Dec. 13, 1966 A. T. HAGERTY ETAL 3,291,193

VENETIAN BLIND WINDOW

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FIG. 3.

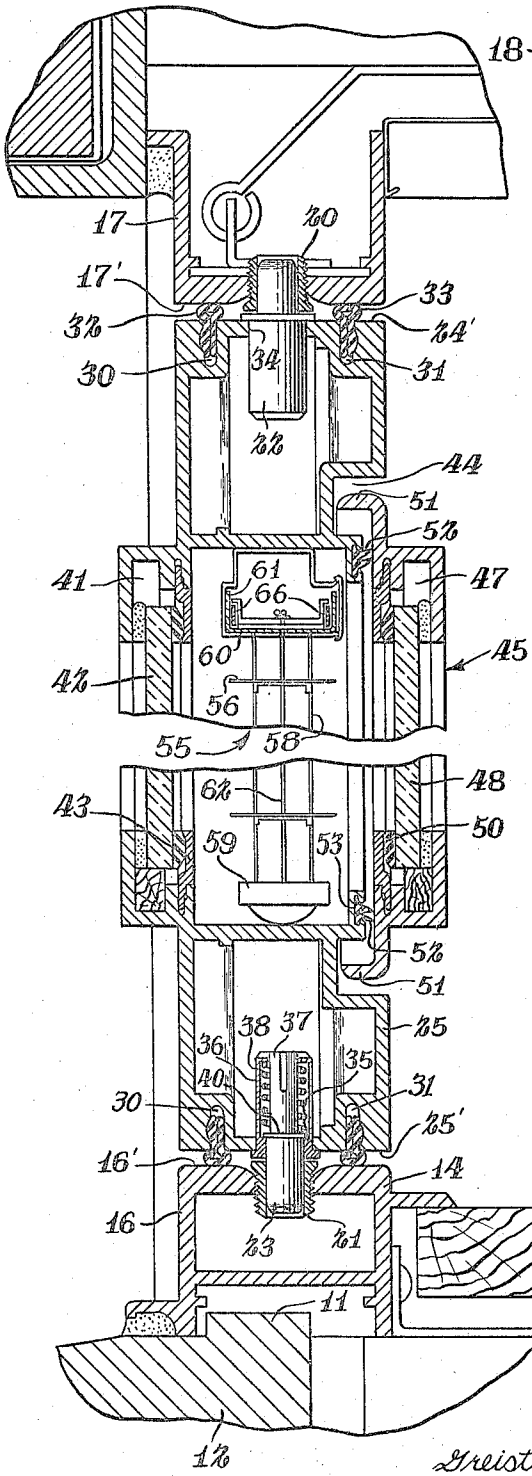


FIG. 2.

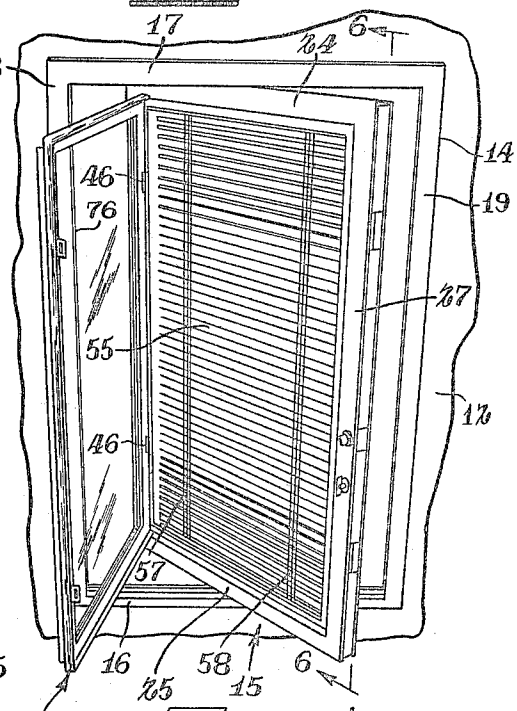
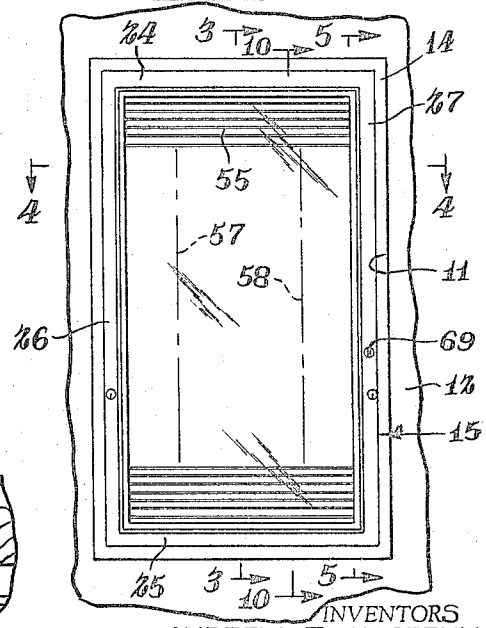


