

**Dec. 20, 1932.**

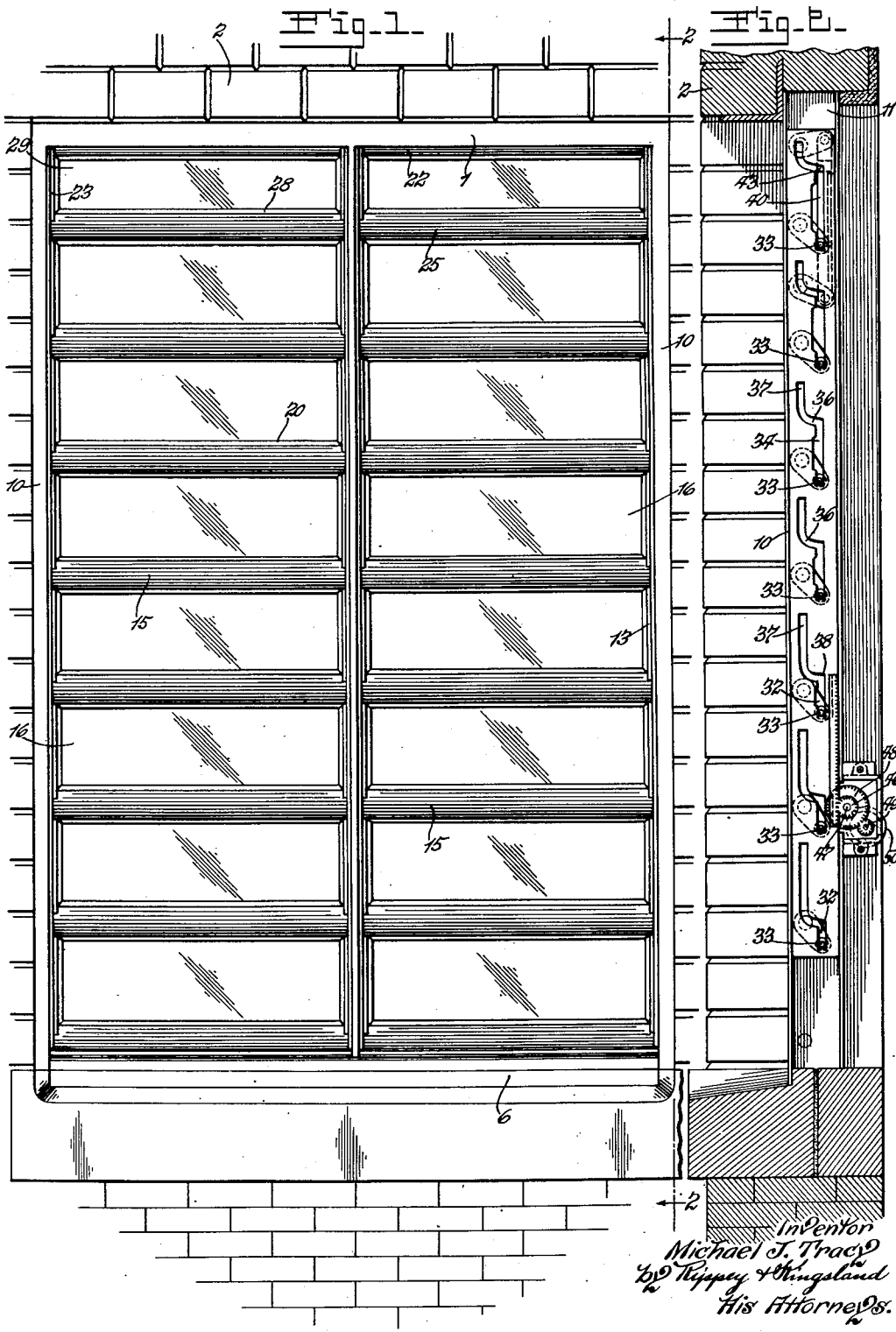
M. J. TRACY

**1,891,485**

WINDOW

Filed Oct. 14, 1931

3 Sheets-Sheet 1



Dec. 20, 1932.

