July 8, 1958 H. ARCAMONTE 2,841,833

AWNING TYPE WINDOW STRUCTURE

Filed April 12, 1957 3 Sheets-Sheet 1

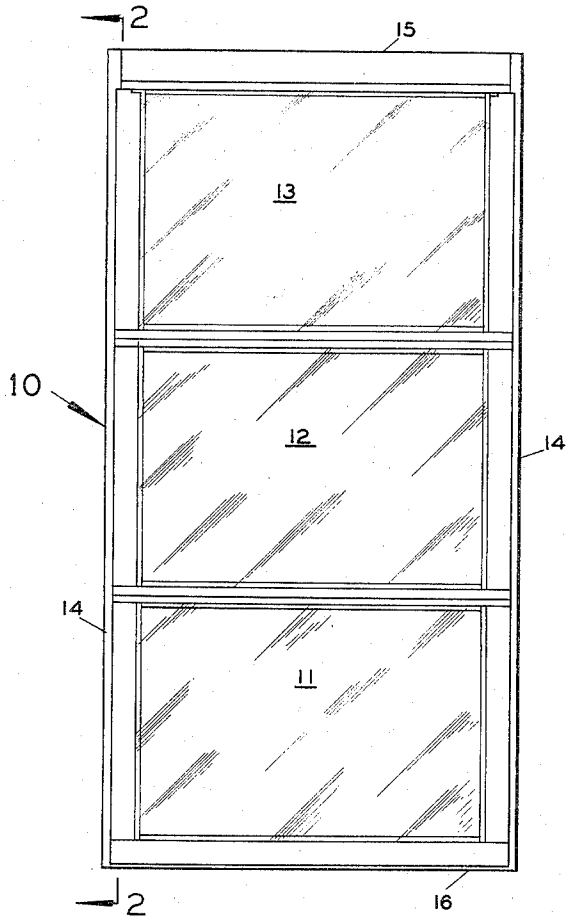


FIG. 1

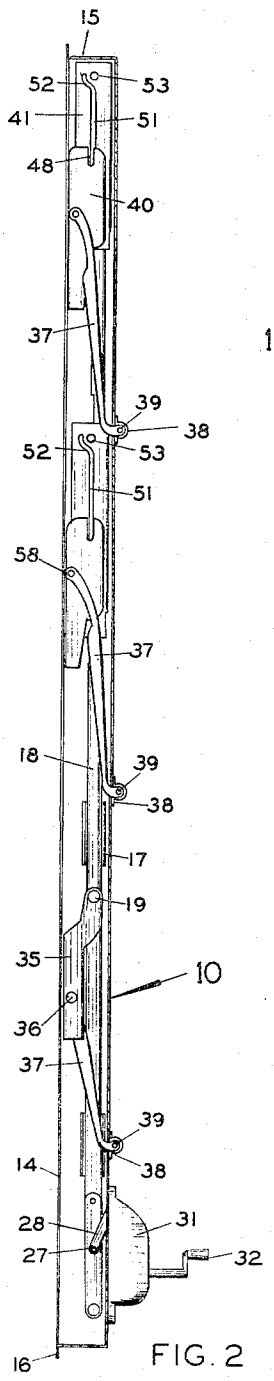


FIG. 2

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AWNING TYPE WINDOW STRUCTURE

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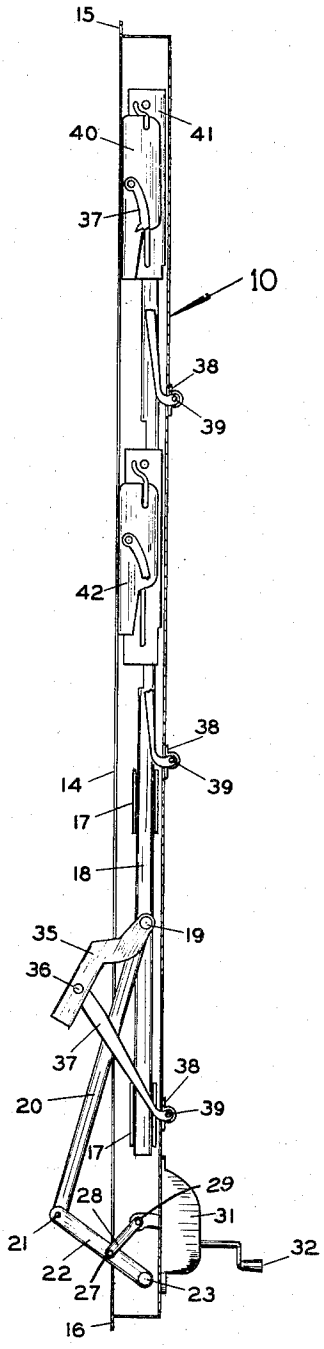


