

July 2, 1946.

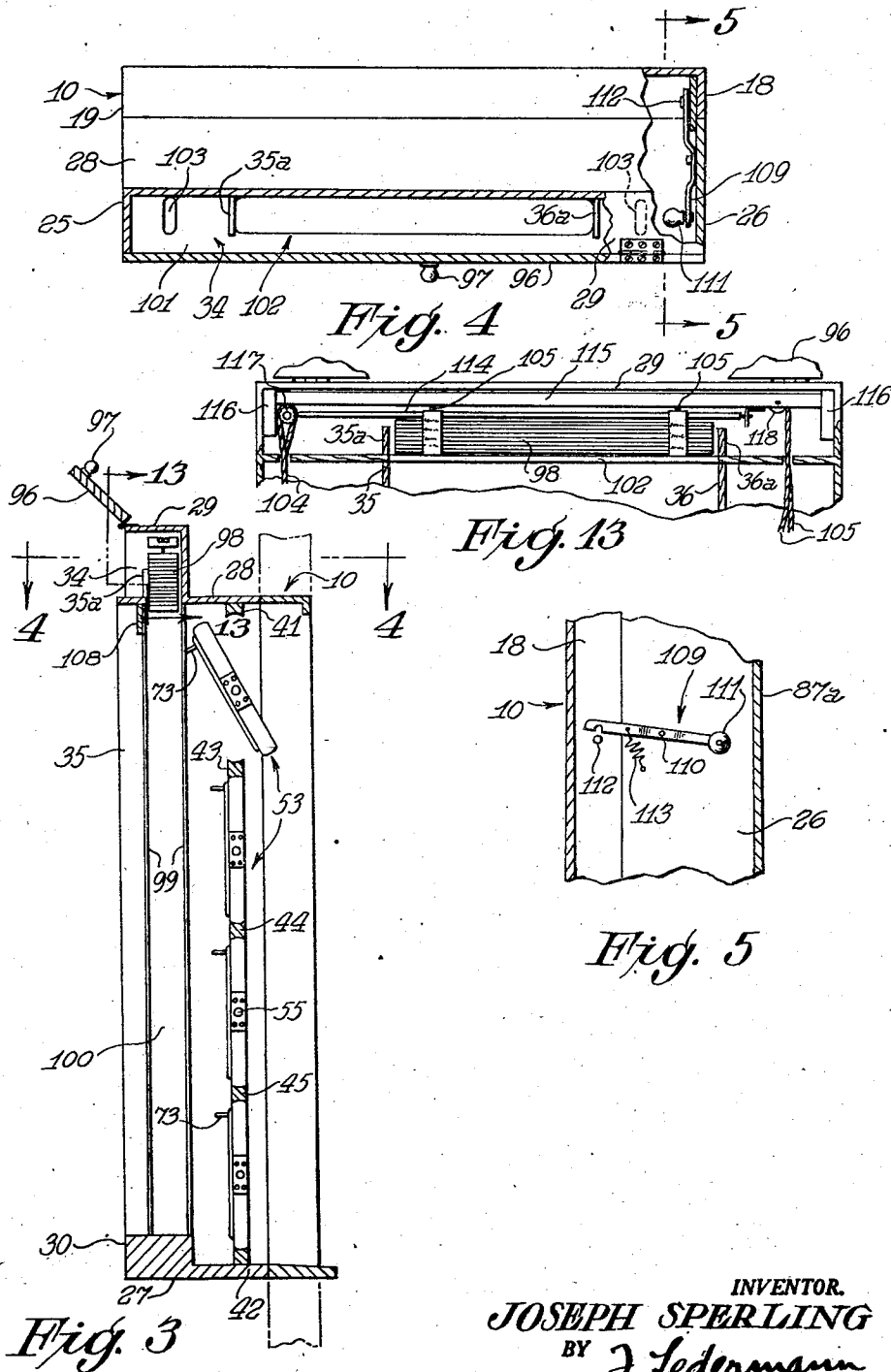
J. SPERLING

2,403,246

WINDOW CONSTRUCTION

Filed March 19, 1945

4 Sheets-Sheet 2



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