a light "dummy" or closure-section which may be placed within the outer section while the glass of the removed inner section is being cleaned. This closure-section is shown in Fig. 8 and comprises a frame S having the same dimensions as the removed section and a sheet of cardboard *s* or other suitable material, preferably of light weight, and transparent or not, as may be desired. During hot weather, the glazed inner section may be removed and a screened section T, as shown in Fig. 11, substituted therefor.

The frames of both the "dummy" or closure-section and the screened section are preferably made of soft wood or other light material so that they can be easily handled, and this is particularly true of the "dummy" or closure-section, which is to be carried from one window to another and placed within the outer sections of the several windows while cleaning the glass of the removed inner section.

In Figs. 12 and 13, I have shown a modification of the abutments forming part of the outer section. In this modification, the abutments are formed of strips of metal U secured to the stiles of said section and having upper and lower lateral extensions *u* which overlap the rails and securely connect them with the stiles. The ends of said strips are continued and bent around the upper and lower edges of the section, as at u^1, and the lower extremities of said strips are bent upward and embedded in the inner face of the section, as at u^2. Screws u^3 secure the strips to the section, as best shown in Fig. 13.

Various changes in the details of construction may be resorted to without departing from my invention or sacrificing any of the advantages thereof.

Having thus described my invention what I claim is,—

In window construction, the combination with a main sash frame, of a removable sash mounted therein, the main frame having a recess formed in the outer face of each of its stiles and in the adjacent portion of the rails, a vertically disposed plate mounted in the recesses in the stiles and projecting inward to engage the supplemental sash to prevent it from passing through the main sash frame, said plate having a laterally extending lug near each end which is adapted to be engaged in the recess in the adjacent rail, the lug projecting from the rail to engage the supplemental sash, the ends of the plate being bent around the ends of the stiles and secured to the same.

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses.

ADAM PERCIVAL BURKHART.

Witnesses:
ELLA C. PLUECKHAHN,
EMIL NEUHART.