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1,891,485

WINDOW

Filed Oct. 14, 1931

3 Sheets-Sheet 2

Fig. 3-

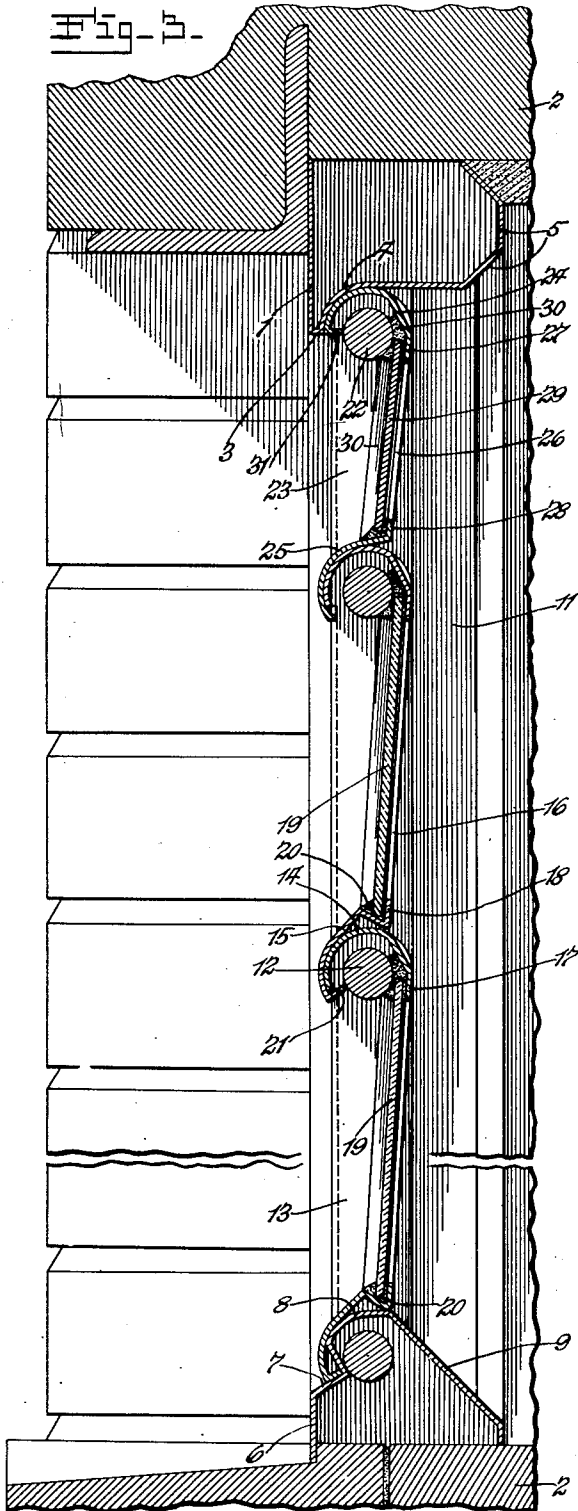
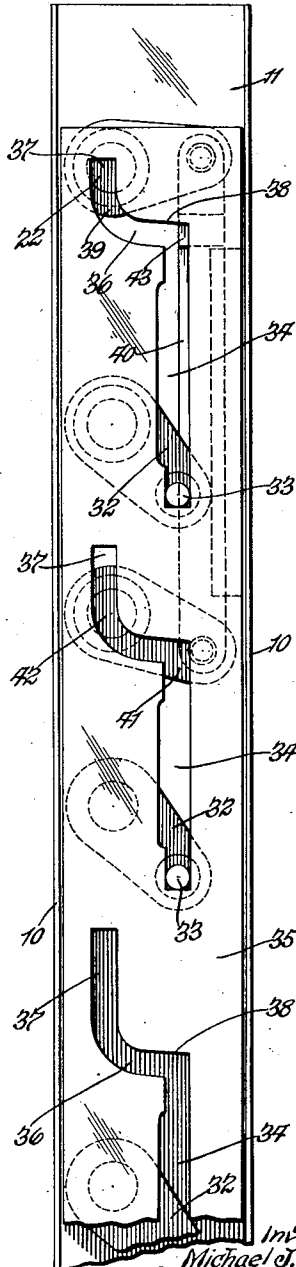