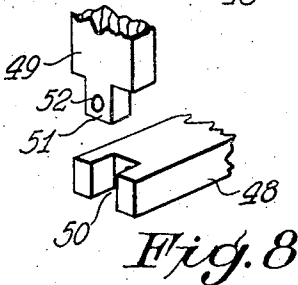
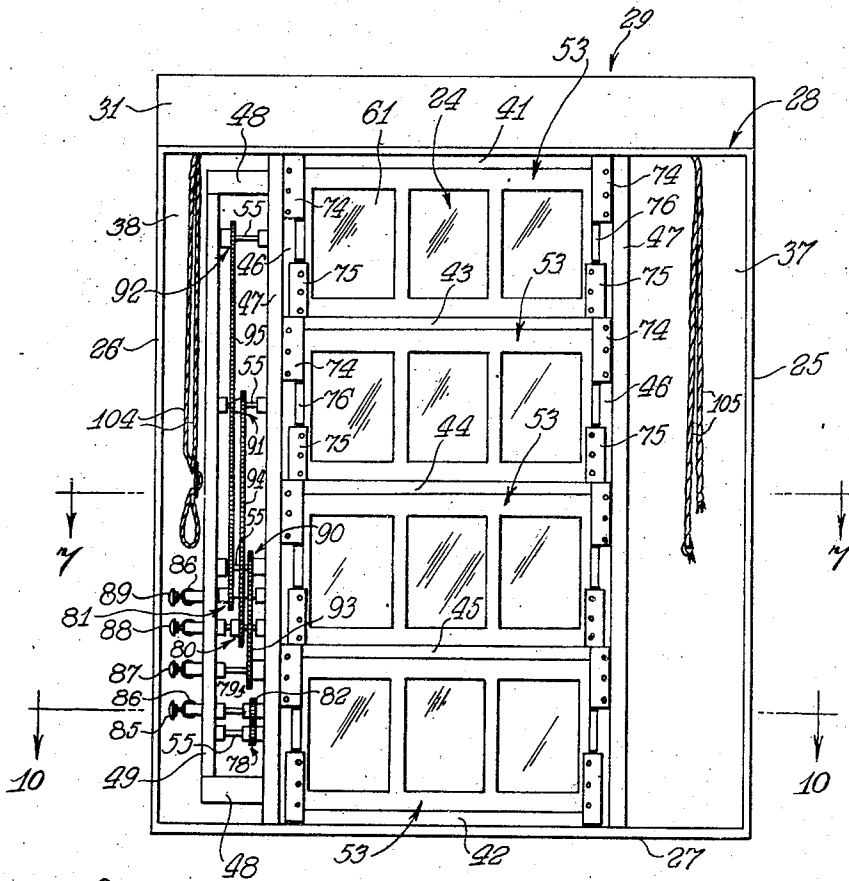
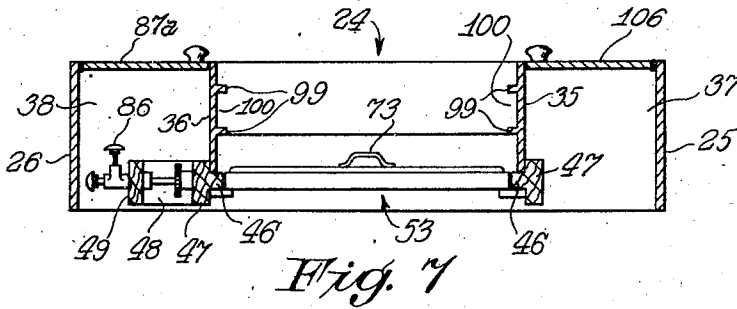
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4 Sheets-Sheet 4