FIG. 3

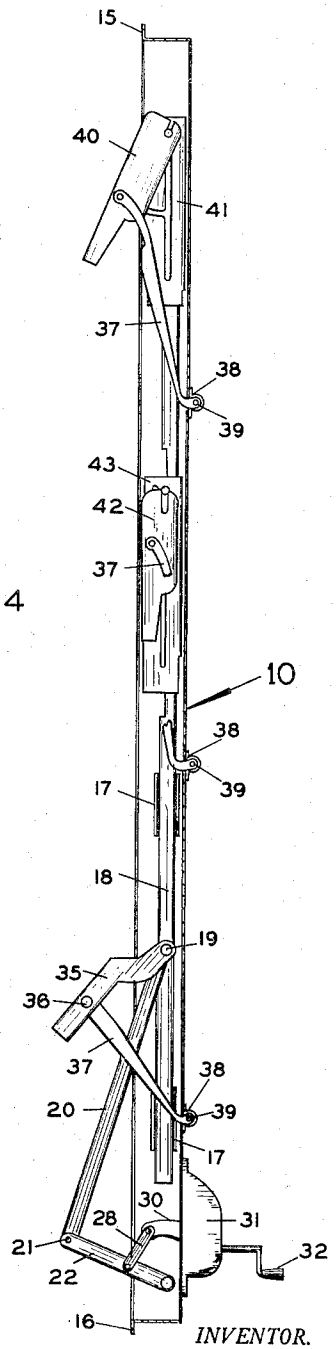


FIG. 4

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AWNING TYPE WINDOW STRUCTURE