FIG. 1.



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Fig. 4.

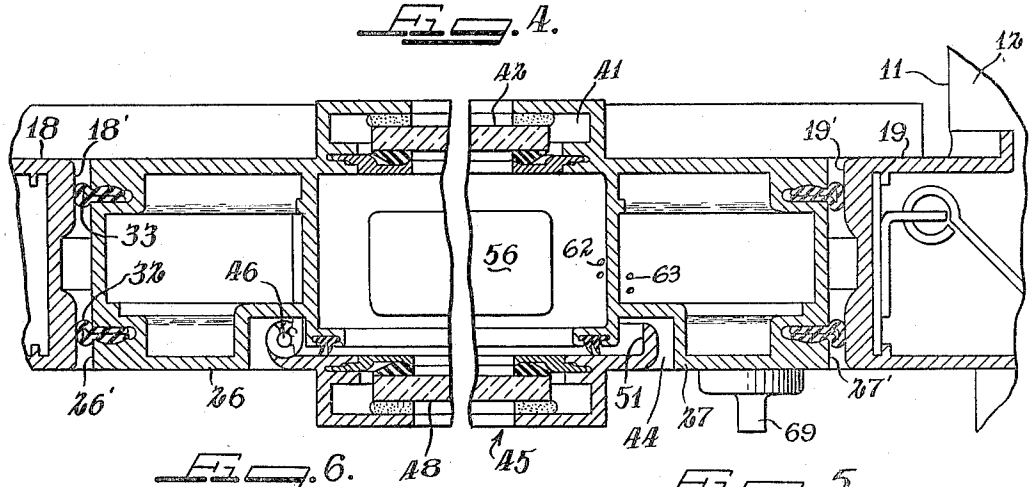


Fig. 6.

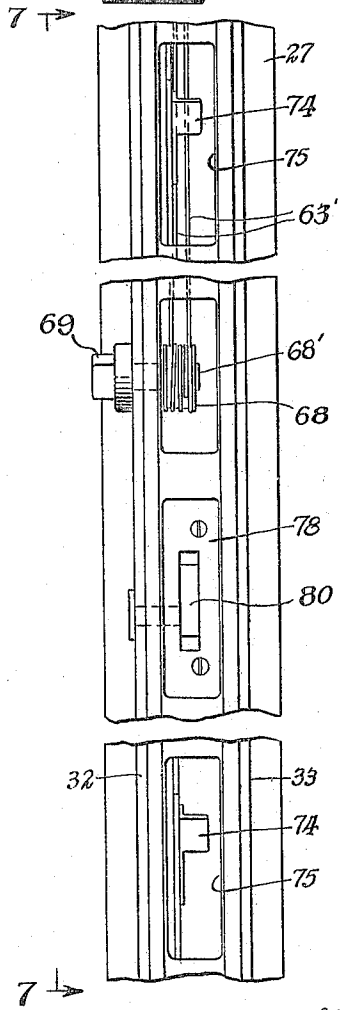
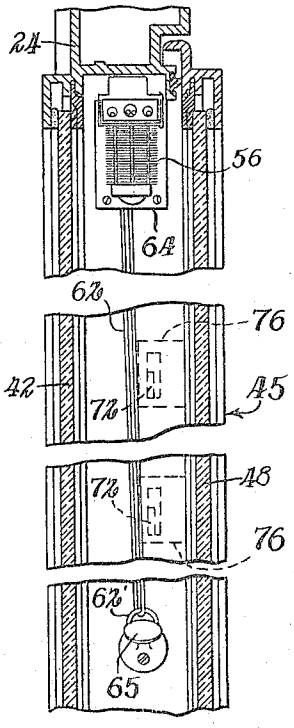