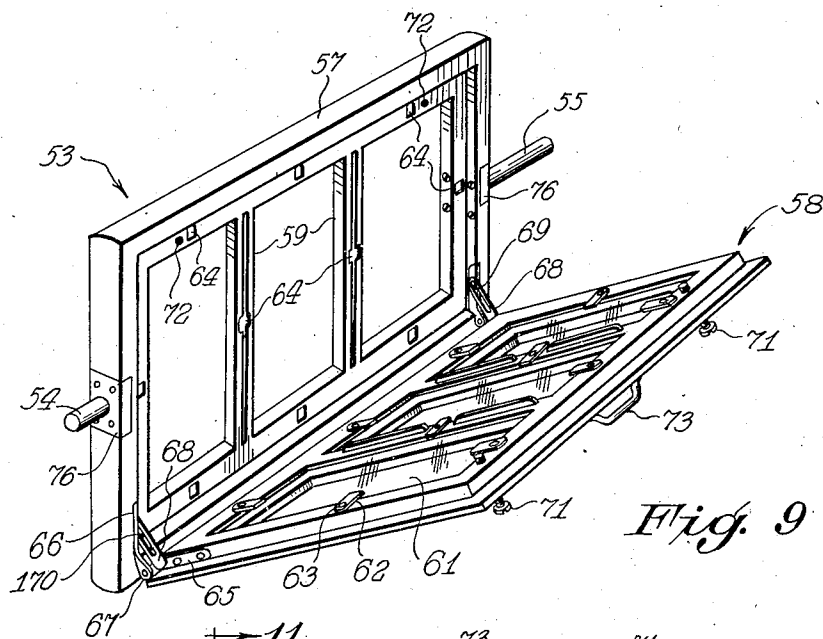


Fig. 9

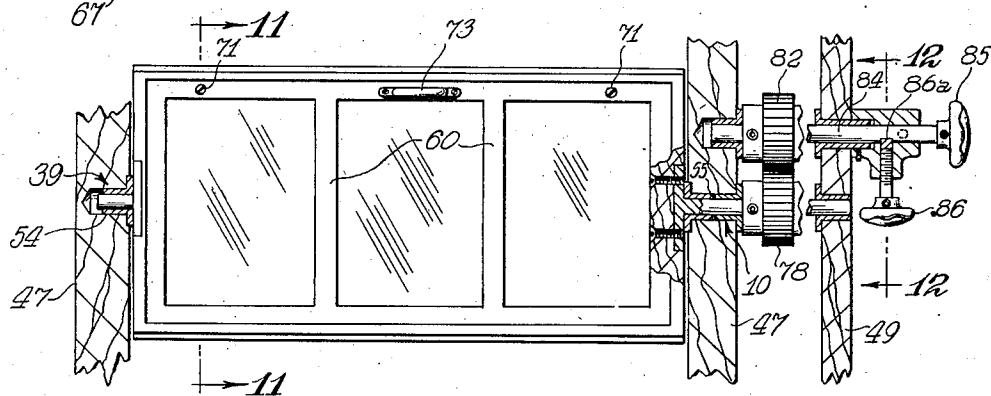


Fig. 10

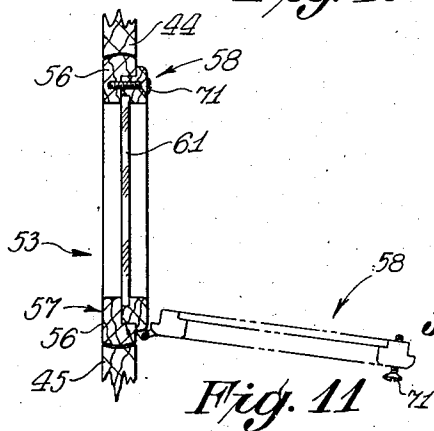


Fig. 11

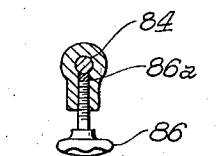


Fig. 12

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UNITED STATES PATENT OFFICE

2,403,246

WINDOW CONSTRUCTION

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6 Claims. (Cl. 160—107)

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This invention relates generally to windows, and more particularly to what may be termed an automatic window which may be applied or used wherever windows are necessary, including among others apartment houses, offices, stores, automobiles, airplanes, factories, etc. The invention broadly aims to provide a window equipped with such novel and practical improvements and appurtenances as will make it simple and practical in construction and operation, as well as ornamental and attractive, and will at the same time provide added features and conveniences which are not found on ordinary windows.

