March 1, 1960 H. MANDEL 2,926,400

PUSH BUTTON OPERATED JALOUSIE WINDOWS

Filed Dec. 24, 1958 4 Sheets-Sheet 1

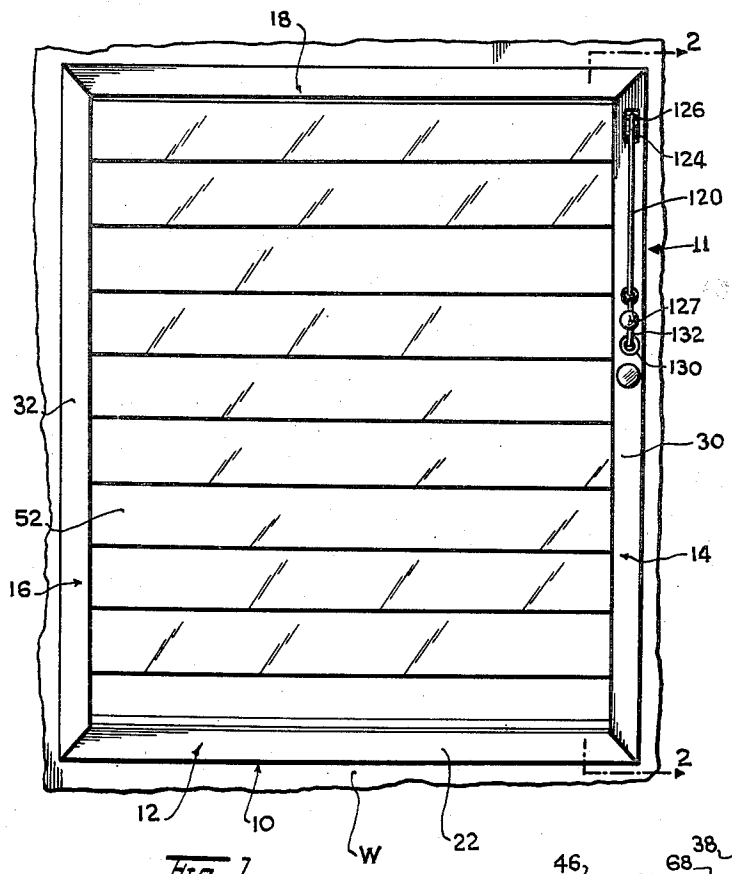


Fig. 1.

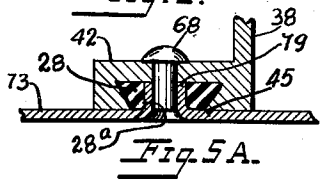


Fig. 5A.

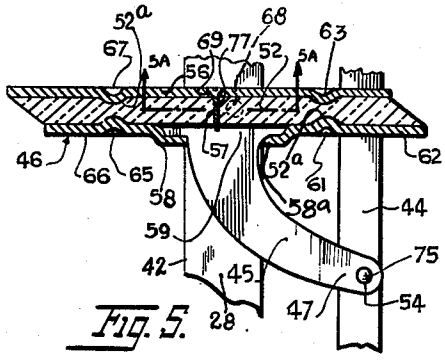


Fig. 5.

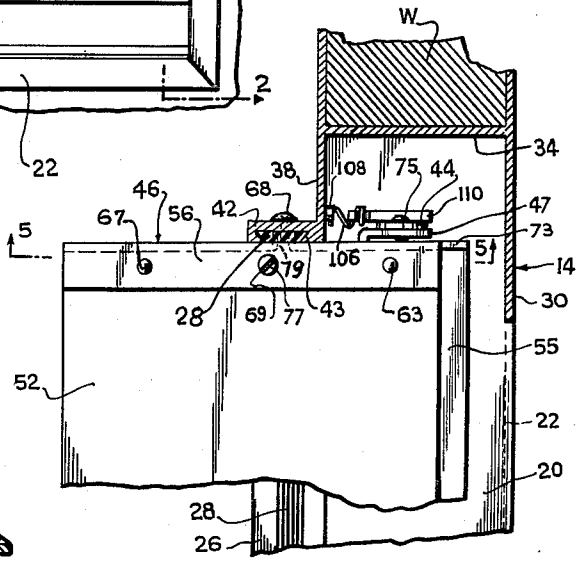


Fig. 4.