Filed April 12, 1957 3 Sheets-Sheet 3

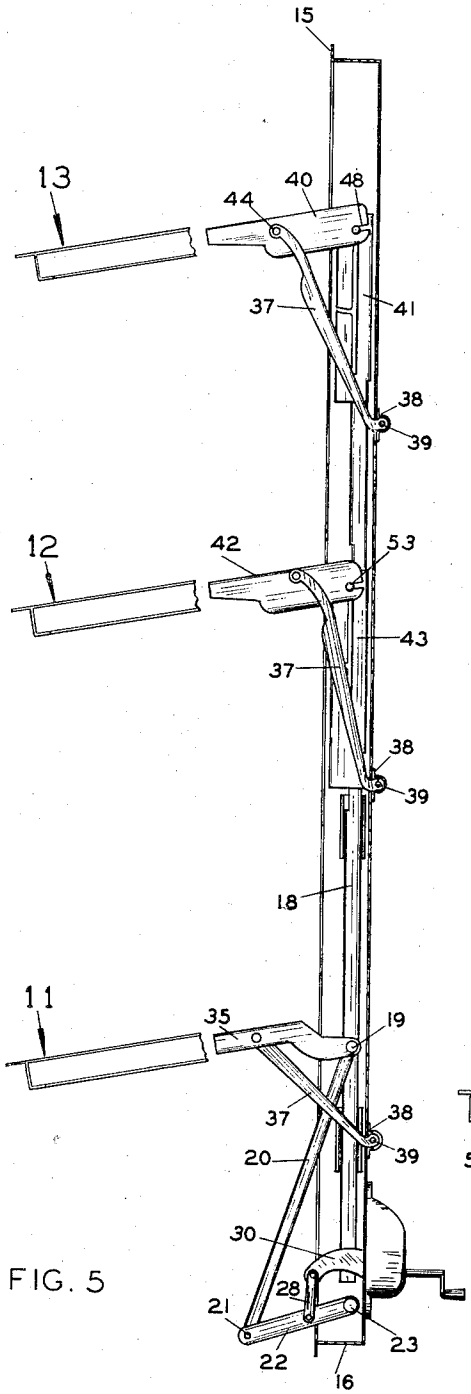


FIG. 5

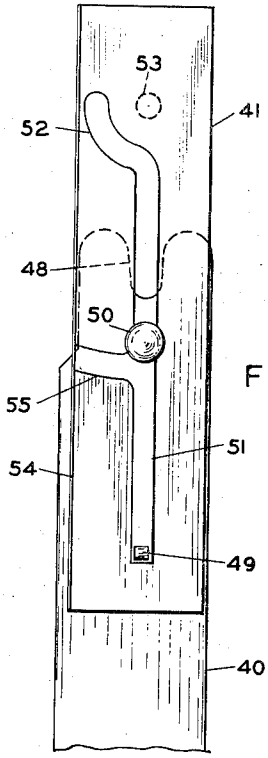


FIG. 6

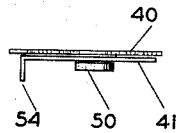


FIG. 8

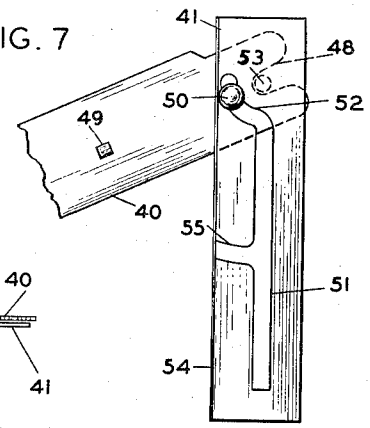


FIG. 7

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AWNING TYPE WINDOW STRUCTURE

Humbert Arcamonte, Miami Springs, Fla.

Application April 12, 1957, Serial No. 652,631

4 Claims. (Cl. 20—42)

This invention relates to windows and is more particularly directed to awning windows of the type described and claimed in my Patent No. 2,704,385 entitled Awning Type Window.

In my above mentioned patent, I describe an awning window having a certain operating mechanism which when actuated does not swing the louvers of the window simultaneously but rather opens and closes the louvers in a desired sequence. In that window, with all of the louvers in a closed position, the topmost louver will swing to an open position first. When it reaches a certain partially opened position, then the bottom louver commences to swing to its opened position and finally, the middle louver or louvers commence swinging to the opened position until all of the louvers reach their completely opened position. Conversely, when it is desired to close the opened louvers, the intermediate louvers close first, then the bottom louver comes to a closed position and finally the top louver is closed thereby returning all of the louvers to a closed position.

The present invention contemplates the use of a different operating structure and the actuation of the louvers in the following order namely, the bottom louver opens first, then the top louver and finally the intermediate louver or louvers. To close the window, the intermediate louvers close first, then the top louver comes to its closed position and finally the bottom louver is closed.

A principal object of the present invention is to provide an awning type window with operating mechanism which is simple in construction and operation and inexpensive in cost.

A further object of the present invention is to provide an awning window in which the louvers open in a desired sequence and close in a reverse sequence.

A still further object of the present invention is to provide an awning window described as above wherein the louvers are locked in position when closed and when opened whereby only actuation of the operating mechanism will effect a movement of the louvers.

A still further object of the present invention is to provide an awning window with delayed opening louvers having hinge plates secured to the louver interengaged with guide plates mounted on an operating bar for delaying the opening and closing of the louvers.

With these and other objects in view, the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a front elevational view of an awning window embodying my invention.

Figure 2 is a vertical sectional view taken along the line 2—2 of Figure 1 with the mechanism actuated to place the louvers or sashes in their closed position but the sashes are omitted.

Figures 3, 4 and 5 are similar views showing the order of sequence of the opening of the louvers, with the louvers shown in position by Figure 5 wherein the louvers are all in their open position.