The above as well as additional and more specific objects will become apparent in the following description, wherein characters of reference refer to like-numbered parts on the accompanying drawings. It is to be noted that the drawings are intended for the purpose of illustration only, and that it is therefore neither desired nor intended that the invention be limited in any manner to the specific details of construction shown excepting insofar as they may be deemed essential to the invention.

Referring briefly to the drawings,

Fig. 1 is a front perspective view of the window unit which is composed of a rear section built solidly into the wall of the house and the front section which is pivoted to the rear section, this view showing the front section swung out part way.

Fig. 2 is a plan view of Fig. 1, with parts broken away and partly in section.

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a rear elevational view of the front or hinged section of the unit.

Fig. 7 is a cross-sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary perspective view of the cooperating members of a joint detail.

Fig. 9 is a perspective view of one of the horizontal window sections per se.

Fig. 10 is a cross-sectional view taken on the line 10—10 of Fig. 6.

Fig. 11 is a cross-sectional view taken on the line 11—11 of Fig. 10.

Fig. 12 is a cross-sectional view taken on the line 12—12 of Fig. 10.

Fig. 13 is a cross-sectional view taken on the line 13—13 of Fig. 3.

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Referring in detail to the drawings, the numeral 10 indicates a rectangular frame set in the wall 11 of a house or other structure surrounding the window opening 12 whose sill is shown at 13. This frame comprises the vertical side compartments 14 and 15 and the central opening 16 which substantially coincides with the window opening 12.

The top member 17 of the frame 10 spans the window opening 16—12, and the outer side walls of the frame are shown at 18 and 19. Inner vertical walls 20 and 21 enclose the sides of the opening 16 and provide the inner walls of the vertical compartments 14 and 15, respectively.

A casing or housing is hinged on a vertical axis to the frame wall 19 by hinges 23, as shown at 22. This casing likewise contains an opening 24 therethrough in alignment with the frame opening 16 and the window opening 12. The casing 22 comprises the side walls 25 and 26, the bottom wall 27, and the stepped top walls 28 and 29. The ledge 30 provided by the bottom wall 27 serves as the inner window sill, and the riser wall 31, together with the uppermost wall 29 and a door 32 hinged at 33 to the latter, provide the enclosure for an extension compartment 34 at the top of the casing.

Vertical walls or partitions 35 and 36 provide compartments 37 and 38, respectively, at the sides of the casing 22, which are substantially in alignment with the compartments 14 and 15, respectively, when the casing lies against the frame 10. At spaced vertical positions within the casing window opening 24, bushing recesses 39 are provided in one member 47 and horizontally aligned openings 40 are provided through the other member 47. At the top and bottom of the opening 24, horizontal frame members 41 and 42 are provided, and at spaced intervals therebetween are additional horizontal frame members 43, 44, and 45. Vertical frame members 46 are provided against the inner surfaces of the partitions 35 and 36 in substantially the same plane as the said horizontal frame members. The members 46 have enlarged body extensions 47 throughout their length which are positioned in the compartments 37 and 38, as seen in Fig. 7. Thus it is apparent that the members 46 with their extension bodies 47 and the top and bottom frame members 41 and 42 form a rectangular frame positioned against the rear edges of the partitions 35 and 36. Near the top and bottom of the member 47 on one side, horizontal extension arms 48 are provided with cut-outs 50 adapted to receive the projections 51 of a vertical outer frame

member 49 in dove-tail fashion for the purpose of releasably securing these members together, and an opening 52 through the projection 51 serves for the passage of a screw or the like into the base of the cut-out.