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PUSH BUTTON OPERATED JALOUSIE WINDOWS

Filed Dec. 24, 1958 4 Sheets-Sheet 2

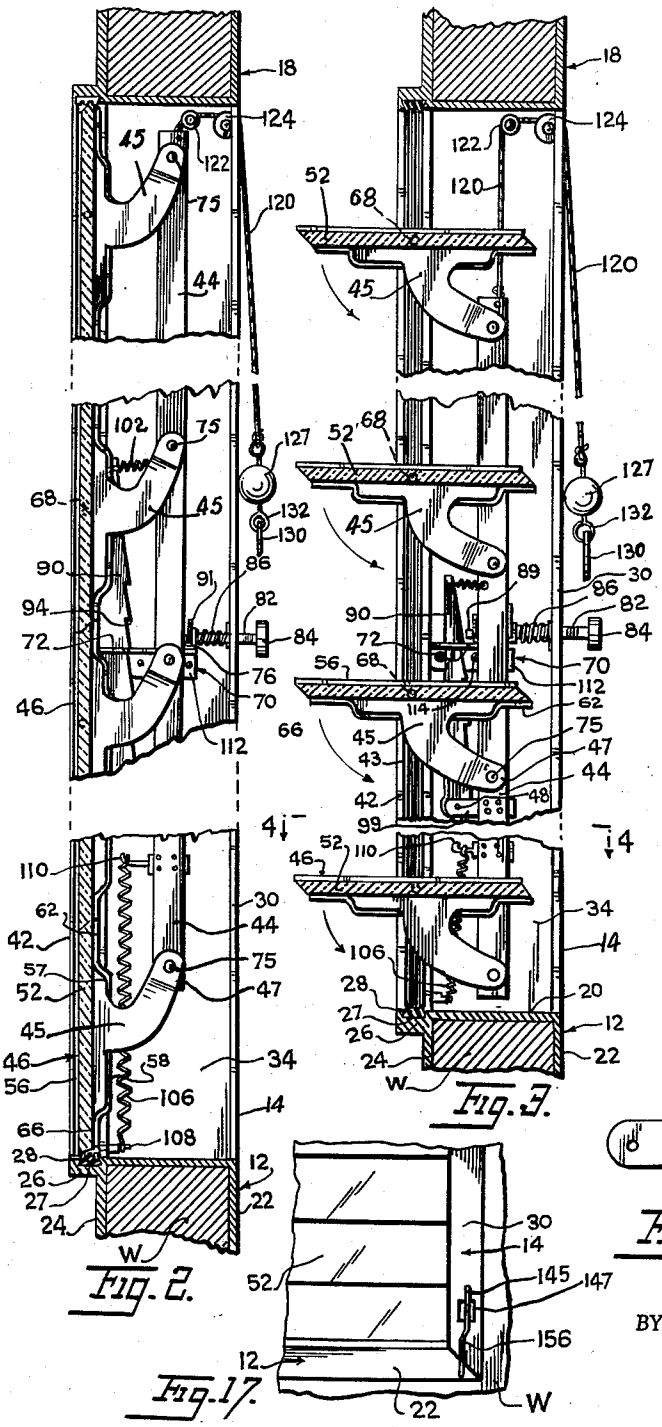


Fig. 2.

Fig. 3.

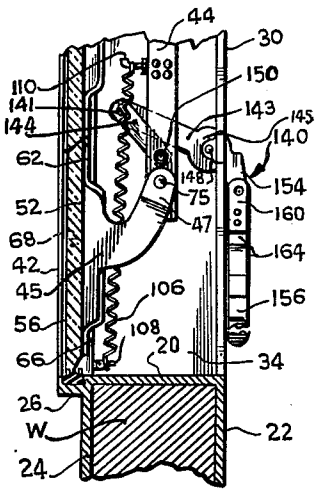


Fig. 15.

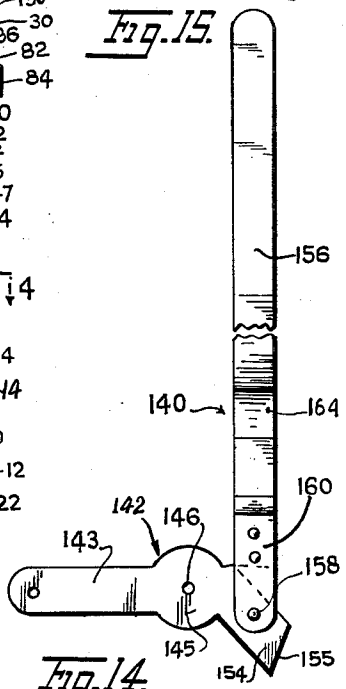


Fig. 14.

Fig. 17.

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PUSH BUTTON OPERATED JALOUSIE WINDOWS

Filed Dec. 24, 1958 4 Sheets-Sheet 3

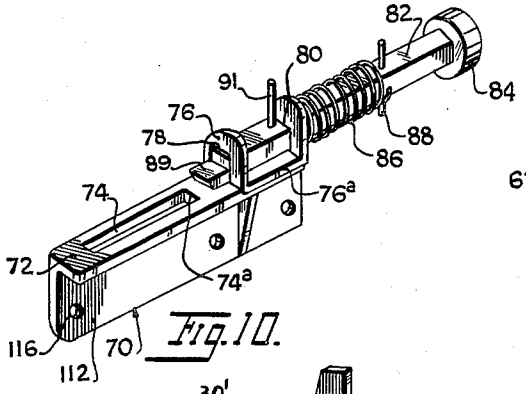


Fig. 10.