Fig. 4-



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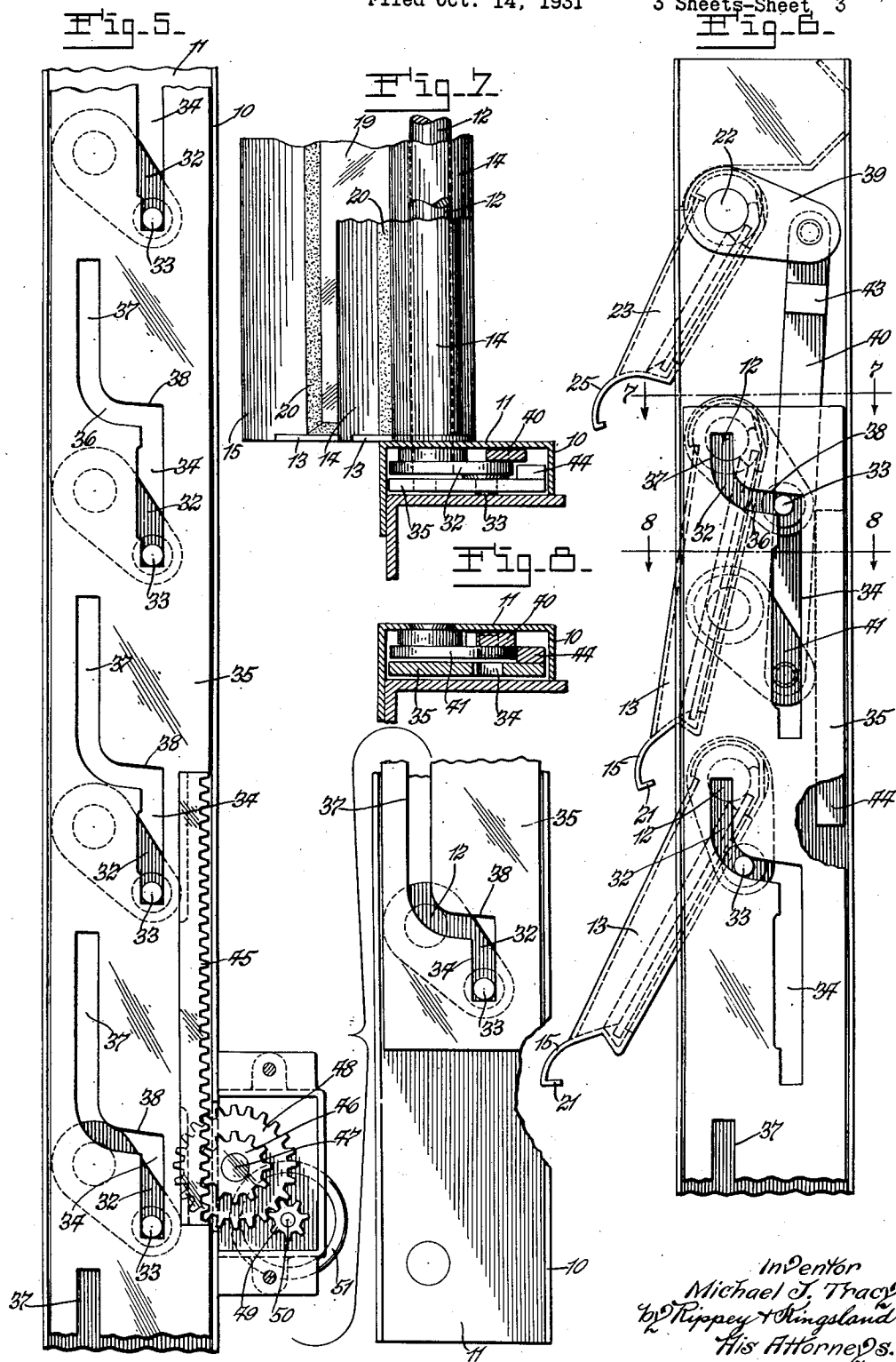
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3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

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## WINDOW

Application filed October 14, 1931. Serial No. 568,686.

This invention relates to windows.

Objects of the invention are to provide an improved window comprising a vertical series of pivoted frames having their horizontal edges overlapping and interlocking in order to hold the window frames closed, in combination with improved mechanism for operating said frames in a predetermined sequence in order to provide a louver arrangement in which the horizontal edges of the frames are spaced apart to form ventilating openings; to provide improved interlocking means for the horizontal edges of windows to prevent the occupant of the room equipped with the window from forcibly opening or displacing any of the frames; to provide an improved operating mechanism for operating the frames to open and closed positions; to provide an improved ventilator device forming a part of the window and associated with the operating mechanism of the window frames in a manner whereby the ventilator device may be opened and closed without operating the window frame; and to obtain all of the other advantageous objects and purposes herein disclosed, reference being made to the accompanying drawings, in which—

Fig. 1 is an outer side elevation of my improved window.

Fig. 2 is a vertical sectional view approximately on the line 2—2 of Fig. 1, showing the mechanism for opening and closing the window and the ventilator.