Between each pair of adjacent horizontal frame members 41-45, inclusive, a pivoted window frame 53 is mounted by insertion of the pin 54 on one side thereof into the bushing 39 and of the elongated pin or shaft 55 on the other side through the opening 40. The frame members 41 and 42 are concavely rounded out on their opposed surfaces, and the frame members 43, 44, and 45 are similarly rounded out on both upper and lower surfaces, as shown in Fig. 11, and the upper and lower horizontal frame members 56 of the sashes 53 are complementarily convexly rounded, for obvious reasons.

The window frame 53 is composed of two sections, the one 57 of which is of stouter construction and the other 58 of which is hingedly secured thereto at the bottom. Normally aligned light panels 59 and 60 are provided in both sections 57 and 58. The window lights or panes are secured in place in the section 58 by means of lugs 62 pivotally mounted on screws 63 secured to the members of the section 58 as shown. Recesses 64 are provided in the members of the section 57 to accommodate the projecting screws 63. The hinges which secure the sections 58 and 57 together comprise ears 65 and 66 screwed against the inner walls of the side frame members and pivotally connected at 67, the former being deformed toward an L-shape. At the knee of the deformation of the ear 65 a link 68 is pivoted, the link having a longitudinal slot 70 engaging a pin or head 69 on the ear 66, the latter also being similarly deformed as shown. Thus, when the section 58 is swung outward as shown in Fig. 9, the link 68 provides a limit stop. Screws 71 passing through the top member of the section 58 normally engage the holes 72 in the top member of the section 53 to lock the two sections together into a single or unitary pivoted window. A handle 73 is provided for swinging the same in either direction. Strips 74 are mounted at the rear against approximately the upper third of the length of the members 46 in each pivoted window section of the complete window opening, and substantially similar strips 75 are mounted against the lower approximately one-third of the length of the side frame members of the section 57 at the rear. Thus the former provide limit stops as well as weather stripping for the pivoted windows in closed position, and the latter provide the same; the space between these upper and lower strips is closed or occupied by the pivot hardware 76. Thus weather stripping is complete for the entire window. Obviously any one or more of the windows 53 may be opened wholly or partly as desired, and when swung down the glass panes 61 may readily be washed on their outer surfaces from within the room.

Between the upright member 47 and the upright member 49, a plurality of gears 78, 79, 80, and 81 are rotatably mounted, in each case being rigid on the pin 55 of the window 53. A gear 82 is in mesh with the gear 78 of the lowermost window 53, and its shaft 84 extends through the member 49 and has on the end of it a handle or wheel 85 rotation of which will obviously swing the window on its pivots. A set screw wheel 86 locks the shaft 84 and hence the window in any position.

Similar control from below is had of the other

pivoted windows 53 through their control wheels 87, 88, and 89, but the gears of these wheels are connected respectively to the window pivot gears 90, 91, and 92 by means of sprocket chains 93, 94, and 95. Each control wheel has a similar set screw wheel 86. A door 87a gives access to the lower portion of the compartment 38 so that the control wheels may be operated as desired.

A door 96, provided with a handle 97, is hinged to the roof 29 of the extension compartment 34. The uppermost member or slat of the Venetian blinds 98 is secured under the roof 29 and the blinds suspended therefrom. Vertical rails 99 are provided on the mutually opposed sides of the partitions 35 and 36, enclosing guide grooves 100 in which the slats of the blind 98 are guided and restrained, so that they cannot swing and rattle as is the case with common Venetian blinds. The compartment 34 has a floor 101 provided with a central rectangular opening or slot 102 therethrough and near each end thereof with a lateral opening 103. The central opening is provided to let the blind slats down therethrough, and the end openings for the passage of the cords for manipulating the blinds, the latter being shown at 104 and 105. The cords 104 reach down into the compartment 38 behind the door 87a, and those of the cords 105 reach down into the compartment 37 behind a similar door 106. The upper portions of these compartments are covered by panels or walls 107. An ornamental apron 108 may be provided at the top of the window opening.

Latching means for releasably locking the casing 22 against the frame 10 is provided in the form of a lever 109 pivoted at 110 against the inner surface of the wall 26 behind the door 87a where it is readily accessible. The lever has a handle 111 and its other end is notched to engage a pin 112 in the wall 18. A spring 113 normally urges the lever into engaging position. It is thus apparent that the casing 22 can be easily swung out from the frame 10 for access to the rear of the casing or to the clear window space.