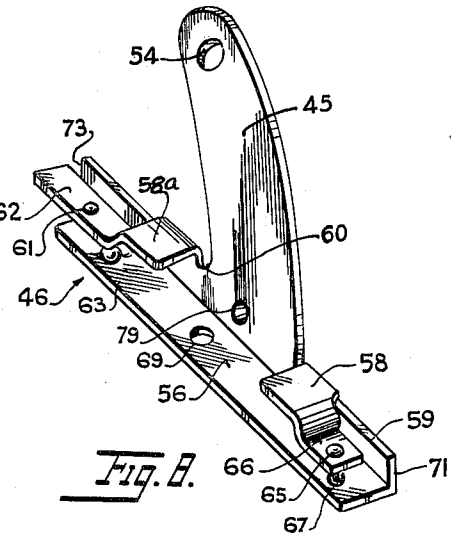


Fig. 8.

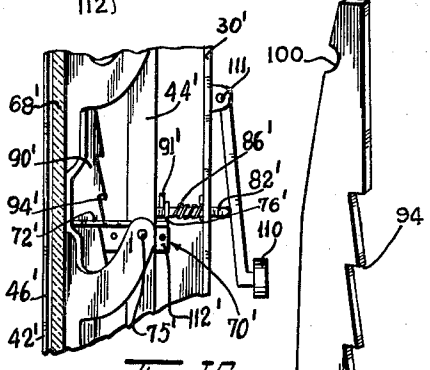


Fig. 19.

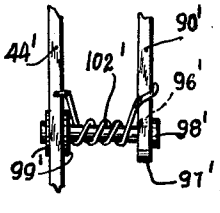


Fig. 18.

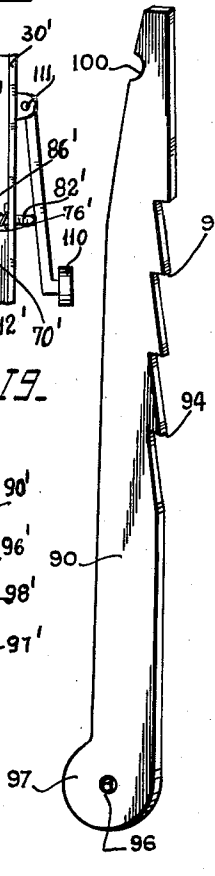


Fig. 9.

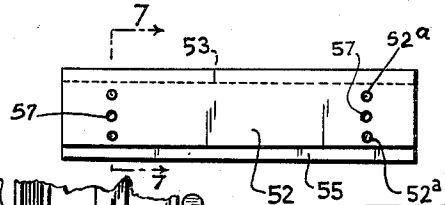


Fig. 6.

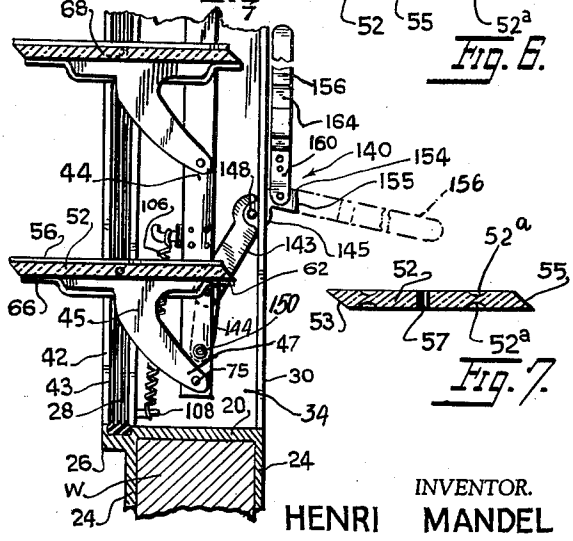


Fig. 16.

Fig. 7.

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PUSH BUTTON OPERATED JALOUSIE WINDOWS

