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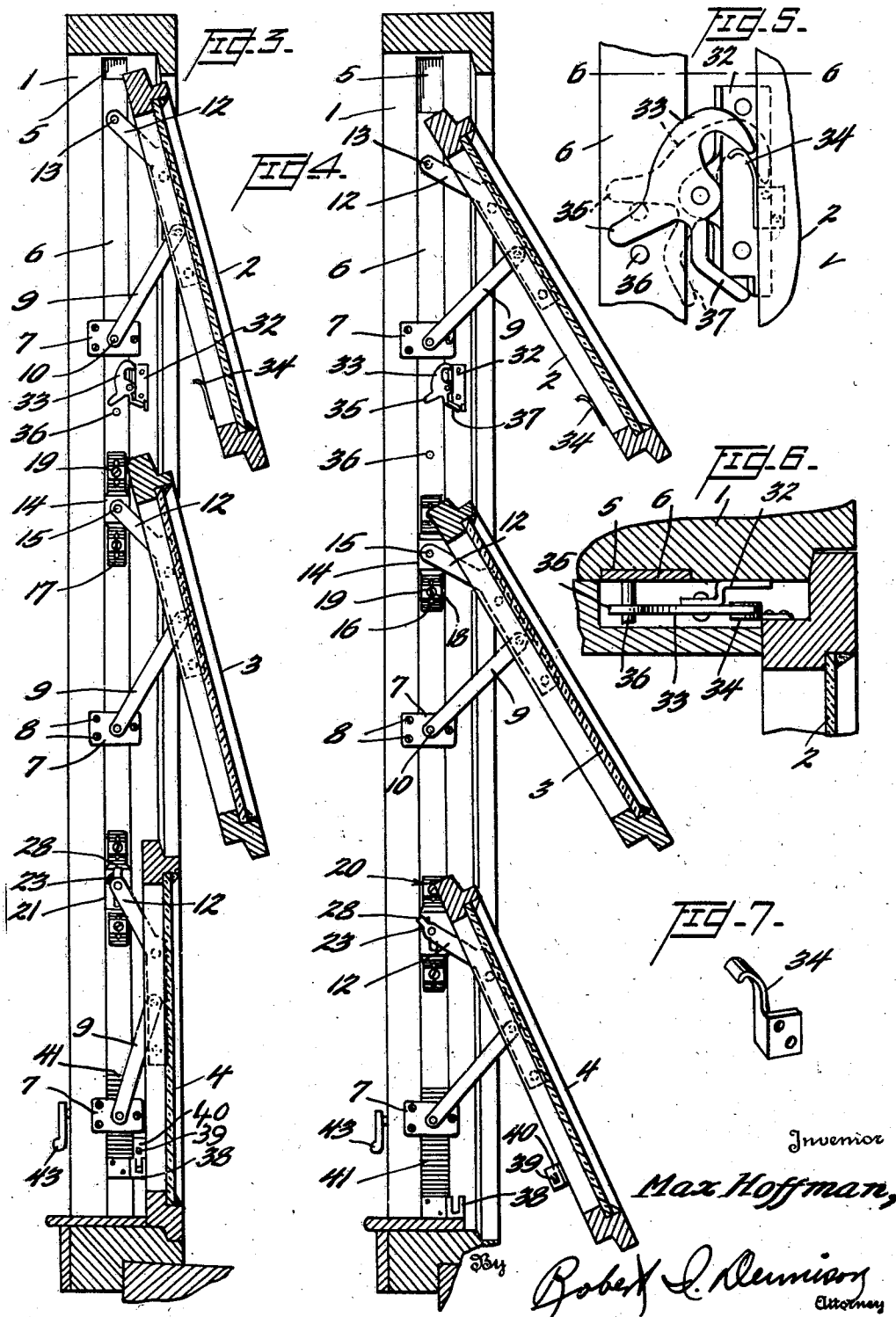
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AWNING TYPE WINDOW