Figure 6 is a detail elevational view of the combination guide and hinge members showing their relative positions when the louvers are closed.

Figure 7 is a similar view showing their relative positions when the louvers are in their open position.

Figure 8 is an end view thereof.

In my Patent No. 2,704,385, I show and describe an awning window similar to that being shown and described herein except that the mechanism for delaying the opening of the various louvers or sashes is different and the order in which the louvers open is also different. As seen in Figure 1, an awning window **10** is shown having three vertically disposed louvers or vents **11**, **12**, and **13** though any number of louvers may be used. In the present awning window **10**, upon the actuation of its operating mechanism the bottom louver **11** will open first, then the top louver **13** will commence to open after which the intermediate louver **12** will open last until all of the louvers will come to their completely opened position. Likewise when it is desired to close the louvers **11**, **12** and **13**, the intermediate louver **12** will close first then the top louver **13** will come to its closed position while the bottom louver **11** will have swung toward its partially closed position after which the bottom louver **11** will become closed.

The awning window **10** is provided with a conventional frame having stiles **14**, header **15** and a sill **16**. Along the inner wall of each of the stiles **14** are mounted a plurality of guides **17** in which a slide or actuating bar **18** is slidably mounted. At their lower end portion there is pivotally mounted as by a pivot pin **19** one end of an operating link **20** at whose lower end a pivot pin **21** mounts one end of a lever arm **22**. The other end of the lever arm **22** is secured to a cross shaft **23** so as to rotate therewith and which cross shaft extends along the sill **16** with the ends of the cross shaft **23** journalled in bushings (not shown) mounted on the stiles **14**. Intermediate the ends of one of the lever arms **22** there is provided a pivot pin **27** for pivotally mounting a link **28** whose other end is pivoted as at **29** to the outer portion of a sector plate member **30** of a conventional operator **31** having a crank **32**.

Pivotally mounted on each of the pivot pins **19** is a hinge plate **35** which extend along each side of the sash **11** and is secured thereto. The lower portion of each of the hinge plates **35** is provided with a pivot pin **36** to which one end of a sash link **37** is pivotally mounted, the other end of the sash link **37** extending downwardly and in the direction of a lug **38** mounted on the stile **14** to which the lower end of the sash link **37** is secured by a pivot pin **39**. It can be seen that since the hinge plates **35** of the sash **11** are pivotally mounted as at **19** to the slide bar **18**, the sash **11** will open or close upon any sliding movement of the slide bar **18**.

In order to delay the opening of the sashes **12** and **13**, there is provided hinge plates **40** and guide plates **41** for the topmost sash **13** and hinge plates **42** and guide plates **43** for the intermediate sash **12**. The hinge plates **40** and **42** are somewhat similar in construction as are the guide plates **41** and **43** as will be described in greater particularity hereinafter.

The hinge plates **40** which are secured to the sides of the topmost sash **13** are provided with a pivot pin **44**

for pivotally mounting the upper end of a sash link 37 whose lower end is pivoted as at 39 to a lug 38 in much the same manner as the previously described sash link 37 of the bottom sash 11. The upper end of the hinge plates 40 is provided with an open ended slot 48 and a pair of pins 49 and 50 slidably mounted in a vertical slot 51 formed in the guide plates 41 secured to the slide bars 18. The pin 50 is provided with an enlarged head as best seen by Figure 8 to prevent the separation of the hinge plates 40 from the guide plates 41. The slot 51 of the guide plates 41 extend vertically along the midportion thereof and at the upper portion as at 52, the slot is arcuate with a further pin 53 which operates as a sash pivot pin mounted on the guide plate 41 adjacent the arcuate slot 52. A vertical flange 54 provides the guide plate 41 with additional strength to compensate for the weakening of the plate 41 by a transverse slot 55 which extends from the edge of the guide plate 41 to the slot 51. The slot 55 as well as the lower portion of the slot 51 forms a guide for the pin 49 of the hinge plates 40. The upper portion of the slot 51 and the arcuate slot 52 form a guide for the pin 50 of the hinge plate 40.