Fig. 3 is an enlarged vertical sectional view showing the interlocking devices associated with the respective window panel frames.

Fig. 4 is an enlarged view showing details of the invention whereby the window frames are operated.

Fig. 5 is a view in continuation of the lower end of Fig. 4 showing the operating mechanism.

Fig. 6 is a view similar to Fig. 4 showing the different window panel frames in open position and the operating mechanism in its operated position.

Fig. 7 is an enlarged cross sectional view approximately on the line 7—7 of Fig. 6.

Fig. 8 is an enlarged cross sectional view approximately on the line 8—8 of Fig. 6.

The frame proper of my improved window is constructed and designed to support a series of pivoted panel frames having interlocking connections for holding them in closed position and being connected with operating mechanism whereby they may be moved to inclined or open positions in sequence in order to provide ventilating openings.

The present invention is a variation in the improvement disclosed in my prior application for patent for window filed February 6, 1931, Serial No. 513,834.

The window frame proper comprises an outer portion including upper, lower and side members. The upper member of the frame proper has a part 1 in rigid connection with the wall 2 of the building. The lower marginal portion 3 of the part 1 extends inwardly and has an inner portion 4 curving upwardly and inwardly and formed with angular portions 5 extending to connection with the wall 2 of the building.

The lower member of the frame comprises a part 6 having rigid connection with the wall 2 and bent to form a sharp inwardly extended angular portion 7 extending transversely of the window opening. The upper arm of the angle or portion 7 is extended and curved inwardly, as indicated at 8, and is provided with a downwardly and inwardly extended portion 9 leading downwardly and inwardly to connection with the wall 2 (Fig. 3).

The side members of the window frame are of channel formation, including flanges 10 extending laterally from the intermediate portion 11, of which they are integral parts. The channel portions 10 extend toward the vertical sides of the window opening in which the frame is mounted, thus spacing the frame portions 11 from the vertical side walls of the opening. The upper and lower ends of these channel members 10—11 are connected with the wall 2 of the building at the upper and lower ends of the window opening.

A vertical series of horizontal rods 12 have their ends pivoted in the window frame mem-

bers 11 and said rods support swinging frames in which the transparent or translucent window panes are secured. Each of the swinging frames is composed of metal and includes vertical side members 13 mounted adjacent to the inner surfaces of the frames 11 and having their upper ends integral or rigid with an upper horizontal frame member 14 and their lower ends rigid with a lower horizontal frame member 15. The upper frame member 14 of each swinging frame is curved in cross section (Fig. 3) and extends over the corresponding rocking rod 12. The rods 12 extend through the upper ends of the side frame members 13 and are attached thereto, so that the frames must swing when the rods 12 are turned. The side frame members 13 have inwardly extended flanges 16 along their inner edges (Fig. 3). The upper frame member 14 has a downwardly depending flange 17 along its inner edge in alinement with the flanges 16 and the lower frame member 15 has an upwardly extended flange 18 along its inner edge in alinement with the flanges 16. In each of these swinging frames constructed as described, a transparent or translucent pane 19 is secured. An impervious joint is obtained between the edges of the pane 19 and the flanges 16, 17 and 18 by putty 20, or other appropriate substance. The lower flange 18 cooperates with the lower frame member 15 to form an angle in which the putty 20 along the lower edge of the pane 19 is mounted. The upper edge of the pane 19 extends between the rod 12 and the flange 17 and the space between said rod 12 and said flange 17 is filled with putty, thus forming an impervious and hermetic joint. Similarly the putty at the ends of the pane forms hermetic joints. The lower edge of each lower frame member 15 is formed with an upwardly and inwardly deflected flange 21, which, in the closed position of the frames, engages the lower edge of the upper portion 14 of the next lower frame, thus providing a lock positively preventing outward swinging movement of any frame before the next lower frame has been swung outwardly a predetermined distance. The construction and arrangement is such that the frames must be operated in sequence, the lower frame being first swung outwardly and the series of frames being started outwardly in successive sequence. The ventilator device comprises a rod 22 above the series of rods 12 and having attached thereto and supporting a swinging frame comprising vertical side members 23, a top member 24, and a bottom member 25. Inwardly extended flanges 26 are formed in connection with the side members 23, a downwardly extended flange 27 is in connection with the top member 24 and an upwardly extended flange 28 is in connection with the bottom member 25. A panel 29 is secured within this frame by putty 30. The putty 30 that extends across the top of the pane is between the rod 22 and the upper frame member 24 and forms an impervious joint. The lower outer edge of the upper frame member 24 is formed with an inwardly extended flange 31 engaging the rod 22. The lower frame member 25 of the ventilator device differs from the lower frame member 15 in that no flange similar to the flange 21 is formed in connection with the lower frame member 25. This permits the upper ventilator frame just described to swing outwardly and inwardly independently of any of the swinging window frames. One end of each rod 12 has attached thereto a crank arm 32 within the channel 10-11. The crank arms 32 have in connection therewith projections 33 engaging in vertical slots 34 in a bar 35 mounted for vertical sliding movements in the adjacent frame 10-11. The respective vertical slots 34 communicate at their upper ends with slots 36 that curve laterally and thence extend upwardly to connection with slot portions 37. Cam shoulders 38 are above the intersection of the slots 34 with the slots 36. The rod 22 has attached thereto a crank arm 39 connected by a link 40 with a crank arm 41 mounted on a pivot 42. An abutment 43 is rigid with the link 40. An actuator 44 for the crank arm 41 is attached to the slide 35 and on downward movement of the slide 35 from its uppermost position engages the crank arm 41 (Fig. 6) and thereby operates said crank arm and the link 40, thus operating the crank 39 and turning the rod 22 to swing the ventilator frame outwardly and open the ventilator before any of the swinging window frames have been operated. When the slide member 35 is moved upwardly to its starting position, the upper end of the member 44 engages the block 43 and pushes upwardly the link 40 and thereby operates the rod 22 to close the ventilator. A rack 45 is attached to the slide 35 and meshes with a pinion 46 (Fig. 5). The pinion 46 is attached to a trunnion 47 with which a gear wheel 48 is rigid. The gear wheel 48 meshes with a pinion 49 attached to a stud shaft 50 to which a handle 51 is secured. Thus, by rotating the handle 51, the gearing may be operated to move the slide 35 upwardly and downwardly. As already mentioned and as clearly shown in Fig. 2 of the drawings, the slots 34 are of different lengths, being of gradually increasing length from the lower slot 34 to the upper slot 34. Thus, less extent of downward movement of the slide 35 is required to operate the lower crank 32 than is required to operate the next adjacent crank or any of the other cranks of the series. Slight initial downward movement of the slide 35