Fig. 5.



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FIG. 7.

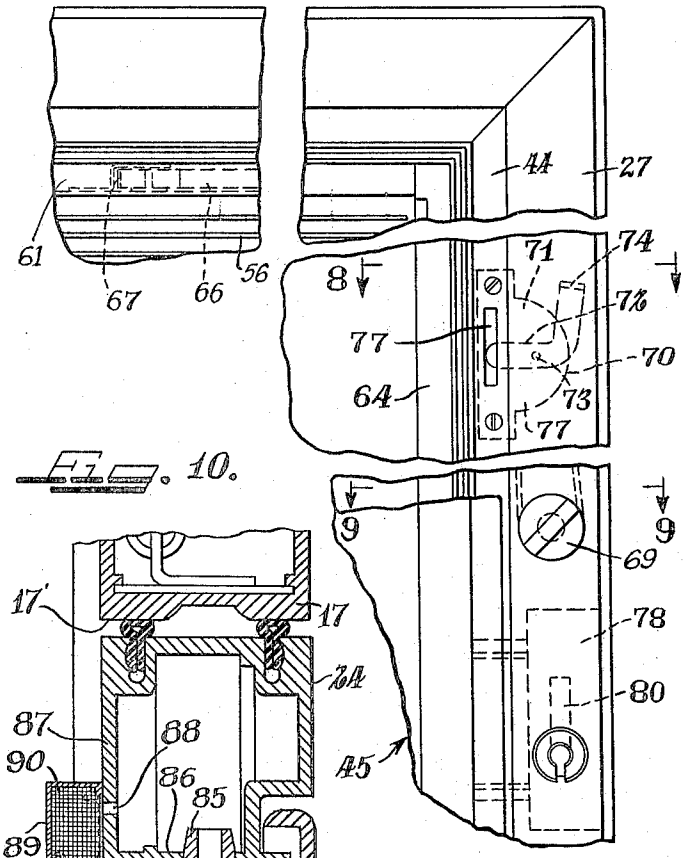


FIG. 8.

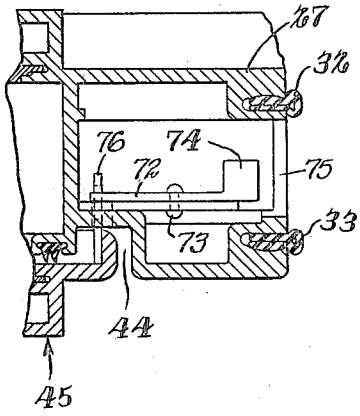


FIG. 10.