As stated hereinabove, with the sashes 11, 12 and 13 closed, upon the actuation of the operator crank 32, the slide bar 18 will commerce to slide downwardly, carrying the pivot pin 19 which causes the sash 11 to begin swinging towards its open position. The guide plates 41 which are secured to the slide bar 18 will also slide downwardly. The pins 49 and 50 of the hinge plate 40 will move relatively upwardly in the slot 51 and the pin 53 on the guide plate 41 will likewise move downwardly in the direction of the open ended slot 48 of the hinge plate 40. When the lower sash 11 has reached a certain opened position, the pin 53 will engage the slot 48, the pin 50 will have reached the top of the slot 51 and about to enter the arcuate slot 52 while the pin 49 will be in alignment with the transverse slot 55. Any further operation of the crank 32 will continue the downward movement of the slide bar 18 and guide plates 41 to effect an outward swinging movement of the sash 13. The pin 50 slides along the arcuate slot 52 and the pin 49 slides along the slot 55 and outwardly thereof to permit the sash 13 to swing to an open position. Now, the sash 11 is about two-thirds opened while the sash 13 is one-third opened; at this time the sash 12 is still in its closed position which is accomplished by providing the sash 12 with hinge plates 42 and guide plates 43 which are approximately identical in construction with the previously described hinge plates 40 and guide plates 41 except that the slot 51 of the guide plate 43 is longer than the slot 51 of the guide plate 41. Also, its sash links 37 are pivoted on pins 58 which are mounted on the hinge plates 42 at a shorter distance to the pivot pin 53 than that between the pivot pins 44 and 53 of the sash 13.

As the crank 32 is continued to be rotated the pin 53 of the guide plate 43 enters the open ended slot 48 of the hinge plate 42. The sash link 37 which is pivoted as at 39 at its lower end to a lug 38 will cause the sash 12 to swing outwardly as the pins 49 and 50 enter the slots 55 and 52 respectively. Due to the fact that the distance between the pivot pins 58 and 53 of the sash 12 is shorter than that between the pivot pins 44 and 53 of the sash 13, the former sash will swing outwardly at a faster rate. By the time, the sash 11 will reach its completely opened position, the sashes 12 and 13 will have arrived at its completely opened position.

When it is desired to close the sashes 11, 12 and 13 of the window 10, the crank is reversed in rotation. The slide bar 18 will slide upwardly and the sashes 11, 12 and 13 begin to swing downwardly to their closed positions. However, the middle sash 12 swings downwardly at the greatest speed, while the top sash 13 closes at a slightly slower speed, while the bottom sash 11 closes at the slowest speed. As the sashes 12 and 13 swing downwardly their respective pins 50 slide downwardly along the arcuate slots 52. As the pins 50 of the middle sash 12 reaches the upper portion of the vertical slot 51, the pin 49 will be received by the transverse slots 55. When the pins 49 and 50 are in alignment in the slots 51, the middle sash 12 will be in its closed position and a continued upward movement of the slide bar 18 will cause the pins 50 and 49 to continue to slide downwardly in the slot 51.

Now, the middle sash 12 is closed, the top sash is approximately one-third opened and the bottom sash is two-thirds opened; the top sash 13 continues to swing to its closed position as the crank 32 is turned until the pins 49 enter the slot 55 and arrive at the slot 51 when the sash 13 is now closed and the pins 49 and 50 slide downwardly along the vertical slot 51 in the same manner as those of the middle sash 12. The sashes 12 and 13 are now completely closed while the sash 11 is still one-third opened, which sash is brought to its closed position by a continued turning of the crank 32.

It is to be noted that in both the opened and closed positions, the sashes 11, 12 and 13 are locked in position against movement in any direction except by the actuation of the operator crank 32. When the sashes are in their closed position, the sash 11 cannot be swung opened unless the slide bar is made to slide downwardly, while the sashes 12 and 13 are locked in their closed position until their pins 49 and 50 arrive at the slots 55 and 52 respectively. The hinge plates 40 may be constructed integrally with the sash frames as well as the guide plates 41 may be constructed as an integral part of the slide or actuating bars 18.