from its downward position in which all of the window frames and the ventilator device are closed will cause the actuator 44 to engage and operate the crank 32 and thereby open the ventilator before any of the window frames are opened.

The ventilator may be closed without opening any of the window frames by restoring the slide 35 to its upper position. Upward movement of the slide 35 causes the actuator 44 to engage the abutment 43 and thereby operate the link 40 in a direction and to an extent to close the ventilator.

Additional downward movement of the slide 35 after the ventilator has been opened first operates the lower window, thus turning the upper frame member 14 of the lower window a distance to permit the next adjacent window frame to be swung outwardly. Additional downward movement of the slide 35 opens the window frame next to the lower window; and additional movement of said slide opens the third window from the bottom and so on through the series.

Thus, the windows are opened in sequence and successively from the bottom window upwardly.

By this invention, the unbreakable and inseverable rods 12 are rendered invisible because they are concealed and covered by the ornamental frame structure of the windows. These rods, together with the metallic frames which are rigidly secured thereto, provide openings through which it is impossible for the inmates to pass even though the panes 19 should become broken.

The groove across the lower part of each swinging frame other than the ventilator frame receives the lower edge of the pane 19, so that it is entirely impossible to swing the pane 19 outwardly even though all the putty against the outer marginal portions of the pane becomes detached. This is because the lower edge of the pane is in a groove from which the pane cannot be removed without moving the pane upwardly. The pane cannot be raised upwardly without removing all of the putty lodged and secured in the space between the rod 12 and the upper portion of the frame comprising the parts 14 and 17. It is impossible to remove the putty from said space and it is, therefore, impossible for the occupant or inmate of the room to remove the pane from the frame in which it is mounted. This construction eliminates the necessity of using clips of the type usually employed to cooperate with the putty in holding the window panes in the frames.

The device is constructed and arranged so that it provides an ornamental window frame structure well designed and adapted for use in connection with institutions in which the inmates must be confined and from which escape is to be prevented. The invention avoids the use of the unsightly bars now

usually required across the windows to prevent escape of inmates from institutions should the windows be opened or broken. This invention serves the double purpose of providing illuminating and ventilating windows and, at the same time, providing invisible guards preventing the escape of the inmates.