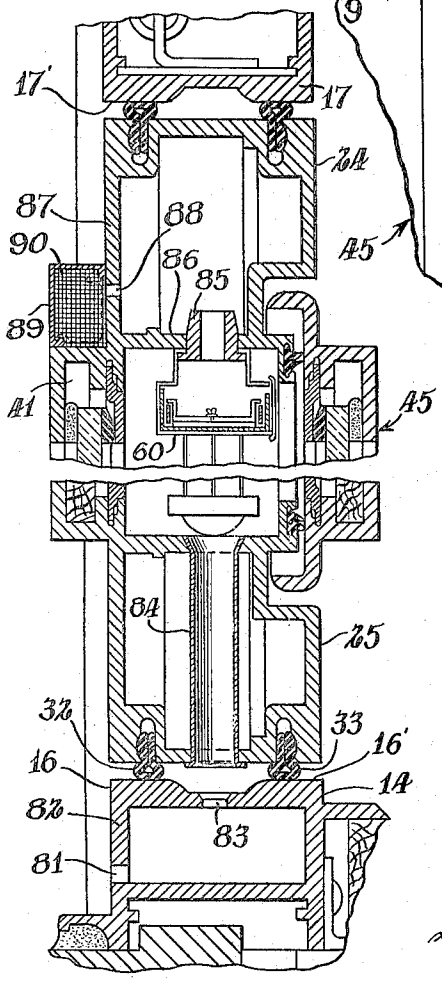
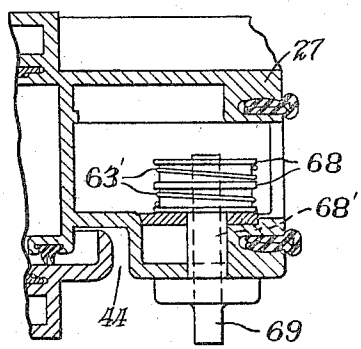


FIG. 9.



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3,291,193

VENETIAN BLIND WINDOW

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5 Claims. (Cl. 160—107)

This invention relates to window constructions and is more particularly concerned with improvements in a window of the type having a Venetian blind incorporated therein.

It is a general object of the invention to provide improvements in a window which is pivotally mounted in an opening in a wall and which is constructed so as to form a compartment for a Venetian blind with the blind mounted therein so that the window can be pivoted to a reversed position without interfering with the blind.

It is a more specific object of the invention to provide a window structure which comprises a sash mounted on a concealed vertical pivot so that it may be readily reversed for cleaning and which incorporates a compartment between spaced panes for mounting therein a Venetian blind with a control know which is readily accessible for tilting the slats and with concealed pull cords for raising and lowering the blind, the one side of the sash comprising a glazed-in side hinged frame providing ready access to the compartment in which the blind is mounted.

It is another object of the invention to provide a window construction which comprises a supporting frame adapted to be mounted in an opening in a wall, a sash assembly mounted in the supporting frame on vertically aligned, concealed pivots with weather stripping which is airtight when the assembly is reversed for cleaning and with the assembly comprising a rectangular frame of substantial thickness formed by hollow frame members and providing glazing channels for receiving a glass pane which forms a normally outside face thereof and a door-like inside frame which is hinged to the tubular frame and provided with glazing channels for a pane of glass which normally forms an inside face thereof, and a Venetian blind mounted between the two glass panes and having operating cords which are concealed in the tubular frame with a slat tilting knob accessible on the inside of the tubular frame.

It is a further object of the invention to provide a window construction of the type described wherein the sash assembly is held in the supporting frame by key operated lock and latch devices permitting only authorized persons to reverse the window.

It is a still further object of the invention to provide a window construction of the type described wherein the sash is provided with means for permitting the circulation therein of outside air so as to reduce the tendency of moisture to condense in the blind accommodating compartment formed between the two glass panes when the inside frame is closed.

These and other objects and advantages of the invention will be apparent from a consideration of the window structure which is shown by way of illustration in the accompanying drawings wherein:

FIGURE 1 is an elevation showing the inside of a window construction which incorporates therein the principal features of the invention;

FIGURE 2 is an inside perspective view of the window structure in partially open condition;

FIGURE 3 is a vertical section taken on the line 3—3 of FIGURE 1, to an enlarged scale and with portions broken away;

FIGURE 4 is a transverse section taken on the line 4—4 of FIGURE 1, to an enlarged scale and with portions broken away;

FIGURE 5 is a fragmentary section taken on the line 5—5 of FIGURE 1, to a larger scale and with portions broken away;

FIGURE 6 is an edge view of the pivoted sash taken on the line 6—6 of FIGURE 2 to an enlarged scale and with portions broken away;

FIGURE 7 is a fragmentary elevation taken on the line 7—7 of FIGURE 6, with portions broken away;

FIGURE 8 is a fragmentary cross section taken on the line 8—8 of FIGURE 7, to a larger scale;

FIGURE 9 is a fragmentary cross section taken on the line 9—9 of FIGURE 7 to a larger scale; and

FIGURE 10 is a partial vertical section taken on the line 10—10 of FIGURE 1, to an enlarged scale and with portions broken away.