Filed Dec. 24, 1958 4 Sheets-Sheet 4

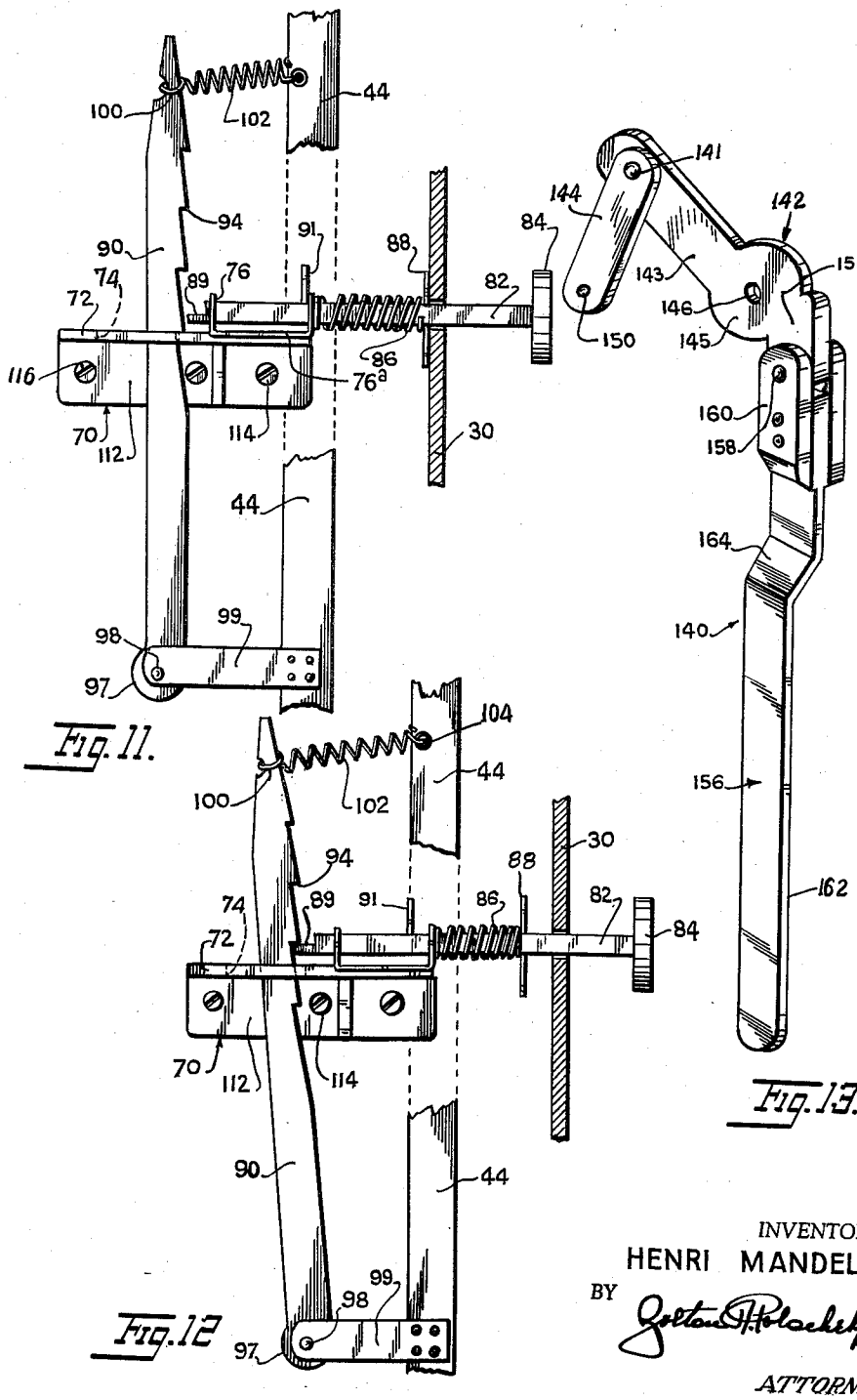


Fig. 11.

Fig. 12

Fig. 13.

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United States Patent Office 2,926,400 Patented Mar. 1, 1960

2,926,400

PUSH BUTTON OPERATED JALOUSIE WINDOWS

Henri Mandel, Bronx, N.Y.

Application December 24, 1958, Serial No. 782,949

5 Claims. (Cl. 20—62)

This invention relates to window construction, and more particularly has regard to an improved, novel construction for a window of the jalousie type.

Windows of the type described above are finding increasing favor among home owners by reason of their desirable characteristic of facilitating uniform ventilation, and controlling the inflow of light and air so that they enter the room at a prescribed angle. Thus, a jalousie window has characteristics similar to those of a Venetian blind. At the same time, however, the jalousie window also has a sturdiness and rigidity not found in Venetian blinds or shutters, and more importantly, can be used as a substitute for a window, by reason of the adaptability of the jalousie for being closed tightly in a manner to effectively prevent the flow of air into the room from the outside.

The main object of the present invention is to provide an improved window of the jalousie type, characterized by the novel manner in which the slats can be adjusted to selected positions, and characterized further by the ease and speed with which the slats can be locked in the selected position to which they are tiltably adjusted.

Another object is to incorporate in the window operator means a novelty designed latching and latch release mechanism, so designed that on adjustment of the slats to a selected position of tiltable adjustment, the slats will automatically lock in the selected position and can be unlocked responsive merely to depression of a conveniently located button.

Another object is to provide, in a jalousie window, a slat support bracket having a novel, improved construction that will facilitate manufacture thereof at low cost, and that will be particularly designed for pivotally mounting the slats and for connecting the slats to an operating bar for joint movement of the slats.

A still further object is to provide a latching and latch release mechanism so arranged that the slats will be automatically opened to selected positions of tiltable adjustment upon actuation of a conveniently located button.

Another object is to provide manually controlled means independent of the latch release mechanism for swinging the slats to selective partially-closed and fully-closed positions.

Another object is to provide a jointed handle for closing the slats, with a portion of the handle rotatable to a position adjacent the window.