Having described my invention, what I claim as new is:

1. An awning window structure comprising a frame, a plurality of sashes disposed vertically in said frame, an actuator bar slidably mounted in said frame adjacent said sashes, a plurality of links, pivot means securing one end of said links to each of said sashes and the other end to said frame, a hinge member mounted on each of said sashes, pivot means mounting said hinge member of one of said sashes to said slide bar, a guide member secured to said slide bar adjacent the other hinge member, said guide member having a longitudinally disposed slot, said slot being arcuate at an upper end and a transverse slot communicating with said longitudinal slot intermediate its ends, a pivot pin mounted on said guide member in alignment with said longitudinal slot, a plurality of pins mounted on said hinge member and extending into said longitudinal slot, said pins being positioned in said longitudinal slot whereby upon the movement of said guide member relative to said hinge member, one of said pins is received by said arcuate end of said slot simultaneously as said other of said pins is received by said transverse slot, said hinge member having an open ended slot in alignment with said pivot pin on said guide member whereby said hinge member is adapted to swing outwardly about said last named pin of said guide member when said pivot pin on said guide member falls into said open ended slot.

2. An awning window structure comprising a frame, a plurality of sashes disposed vertically in said frame, an actuator bar slidably mounted in said frame adjacent said sashes, a plurality of links, pivot means securing one end of said links to each of said sashes and the other end to said frame, a hinge member mounted on each of said sashes, pivot means mounting said hinge member of one of said sashes to said slide bar, a guide member secured to said slide bar adjacent each of the other hinge members, said guide members having a longitudinally disposed slot of unequal length, each of said slots being arcuate at an upper end and a transverse slot communicating with said longitudinal slots intermediate their ends, a pivot pin mounted on said guide members in alignment with said longitudinal slots, a plurality of pins mounted on

each of said other hinge members and extending into each of said longitudinal slots of said guide members, said pins being so positioned in said longitudinal slots that upon the movement of said guide members relative to said hinge members, one of said pins of each of said hinge members is received by said arcuate slot at the same time as said other pin of each of said hinge members is received by said transverse slot, said plurality of pins of each of said hinge members arriving at said arcuate and transverse slots of said guide members at different predetermined positions of said actuating bar, each of said hinge members having an open ended slot in alignment with said pivot pin on said guide members whereby said hinge members are adapted to swing about said last named pin outwardly of said guide members to open each of said sashes in a predetermined consecutive order when said pivot pin on said guide member falls into said open ended slot.

3. An article of manufacture comprising a hinge member, a guide member, said guide member having a longitudinally disposed slot, said slot being arcuate at an upper end and a transverse slot communicating with said longitudinal slot intermediate its ends, a pivot pin mounted on said guide member in alignment with said longitudinal slot, a plurality of pins mounted on said hinge member and extending into said longitudinal slot, said pins being positioned in said longitudinal slot whereby upon the movement of said guide member relative to said hinge member, one of said pins is received by said arcuate end of said slot simultaneously as said other of said pins is received by said transverse slot, said hinge member

having an open ended slot in alignment with said pivot pin on said guide member whereby said hinge member is adapted to swing about said last named pin outwardly of said guide member when said pivot pin on said guide member falls into said open ended slot.

4. An article of manufacture comprising a hinge member, a guide member positioned adjacent said hinge member, a flange mounted along one edge of said guide member, said guide member having a longitudinally disposed slot whose upper end is arcuate and a transverse slot communicating with said longitudinal slot intermediate its ends and extending through said flange, a pin mounted on said guide member above said arcuate slot and in alignment with said longitudinal slot, a plurality of pins mounted on said hinge member and extending into said longitudinal slot, said hinge member having an open ended slot at its top portion in alignment with said pin on said guide member whereby upon the relative sliding movement of said guide member and said hinge member said plurality of pins arrive at said arcuate slot and said transverse slot simultaneously with said pin on said guide member being engaged by said open ended slot of said hinge member to permit an outward pivotal movement of said hinge member on said guide member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,090,133	Larson	Aug. 17, 1937
2,292,133	Larson	Aug. 4, 1942
2,740,170	Westman	Apr. 3, 1956