Referring to FIGURES 1 to 4, there is illustrated a window construction 10 which incorporates the principal features of the present invention and which is adapted to be mounted in an opening 11 in a vertically disposed wall 12 of a building. The window 10 comprises an outer support frame 14 in which there is mounted for pivotal movement a sash assembly 15. The outer supporting frame 14 is rectangular and formed of connected end frame members 16, 17 and side frame members 18, 19 of aluminum, stainless steel or the like. It extends about the periphery of the opening 11 so as to present inside edge surfaces 16', 17', 18' and 19' of substantial width. The top and bottom end frame members 16 and 17 are provided with vertically aligned apertures in the inside edges 16' and 17' which are adapted to receive bearing forming members 20 and 21 for accommodating pivot forming members 22 and 23 extending from the sash assembly 15 and located midway between the sides 18 and 19 of the supporting frame 14.

The sash assembly 15 comprises a main frame of rectangular shape having top and bottom end members 24 and 25 which extend between and connect the ends of side frame members 26 and 27. The frame members 24, 25, 26 and 27 are of hollow construction, preferably formed of extruded metal, such as aluminum, stainless steel or the like, with a generally rectangular cross section. The frame members 24, 25, 26 and 27 are connected so as to present peripherally extending exterior edge faces 24', 25', 26' and 27' which are slotted at 30 and 31 for accommodating a pair of compressible weather strips 32 and 33 which extend uninterruptedly about the entire periphery of the frame and which engage with the confronting surfaces 16', 17', 18', 19' of the outer frame 14 when the inner assembly 15 is in the plane of the frame 14. The weather strips 32 and 33 are effective for sealing the sash assembly 15 in the outer support frame 14 in either the normal or the reverse position of the assembly 15 so long as it is swung into the plane of the outer frame 14 so that the surfaces 16', 17', 18', 19' and 24', 25', 26', 27' are in confronting relation.

The upper frame member 24 of the sash assembly 15 has an aperture 34 in which the upper pivot pin 22 is seated in fixed relation. The lower frame member 25 has an aperture 35 in which there is seated a bearing and spring housing member 36 for receiving the lower pivot pin 23. The pin 23 has a stem 37 of reduced cross section which extends into the housing forming upper portion of the member 36 and on which a compression spring 38 is seated with its one end bearing against the inside surface of the flange at the top of the housing forming member 36 and with the other end bearing against the shoulder 40 on the pin 23 so that this pin is slidably mounted in the housing 36 and urged by the compression spring 38 into position to engage in the bearing 21 in the outer supporting frame 14.

The frame members 24, 25, 26 and 27 of the sash assembly 15 are formed to provide on the outside face of the assembly 15 a glazing channel 41 in which the margins of a pane of glass 42 are seated with a suitable seal forming glazing assembly 43 for retaining the pane 42 permanently in place therein.

The frame forming members 24, 25, 26 and 27 of the sash assembly 15 are formed with a continuous recess 44 extending about the inside edge of the frame on the inside face thereof and a glazed panel assembly 45 is mounted by means of a pair of concealed hinges 46 so as to swing about an axis extending along the inside edge of the one vertical side frame member 26. The panel assembly 45 is of rectangular shape and is provided with a glazing channel 47 in which the margins of a pane of glass 48 are seated with a suitable glazing assembly 50 to hold the same therein. The side and end frame members of the panel assembly 45 are formed so as to provide a peripheral flange 51 which extends into the recess 44 in the frame members 24, 25, 26 and 27 and a compressible sealing member 52 is mounted in a channel 53 which extends continuously about the inner edges of the frame members in panel assembly 45. Portions of the hinges 46 may be formed integral with the one side frame member as shown in FIGURE 4.