Still another object is to provide a jalousie window having slats with beveled edges so that the slats assume a flat or coplanar position when juxtaposed in closed position.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and acocmpanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a front elevational view of a window according to the present invention, with the slats in fully-closed position, the window being viewed from the inside of the room.

Fig. 2 is an enlarged vertical sectional view through the window substantially on line 2—2 of Fig. 1, portions being broken away, the slats being in their fully-closed position.

Fig. 3 is a sectional view similar to Fig. 2 with the slats in their fully open position.

Fig. 4 is a fragmentary plan sectional view on a further enlarged scale taken on line 4—4 of Fig. 3.

Fig. 5 is a fragmentary sectional view taken on line 5—5 of Fig. 4 showing a portion of the slat mounting structure.

Fig. 5A is an enlarged sectional view taken on the line 5A—5A of Fig. 5.

Fig. 6 is a plan view on a reduced scale of a transparent slat employed in the window.

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

Fig. 8 is a perspective view on an enlarged scale of a slat support bracket per se.

Fig. 9 is a perspective view of a latching bar per se.

Fig. 10 is a perspective view of portions of the latching and latch release mechanism.

Figs. 11 and 12 are elevational views of portions of the latching and latch release mechanism in two different positions illustrating the mode of operation thereof.

Fig. 13 is a perspective view on an enlarged scale of a jointed handle useful in operating the window.

Fig. 14 is an elevational view of the jointed handle in a bent position.

Figs. 15 and 16 are sectional views similar to the lower portions of Figs. 2 and 3, respectively, of other window structures employing the operating handle of Figs. 13 and 14.

Fig. 17 is an elevational view of a lower corner of a window employing the operating handle of Figs. 13 and 14.

Fig. 18 is elevational detail view showing another modified form of the invention.

Fig. 19 is a fragmentary sectional view showing a further modification of the invention.

Referring to the drawings in detail, a jalousie window 10 formed according to the present invention is mounted in a window opening provided in a wall W. The jalousie window may be formed of extruded aluminum, or any other suitable material, and in the illustrated example includes a rectangular frame 11 fixedly engaged in any suitable manner in the window opening, and formed with a horizontally extending sill 12, upwardly extending side jambs 14, 16 rigid with and extending upwardly from opposite ends of the sill, and a header 18 extending horizontally and fixedly connected between the upper ends of the side jambs.

Referring to Figs. 2 and 3, the sill is in the form of a downwardly opening channel, including a web 20 integral with depending inner and outer walls 22, 24, respectively. Integral with web 20 and projecting in a direction outwardly from the window opening is a seal strip support flange 26 coplanar with web 20 and having a dovetail groove 27 in which is engaged a soft, resiliently compressible or grooved sealing strip 28 which may be formed of rubber or the like and which has a cross-sectional shape mating with that of the groove.

The header 18, as will be understood, is of a cross-sectional shape opposite from but otherwise identical to that of the sill.

The side jambs 14, 16 are of opposite but identical cross-sectional formation, and are in the general shape of inwardly facing, confronting channels, thus defining longitudinal recesses in the respective side jambs facing

inwardly of the window opening to constitute cavities in which the window operating and latching mechanisms are recessed so as to be ordinarily concealed from view.

In any event, the side jambs **14**, **16** include inner side walls **30**, **32**, respectively, coplanar with the depending wall **22** of the sill. In engagement with the sides of the window opening are web or body wall portions **34** of the side jambs, integral with the walls **30**, **32**. Integrally formed upon the web portions are outer side walls **38**, these being coplanar with the outer wall **24** of the sill. Projecting outwardly from and integral with the walls **38** are seal strip support flanges **42** with the sealing strip **28** being of endless formation and being continued within dovetail grooves **43** provided in said flanges **42**.

Extending longitudinally within the channeled side jambs are elongated, straight, flat, wide operating or connector bars **44** disposed within the channels of the side jambs **14**, **16**, respectively. Pivotally connected to the operating bars at locations uniformly spaced longitudinally of the respective operating bars, are end brackets **46** pivotally attached to the bars **44**. Supported by and extending between the end brackets are glass slats **52**.

Referring to Figs. 5 and 8, each bracket **46** is of one-piece formation, being cut and shaped from a single blank of sheet metal material. The brackets **46** at opposite ends of the slats are of opposite but identical formation so that the description of one will suffice for both. Each bracket includes a supporting lever arm **45** which is of arcuate formation, having a short outer end **47** offset from the body of the arm. In end **47** is an opening **54**.

The lever arm **45** is provided with an outwardly struck opening **79** which forms a tubing and is adapted to receive a complementary opening **28a** formed in the sealing strip **28**, within the flanges **42**.