It is now clear that all of the intended objects and purposes are obtained in a highly satisfactory manner. The construction and arrangement of the parts of the invention may be varied as widely as the scope of equivalents will permit without departure from the nature and principle thereof. I contemplate such variations as may be required to meet individual preferences and, without restricting myself unessentially in any particular, what I claim and desire to secure by Letters Patent is:—

1. A window comprising a vertical series of pivotally supported window sections, a ventilator section pivotally supported adjacent to said window sections, operating cranks for said window sections and said ventilator section, an actuator for said cranks movable from and to a starting position, and connections for operating said cranks by said actuator for swinging said ventilator section first to open position and then swinging said window sections outwardly to outwardly inclined positions by continued operation of said actuator in one direction from said starting position and for moving said window sections and said ventilator section to closed positions successively in reverse order from the order that they were moved outwardly and by continued operation of said actuator toward said starting position of said actuator.

2. A window of the character described comprising a vertical series of horizontal rods, means for supporting said rods for rocking movements, frames rigidly attached to said rods, window panes mounted in said frames, interlocking connections between adjacent portions of said frames maintaining closed joints between said frames when said frames are in closed positions and preventing said frames from being forced open other than in a predetermined manner, a ventilator device, and mechanism for opening said ventilator device and then swinging said frames successively to outwardly inclined positions.

3. A window of the character described comprising a vertical series of horizontal rods, means for supporting said rods for rocking movements, frames rigidly attached to said rods, window panes mounted in said frames, means for maintaining interlocked joints between said frames when said frames are in closed position, ventilating means, and mechanism for opening said ventilating means and for swinging said frames successively to outwardly inclined positions by continued movement of said mechanism from a

starting position and for moving said frames and said ventilating means to closed positions successively and in reverse order to which they were moved to their outward and open positions respectively by continued movement of said mechanism to said starting position.

4. A window of the character described comprising a vertical series of horizontal rods supported for rocking movements, a ventilator device supported by one of said rods, window sections supported by the remaining rods respectively and movable therefrom to open and closed positions, a crank attached to each of said rods, and an actuator for operating said cranks and rocking said rods successively and by continued movement of said actuator from a definite starting position and thereby first opening said ventilator device and then moving said window sections successively to outwardly inclined positions.

5. A window of the character described comprising a vertical series of horizontal rods supported for rocking movements, a ventilator device supported by one of said rods, window sections supported by the remaining rods respectively and movable therefrom to open and closed positions, a crank attached to each of said rods, an actuator for operating said cranks and rocking said rods successively and by continued movement of said actuator from a definite starting position and thereby first opening said ventilator device and then moving said window sections successively to outwardly inclined positions, and means in connection with the respective frames covering and concealing said rods from view.

6. A window of the character described comprising a vertical series of swinging frames, window panes supported in said frames respectively, mechanism movable from and to a definite starting position, and means operated by said mechanism for swinging the frame at one end of said series completely to open position before moving any of the remaining frames, and then moving the remaining frames successively from the opposite end of said series to open position, by continued movement of said mechanism in one direction.

7. A window and ventilator of the character described comprising a vertical series of window sections movable from closed positions to outwardly inclined positions, a ventilator device above said window sections movable from closed position to outwardly inclined open position, an actuator movable from and to a starting position, and means controlled by said actuator for first opening said ventilator device and then moving said window sections successively from the lower end of said series to open positions during movement of said actuator from a definite starting position.

8. A window of the character described

comprising a vertical series of window frames, means for maintaining interlocked joints between said frames when said frames are in closed position, a ventilator device above said window frames, a vertically movable bar, mechanism for moving said bar vertically from and to a starting position, cranks in connection with said window frames and said ventilating device respectively, and means forming connections between said cranks and said bar for opening said ventilating means during initial movement of said bar from said starting position and thereafter opening said window frames successively upwardly from the lower end of the series.

9. A window of the character described comprising a vertical series of window frames, means for maintaining interlocked joints between said frames when said frames are in closed position, a ventilator device above said window frames, a vertically movable bar, mechanism for moving said bar vertically from and to a starting position, cranks in connection with said window frames and said ventilating device respectively, and means forming connections between said cranks and said bar for opening said ventilating means during initial movement of said bar from said starting position and thereafter opening said window frames successively upwardly from the lower end of the series and for moving said ventilator and said window frames successively to closed position in reverse order by movement of said bar toward its starting position.

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