A Venetian blind 55 is mounted within the compartment formed by the frame members 24, 25, 26 and 27, the outer glass pane 42 and the hinged inner glazed panel 45. The blind 55 is of conventional construction having a series of slats 56 mounted on parallel cords 57 and 58 extending between lower and upper cross bars 59 and 60, the latter constituting the bottom forming plate member of an upwardly opening housing 61 which is of channel shaped cross section and which is secured to the inside along the top sash frame member 24. The blind 55 is provided with the cords 62 (FIGURES 3 to 5) for raising and lowering the same and the cords 63 for tilting the slats. The cords 62 are attached at one end to the bottom cross bar 59 and extend through grommets in the housing member 60, through the housing and out of the one end thereof through a short length of flexible conduit which is turned down beneath a guard plate 64 (FIGURE 5) at an upper corner of the sash frame. A hook 65 is provided near the bottom of the sash frame member 27 on the inside surface, where it is concealed when viewed from the front of the window, for attachment thereto of a connecting ring 62' on the ends of the cords 62 when the blind is raised as shown in FIGURE 5 in order to hold the blind in a raised position.

The slat tilting cords 63 extend through grommets in the housing member 60 and are attached to a metal tape 66 which is looped around a pulley 67 at one end of the housing 61 so that the ends thereof have a limited travel in a path alongside the front and back walls of the housing 61. Pullcords 63' are attached to the ends of the metal tape 66 and extend through short metal conduits at the end of the housing which extend through the guard plate 64 and also through suitable apertures provided in the inside wall of the side frame member 27. A pair of pulleys or drum members 68 (FIGURES 6, 7 and 9) are mounted side by side on a small shaft 68' which is journaled in the inside wall of the sash frame member 27 and provided with an external knob 69 for turning the same. The two ends of the cords 63' are coiled in reverse directions about the pulleys 68 and secured so that turning the knob will wind the one end of the one cord 63' in one direction and unwind the end of the other cords 63' in the opposite direction for tilting the slats 56 as desired.

Latch assemblies 70 (FIGURES 5 to 7) are mounted in the frame side member 27 near the bottom and top thereof for latching the glazed panel 45 in closed position. Each of the latch assemblies 70 comprises a supporting bracket 71, a latch arm 72, pivotally mounted on the bracket at 73 and having a finger piece 74 which is accessible for operation through a finger slot or opening 75 in the outer edge of the frame member 27. The other end of the latch arm 72 is adapted to be swung into engagement with a slotted keeper 76 extending inwardly of the frame of the panel 45. The sash frame member 27 is slotted at 77 to accommodate the keeper 76. The latch fingers 74 are, of course, accessible for operation only when the sash assembly 15 is pivoted out of the plane of the supporting frame 14 as shown in FIGURE 2. The entire sash assembly 15 may be locked in closed position by means of a barrel-type lock having a pivoted lock bar or finger 80 which is adapted to be received, when turned to locking position, in a keeper slot (not shown) in the sash member 19 of the outer frame 14. The lock assembly 78 preferably includes a key of the type which is removable from the lock only when the lock is in operative position.

In order to eliminate any tendency for moisture to condense in the blind accommodating compartment when the sash assembly 15 is in the normally closed position due to temperature and moisture differences between the air on the inside and the outside of the sash, provision is made for circulation within the compartment of the outside air which is normally cooler and drier than the inside air. As indicated in FIGURE 10 weep holes are provided at 81 in the outside wall 82 of the support frame bottom end member 16 and at 83 in the inside wall which forms the inside edge 16' of the hollow frame member 16. The weep holes 83 are in the central area of the edge 16' so as to lie between the weather seals 32 and 33 on the sash assembly 15 when the latter is in the closed position. Vertically disposed vent tubes 84 are provided in the hollow bottom frame member 25 of the sash assembly 15 and grommets 85 are disposed in holes provided in the inside wall 86 of the hollow top frame member 24. The outside wall 87 of the top sash frame member 24 is provided with slots 88 which open into a drip cap 89 extending along the top portion of the outside glazing channel formation 41. The drip cap 89 is vented at its ends with the vent openings covered by a screen as indicated at 90. The number of weep holes 81, 83, vent tubes 84, grommets 85 and slots 88 and their location will be determined according to the amount of outside air circulation desired within the sash assembly 15.