Integrally formed upon the arm **45** of each bracket is a laterally inwardly projecting, elongated end flange **56** spaced from lips **58** and **58a**, the lips being integrally connected to a web **59** extending therebetween. Lip **58a** is interrupted intermediate its ends by a recess **60** at the location of the arm **45**. Further, lip **58a** at its forward end projects beyond the corresponding end of the flange **56**, and the projecting part of the lip **58a** has a depending extension **62**. An inwardly extending dimple or knob **61** is formed on extension **62**. An inwardly extending knob **63** is formed adjacent one end of flange **56**. These knobs together enter recesses **52a** on opposite sides of a slat **52** while the offset extension **62** bears against the inner or under surface of the associated slat **52**. The slat is further engaged firmly by an inwardly extending projection **65** on the offset end **66** of lip **58** and opposed projection **67** on flange **56**. Thus, the slat is clamped betwen the flange **56** and lip extensions **62** and **66**. A hole **69** is provided in flange **56** midway its ends as shown in Figs. 4 and 5 in which a screw **77** can be threaded to pass through an aligned hole **57** in the slat to prevent the slat from accidental disengagement with respect to the bracket. Web **59** has obliquely cut corners **71**, **73** which conform with the slant of beveled side edges **53** and **55** of the slat.

Thus, each slat **52** which is of flat wide formation is engaged in two brackets **46** at opposite ends of the slat. In Figs. 6 and 7 is shown a preferred construction of the slats. Opposite lateral edges **53** and **55** of the slat are beveled and inclined in the same direction. Centrally located holes **57** are provided to receive screws **77** for attaching the slat to the bracket. Additionally there are provided recesses **52a** formed in opposite faces of the slat and spaced from holes **57** for receiving in-struck indentations **61**, **63**, **65**, **67** in the brackets **46**. By reason of the beveled side edges of the slats they are enabled to be positioned in flat coplanar alignment, as clearly shown in Fig. 2, with adjacent lateral edges of the slats juxtaposed to each other for forming an effective weather-tight seal.

It is important to note that the sealing strip **28** is located so that the ends of the slats will be brought to bear firmly against the upwardly projecting ridges or ribs when the slats are in the fully closed position. The beveled upper side edge of the top slat and the beveled lower side edge of the bottom slat in window **10** will abut the sealing strip portions mounted in the sill and header respectively, so that the window is effectively sealed all around. The width of the sealing strips should be greater than the thickness of the slats in their aligned closed coplanar position so that a continuous full seal will be formed between the closed slats and the strips.

It will be seen that each end bracket includes supporting lever arm **45**, one end of which is integral with a channeled portion receiving the adjacent end of a slat, said channeled portion being extended at right angles to the arm to which it is integrally connected, and arranged parallel to the offset arm section **47** which section is connected to an associated bar **44** by means of a rivet or pivot pin **75** extending through hole **54**.

The several brackets are pivotally mounted by pivot pins **68** anchored in outwardly struck tubular openings **79** in the webs **59**. The pins **68** are disposed upon their associated side jambs in integrally spaced relation to the associated connecting bar **44**. The pivot pins **68** are disposed at the locations of and extend through the side portions of the sealing strip **28** and through the flanges **42** as will be readily seen from Figs. 2, 4 and 5A. The axes of the pivotal connections **68** pass through the channeled body portions of the brackets, that is, said axes are disposed substantially in the planes of the slats **52**, extending longitudinally of an medially between opposite sides of the slats.

The latching and latch release mechanism, as best shown in Figs. 10–12, includes an angle bracket plate **70** having an upper side **72** in which is formed a closed slot **74**. The side **72** carries a U-shaped bracket member **76** having aligned rectangular openings **78**, **80** in the legs thereof through which is slidable a rectangular pusher bar **82**. An operating knob **84** is provided on bar **82**. A coil spring **86** is sleeved on bar **82** between a pin **88** passing through bar **82** and the adjacent end leg of bracket **76**. Bracket member **76** has its bight **76a** welded to side **72** of the bracket plate **70**. The inner end of bar **82** is formed with a tooth **89**. A pin **91** projects from bar **82** between the legs of member **76** and serves as a stop element preventing removal of the bar from member **76** as spring **86** expands.

A ratchet bar **90** best shown in Fig. 9 coacts with bracket **70**. This bar has a plurality of teeth **94** formed in one edge. A hole **96** near one rounded end **97** serves to receive a pin **98** by which the bar is pivotally mounted on arm **99** carried by bar **44** as shown in Figs. 3, 11, and 12. A recess **100** in bar **90** near the narrow upper end of the bar receives one end of a coil spring **102** which is received at its other end in a hole **104** in bar **44**. Bar **90** is mounted in bracket **70**. The bar is slidably disposed in slot **74** with its teeth **94** facing toward the toothed end of bar **82**.

The operating bar **44** is normally urged downwardly by a tensioned spring **106** best shown in Figs. 2, 3 and 4. This spring is secured at one end by an anchoring pin **108** near the bottom of wall **38** and at its other end by a hook **110** secured to bar **44**. The downward pull on bar **44** causes the lower flat edge of one of the teeth **94** of bar **90** to engage on the inner end edge wall of slot **74** adjacent the protruding tooth **89** of bar **82**, as shown in Fig. 11. Spring **102** urges bar **90** toward bar **44** so that the inner undercut side of one tooth **94** is pressed down firmly on the upper surface of the horizontal side **72** of the bracket **70**. The vertical side **112** of the bracket is secured by screws **114** passing through holes **116** in side **112** and threaded in holes in wall **34** of the jamb **14**.