The Venetian blind, when fully raised, are concealed, as is obvious from Fig. 3. They may be raised, lowered, or tilted as desired by manipulation of the normally concealed cords by opening either or both doors 87a or 106 to grasp the cords. The hinged windows 53 are also operable by the several selective hand wheels, as described, and the latter are accessible through the same door 87a which normally conceals them.

Regarding the construction of the set screw 86 and its assembly, as shown in Figs. 10 and 12, it is to be noted that a disc-shaped block 86a is positioned between the end of the screw 86 and the shaft 84, and that surface of the block which lies against the shaft is arcuately gouged out at the same degree of curvature as the shaft so as to simulate and function in the manner of a brake shoe. Thus, instead of obtaining merely a point or small area of contact between the end of the screw and the shaft, such contact is extended over a considerably greater area to provide a stronger and more positive locking engagement of the screw against the shaft.

As a means for positively guiding the raised blind slats into the grooves 100, extensions 35a and 36a from the partitions 35 and 36, respectively, project upward into the compartment 34, as shown in Figs. 3 and 13, and the manner of suspending the blinds is illustrated in these figures. The uppermost slat 114 is extended as shown and pivotally suspended from the support-

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ing plank-like member 115 which itself is supported beneath the roof 29 in brackets 116. The gear unit 117 which includes a pulley about which the cord 104 is trained, is of standard construction and serves to swing the slat 114 in either direction about its axis, in the usual manner. The member 115 is provided with a slot in which the pulley 118 is supported, about which the cords 105 pass, and a groove, not shown, through which the cords 105 extend horizontally and pass through holes therein, not shown, and through aligned holes, not shown, in the slat 114 to be secured in the usual manner to the lowermost blind slat after passing through aligned holes in the other slats.

Not only may the windows 53 be tilted into any angular position desired, within the limits thereof, either all at the same angle or at different angles as well as all closed, but the outer surfaces of the glass panes 61 may readily be washed or cleaned from within the room in an obvious manner. In the event that a pane of glass requires replacement, the operation is extremely simple as is apparent from the above description of the construction of the windows.

The entire unit, when in place, presents a very neat and attractive appearance, having all the working parts concealed and presenting only the pivoted windows 53 and that portion, if any, of the Venetian blind which is not in extreme raised position. It is to be noted that the window control wheels or handles 36 are all positioned well down in the compartment 38 within easy grasp, and by this arrangement all the windows may be controlled without requiring a ladder or other platform on which to stand to reach the window controls.

Obviously, modifications in form and structure may be made without departing from the spirit and scope of the invention.

I claim:

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1. A window unit comprising a casing hinged to a fixed window frame on a vertical axis and having a window opening therethrough, said casing having vertical compartments on the sides thereof, a plurality of spaced pivoted sashes mounted in said casing window opening, means for releasably locking said casing against said frame, and control means for swinging said sashes mounted in one of said compartments.

2. The device set forth in claim 1, said casing having a compartment over the top of said window opening thereof and having a Venetian blind suspended therein, the control cords for said blind extending into said compartments toward the lower ends thereof.

3. The device set forth in claim 1, said casing having walls covering the fronts of said compartments, said walls including doors at the lower ends thereof.

4. The device set forth in claim 1, said casing having a Venetian blind suspended from the top of said window opening therethrough, the side walls of said last-named window opening having vertical grooves, the ends of the slats of said Venetian blind being slidably restrained in said grooves.

5. The device set forth in claim 1, said control means comprising axial pins on said pivoted windows, gears on said pins, hand wheels mounted in the lower portion of said compartment, and means connect'ng each of said hand wheels with one of said gears for selective operation of said sashes.

6. The device set forth in claim 1, each of said sashes comprising a pair of separable members mutually hinged together at the bottom, means for releasably locking said members together, one of said members having window panes, and means for releasably locking said panes therein.

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