The operation of the window will be obvious from the description of the structure thereof. It may be unlocked and the sash assembly 15 pivoted to open position as shown in FIGURE 2 which renders the latches 72 accessible for opening the hinged panel 45 to raise or lower the Venetian blind. The vertical pivot arrangement permits reversing the sash assembly 15 for cleaning purposes with the two frames being airtight when in either normally closed or reversed position. The slats in the Venetian blind may be readily adjusted by turning the knob 69 without any other adjustment of the window.

While particular materials and specific details of construction have been referred to in describing the form of the window illustrated, it will be understood that other materials and equivalent details of construction may be resorted to within the spirit of the invention.

We claim:

1. A window comprising a rectangular support frame fixed in an opening in a wall of a building, a rectangular sash assembly disposed in said support frame, top and bottom vertically aligned pivot members connecting the sash assembly and the support frame and permitting swinging movement of the sash assembly into and out of the plane of said support frame whereby the assembly may be selectively positioned with the faces thereof reversed, a peripherally extending compressible weather seal member interposed between confronting edges of the support frame and sash assembly providing an airtight seal when the sash assembly is in the plane of the support frame, said sash assembly including a peripheral

frame with an inwardly facing glazing channel adjacent the outer edge, a pane of glass having its margins seated in said glazing channel and forming a face of the assembly which in the normal position of the assembly is on the outside of the building, a rectangular inner frame hinged to said sash frame adjacent the inside edge thereof, a pane of glass mounted in said inner frame and forming a face of the assembly which in the normal position of the assembly is on the inside of the building, a Venetian blind mounted at the top of the compartment formed between said glass panes, said Venetian blind having cross slats, means including a connecting cord for raising and lowering the slats and means including a cord for tilting the slats, said cords extending at one end of the blind, said slat tilting cord being enclosed in a portion of said sash frame so as to be hidden from view, a control member enclosed in said sash frame portion which is connected to said slat-tilting cord and which has a portion extending inwardly of the face of the assembly which is normally inside the building where it is accessible for manual turning and means on the inside wall of said sash frame for anchoring said slat raising cord to hold the slats in the raised position.

2. A window comprising a rectangular supporting frame seated in fixed position in an opening in a wall of a building, a rectangular sash assembly mounted in said supporting frame on vertically aligned pivots for swinging movement into and out of the plane of said supporting frame so that the faces thereof may be reversed, a pair of laterally spaced, compressible weather seals interposed between confronting edges of the supporting frame and the sash assembly so as to provide an airtight seal when the sash assembly is disposed in the plane of the supporting frame, said sash assembly including a peripheral frame of hollow material having an inwardly opening glazing channel in its inner edge, a pane of glass having its margins seated in said glazing channel and forming a face of the assembly which is normally disposed on the outside of the building, a rectangular panel forming inner frame hinged to one side of said sash frame adjacent the inside edge thereof and having a glazing channel, a pane of glass mounted in the glazing channel in said panel frame and forming a face of the assembly which is normally disposed on the inside of the building, said sash frame and said glass panes defining a compartment for accommodating a Venetian blind, said supporting frame and sash assembly having means which forms a passageway extending from the outside face of said supporting frame between said pair of weather seal members and into the bottom of said blind compartment for admitting outside air to said compartment and means forming an air passageway between the top of said blind compartment and the outside face of the sash, said Venetian blind having cross slats and means including a pair of cords for tilting the slats, said slat-tilting cords extending at one end of the blind into the sash frame and downwardly along one side thereof so as to be hidden from view, a pair of pulleys mounted on a shaft journaled in the side of the sash frame and said slat-tilting cords being connected to said pulleys so as to be wound thereon in opposite directions when the shaft is rotated in one direction.