If knob 84 is pressed outwardly toward flange 30, bar 82 advances tooth 89 against the adjacent tooth 94 of bar 90. This causes outward pivoting of the bar 90 so that it is moved off the under edge 74a of slot 74. When bar 90 is thus moved clear of edge 74a bars 44 and 90 moved downwardly together as spring 106 contracts so that the next tooth 94 becomes engaged on the tooth 89 of bar 82 as shown in Fig. 12. If knob 84 is then released, bar 90 will move toward edge 74a of the slot under bias of spring 102 until tooth 89 is retracted from the engaged tooth 94 whereupon the released tooth 94 will engage at edge 74a of the slot in a position similar to that shown in Fig. 11. During this downward movement of bars 90 and 44, all the slats 52 will pivot on pins 68 to a partially open position. If knob 84 is pressed a number of times in succession the slats will be caused to open more and more a step at a time until the fully open position, as shown in Fig. 3, is attained.

In order to close the slats, there is provided a cord or cable 120 preferably formed of twisted steel wire, as best shown in Figs. 1, 2 and 3. This cable is connected at one end to the top of bar 44 and passes over pulleys or rollers 122 and 124 rotatably mounted on wall 34 of jamb 14. Pulley 124 is disposed in a slot 126 in the front wall 30 of jamb 14 so that the cable extends through the slot. A lead or iron weight 127 is secured to the cable outside of the jamb. A pulling ring 130 is secured to the weight by eyebolt 132.

To close the slats, it is only necessary to pull downward manually upon the cable 120 so that the bar 44 will be raised to tilt the slats from their open position shown in Fig. 3 to the closed position shown in Figs. 1 and 2, or to any intermediate position between fully open and fully closed positions. The selected partially closed position of the slats will be maintained by engagement of one of the intermediate teeth 94 with bracket 70. As the bar 44 in jamb 14 is pulled upwardly the force is transmitted via the lever arms 45 and slats 52 to the corresponding bar 44 in jamb 16. The slats will remain in the selected partially closed and in the fully closed position by the operation of the latch mechanism provided by bracket 70 and the ratchet bar 90. To open the slats fully or partially from the fully closed position or any partially closed position, the knob 84 must be manually pushed one or more times to operate the latch release mechanism associated with bracket 70.

Instead of a cord or cable 120 for operating the bar 44, there may be provided a metal chain. As a still further alternative for selectively closing the slats, there may be provided a handle operated linkage 140 as best shown in Figs. 13–17. This linkage includes a bell crank lever 142 having an arm 143 and an enlarged center section 145 provided with a hole 146 just beyond arm 143, which hole serves to receive a pin 148 for pivotally mounting the lever on wall 34. The center section 145 extends through a slot 147 in wall 30. A link 144 is pivotally connected at one end to the end of arm 143 by means of a pivot pin 141 and at the other end to bar 44 by means of an eyelet 150 struck-out from the bar 44, adjacent the bottom end thereof so that as the bar 44 moves downwardly under bias of spring 106, the bell crank lever 142 pivots downwardly within jamb 14. When the lever 142 is pivoted upwardly on pin 148, the bar 44 is raised to close the slats.

Attached to the other arm 154 of lever 142 is a lever handle 156. This lever handle has a forked end 160 pivotally attached to arm 154 by a pin 158. The free end 162 of the handle is offset from the central longitudinal plane of the bell crank lever 142 by a bent section 164. This offset portion provides clearance for grasping the lever handle and applying a force to it. It will be noted that the lever handle is pivotally attached to lever 142. This pivotal attachment is so arranged that the lever handle can be rotated angularly from the outwardly extending position shown in dotted lines in Fig. 16 to an upwardly extending position adjacent to flange 30 as shown in full lines in Fig. 16. This permits the lever handle to be pivoted out of the way of curtains, drapes, or the like which may be placed adjacent to the window. The lever handle 156 is limited in angular rotation with respect to the lever 142 at one end to a position of alignment with arm 154 of the lever, as shown in Figs. 13, 15 and 17, because of the angular corner 155 on arm 154. When the lever handle 156 is disposed in a downward position adjacent flange 30, as shown in Fig. 15 the slats are fully closed. When the lever handle is moved to an upward position the slats are fully open as handle may be pivoted with respect to arm 154 shown in Figs. 14 and 16. In any partially open or closed position of the slats, the lever handle can also be disposed to a vertical position. It will be understood that whenever the slats are adjusted to open or closed positions, the position of the bell crank lever changes, necessitating a repositioning of the lever handle 156 with respect to the lever if it is desired to place the lever handle in an out of the way position adjacent to the window.

In Fig. 18 the ratchet bar 90′ is shown to be pivotally mounted to the operating bar 44′ by a fixed pin 98′ which engages in hole 96′ of the rounded end 97′ of the ratchet bar 90′. A coil spring 102′ is provided around pin 98′ to urge the ratchet bar 90′ functioning position.

It is possible to fabricate the window structure with conventional fully flat slats which overlap when in closed position. However, the beveled edge slats as disclosed herein are preferred because of the flat coplanar inner and outer surfaces of the window in the closed position. Such a wholly flat arrangement of the slats has been found to be easier to clean and to keep clean, and presents a more attractive appearance. Also, there is an economy effected in the amount of glass required to form the slats used in the window employing beveled edge slats because narrower slats can be used.

There has thus been provided, according to the invention, means for automatically opening slats of a jalousie window responsive to manual actuation of a knob controlled latch release mechanism. The opening of the slats being effected in steps from fully closed to fully open position. There has been further provided manual actuation means for closing the slats with the latch mechanism retaining the slats in selective partially closed positions.

In Fig. 19, the pusher bar 82′ is shown to be engaged by hand lever 110 pivoted at 111 at the outer side of the wall 30′. In other respects this form of the invention is similar to the previous form and the corresponding parts are indicated with similar reference numerals with a prime added.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A jalousie window construction, comprising a frame including side jambs, slat-supporting end brackets pivoted on said jambs, a connecting bar in one of the jambs pivotally connected to the brackets for effecting conjoint pivotal movement of the brackets about their respective pivots, slats carried by the several brackets, latch means supported on said one jamb and bar respectively and adapted for interengaging on swinging of the brackets to a selected position, means for disengaging the latch means for releasing the slats for swinging movement away from said position, spring means normally tending to bias said brackets to open position, said latch means including a bracket supported on said one jamb, said bracket having a slot therein, and a ratchet bar pivotally attached to

said connecting bar extending along and beside said connecting bar and slidable in said slot, the teeth of said ratchet bar disposed to engage on an edge of said slot in succession during movement of the ratchet bar through said slot, spring means connecting said bars and tending to hold said ratchet bar in engagement with said edge, said means for disengaging the latch including a pusher bar slidably mounted on the bracket and having a forwardly extending tooth adapted to engage the edge of the ratchet bar during pushing movement thereof, each of said slats being a rectangular member having beveled lateral edges so that the slats form a coplanar flat window when in a closed position, and manually operable means attached to said connecting bar for moving said bar and closing said slats, said manually operable means including a bell crank lever pivotally mounted on said one jamb, a link interposed between one end of said bell crank lever and the connecting bar, and a lever handle pivotally engaged with the other end of said bell crank lever for tilting the lever, said lever handle being movable to a vertical position adjacent said one jamb when in a non-operating position.

2. In an actuating mechanism for a jalousie window having a frame and with an opening, pivoted slats extending horizontally across the opening in said frame, a movable bar coupling the slats for simultaneous opening or closing movement, a coil spring connected to a side of the frame and the coupling bar for urging the bar to slat opening position, a ratchet bar pivotally connected to said coupling bar, and extending along and beside said connecting bar, spring means joining said bars, a slotted bracket fixed on the window frame, said ratchet bar being movable through the slot in said bracket and held by the last-named spring with a tooth thereof normally engaging an edge of the slot to prevent movement of the ratchet bar, a spring-pressed bar slidably mounted in the bracket and slidable towards and from the ratchet bar, a tooth on one end of said slidable bar for releasing said ratchet bar from the bracket, a bell-crank lever pivotally mounted on the window frame, a link pivotally connected at one end to one end of the bell-crank lever and pivotally connected at its other end to the connecting bar, and a manually actuated lever pivotally connected at one end to the other end of the bell-crank lever for

actuating the latter to close the slats upon release of the ratchet bar from the bracket.

3. An actuating mechanism for a jalousie window comprising a frame surrounding an opening, transverse slats extending horizontally across said opening and pivotally mounted at their opposite ends in said frame, a vertical bar pivotally coupling the slats to move them to open and closed positions, a spring connected to the coupling bar and said frame for actuating said bar to open said slats, a ratchet bar pivotally connected to said coupling bar at one end of said coupling bar, extending along said coupling bar and beside it towards the opposite end thereof and movable therewith, a spring connected to said bars and tending to move said bars towards each other, a member supported on the window frame and having a slot therein, said ratchet bar being movable through said slot and being held by the last-named spring with a tooth normally engaging the edge of said slot to prevent movement of said bar, and a pin mounted on the frame and slidable relative to the ratchet bar for releasing said ratchet bar from the slot in said member, to permit the first-named spring to operate the bar coupling said slats.

4. The actuating mechanism according to claim 3 and further comprising a bell-crank lever mounted on the window frame, a link pivotally connected at one end to one end of the bell-crank lever and pivotally connected at its other end to the connecting bar, and a handle pivotally attached to the opposite end of said lever.

5. The actuating mechanism according to claim 3 in which the member supported on the window frame is a bracket with a horizontal portion containing said slot, said bracket having bearings adjacent said portion receiving said pin.

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