3. A window comprising a rectangular supporting frame seated in an opening in a wall of a building, a rectangular sash assembly mounted in said supporting frame on vertically aligned pivot members for swinging movement into and out of the plane of said supporting frame whereby the assembly may be swung to a position where the faces thereof are reversed, a pair of laterally spaced continuous weather seals interposed between confronting edges of the supporting frame and sash assembly so as to provide an airtight seal when the sash assembly is disposed in either normal or reversed position in the plane of the supporting frame, said sash assembly including a hollow tubular frame of generally rectangular cross section, a pane of glass having its margins secured in a glazing channel in the inner edge adjacent the outside face of said tubular frame and normally positioned on the outside of the building, a panel forming rectangular frame hinged to one side of said hollow tubular frame adjacent the inside edge thereof, a pane of glass mounted in said panel forming frame, said tubular sash frame and said glass panes defining a compartment for accommodating a Venetian blind, pivotally mounted latch members concealed in the side of said tubular frame which is opposite the hinge connection with said panel forming frame, keeper members on said panel forming frame which extend through apertures in said tubular frame when said panel forming frame is closed for cooperation with said latch members, and said tubular frame having apertures between said weather seals in the outer peripheral edge thereof which provide access to said latches for manual operation thereof when said sash assembly is swung out of the plane of said supporting frame.

4. A window comprising a rectangular supporting frame seated in fixed position in an opening in a wall of a building, a rectangular sash assembly disposed in said supporting frame, vertically aligned top and bottom pivot members mounting said sash assembly in said supporting frame for swinging movement into and out of the plane of said supporting frame whereby the assembly may be swung to a position where the faces thereof are reversed, said supporting frame and said sash frame being formed of hollow metal structural members of generally rectangular cross section and having confronting walls when said sash assembly is in closed position in the plane of said supporting frame, a pair of laterally spaced weather seal members interposed between said confronting walls which provides an airtight seal when the sash assembly is in said closed position, said sash assembly including an outer glass pane having its margins seated in a glazing channel in the edge of said sash frame which faces the center thereof, said pane of glass forming a face of the assembly which is normally on the outside of the building, a panel forming member hinged to said sash frame adjacent the opposite face thereof and having a pane of glass which forms a face of the assembly which is normally disposed on the inside of the building, a Venetian blind mounted at the top of the compartment formed within said sash frame and between the glass panes, said supporting frame having weep holes in the bottom cross member thereof for admitting outside air to the space between the pair of weatherseal members, said sash frame having vent tubes in the bottom cross member thereof for admitting the outside air delivered through said weep holes to the bottom of the blind accommodating compartment in the sash frame and said sash frame having grommets mounted in the inner wall of the top cross member thereof and slots in the adjoining outside wall so as to form air passageways between the top of the blind compartment and the outside face of the sash.

5. A window comprising a rectangular supporting frame seated in fixed position in an opening in a wall of a building, a rectangular sash assembly disposed in said supporting frame, vertically aligned top and bottom pivot members mounting said sash assembly in said supporting frame for swinging movement into and out of the plane of said supporting frame whereby the assembly may be swung to a position where the faces thereof are reversed, said supporting frame and said sash frame being formed at least in part of hollow structural members and having confronting walls when said sash assembly is in the plane of said supporting frame, a pair of laterally spaced weather seal members on one of said confronting walls which provides an airtight seal when the sash assembly is in the plane of the supporting frame, said sash assembly having a glazing channel in the inner edge of said sash frame and a glass pane seated therein, said glass pane forming a face of the assembly which in the normal position of the sash is on the outside of the building, a panel form-

ing member hinged to said sash frame adjacent the opposite face thereof and including a glass pane which in the normal position of the sash is disposed on the inside of the building, a Venetian blind mounted in the compartment formed within said sash frame and between the glass panes, said supporting frame having a bottom frame member with weep holes in the outside wall and in the adjoining wall which faces the center of the sash for admitting outside air to the space between the pair of weather seal members, said sash frame having a bottom member with vertically extending vent tubes which admit the outside air to the bottom of the blind accommodating compartment in the sash frame and said sash frame having a top frame member with grommets in the wall which faces toward the center of the sash and slots in the adjoining outside wall forming air passageways between the

top of the blind compartment and the outside face of the sash.

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