Filed July 17, 1944

4 Sheets-Sheet 2



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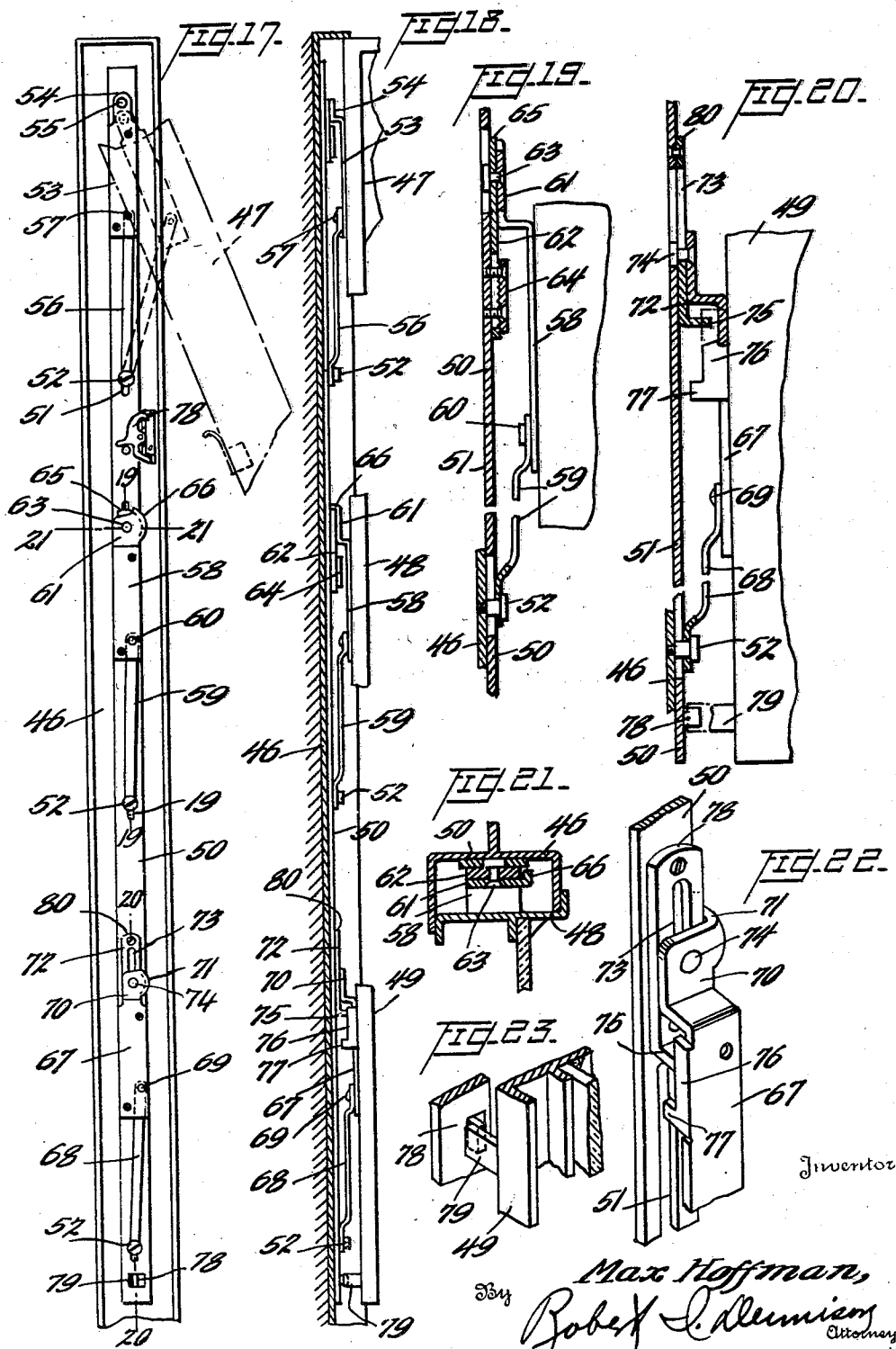
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AWNING TYPE WINDOW

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3 Claims. (Cl. 20—42)

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The present invention relates to improvements in windows and has reference more particularly to certain improvements in awning type windows.

One of the important objects of the present invention resides in the provision of an awning type window wherein means is provided for effecting a delayed opening of one of the swinging sashes during the swinging movement of the sashes to an open position.

Another important object is to provide an awning type window wherein means is provided for automatically locking the swinging sashes when the latter are in their fully closed position.

A further object is to provide an awning type window wherein the locking means will be automatically released or disengaged when the slidable actuating bar that operatively connects all of the sashes together is moved in one direction, immediately prior to the swinging of the sashes to an open position.

A still further object resides in the provision of an awning type window employing a novel hinge unit for connecting the swinging sashes to the slidable actuating bar whereby the hinge units may be adjusted on the bar to effect a tight closing of the sashes.

Still another important object is to provide an awning type window of the above mentioned character wherein means is provided for holding the swinging sashes in any angularly adjusted position.

A further and important object is to provide an awning type window that can be incorporated in a wooden, metallic or plastic frame and this without requiring any material alterations of the frame.

Another important object is to provide an awning type window wherein a novel hinge construction is employed for connecting the sashes to the slidable actuating bar in such a manner as to vary the amount of opening of the swinging sashes.

Another object is to provide an awning type window of the above mentioned character that will at all times be positive and efficient in its operation and due to its simplicity can be manufactured and sold at a very low cost, and also capable of easy installation.

A further object resides in providing an awning type window wherein one of the sashes constitutes the means for controlling the opening and closing of the several swinging sashes as well as the delayed opening of one of the sashes.

A still further object resides in the provision

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of an awning type window that consists of comparatively few parts yet is strong and durable.

Other objects and advantages of the present invention will become apparent during the course of the following description when taken in conjunction with the accompanying drawings.

In the accompanying drawings forming a part of this specification and in which corresponding numerals designate like parts throughout the several views:

Figure 1 is an elevational view of a wooden window frame showing the awning type window mounted therein, with the window sashes illustrated in their fully closed and locked position;

Figure 2 is a vertical sectional view through the wooden window frame and the swinging sashes showing the latter in their closed and locked position and showing the sliding actuating bar and the hinge units in elevation;

Figure 3 is a view similar to Figure 2 showing the upper two sashes in a partly opened position while the lower sash is still in its closed position;

Figure 4 is a similar section showing the position of the swinging sashes when in their fully opened position;

Figure 5 is a detail elevational view of the locking means employed for locking the upper sash in its fully closed position and which forms an important part of this invention;

Figure 6 is a transverse section taken approximately on the line 6—6 of Figure 5 looking downwardly;

Figure 7 is a detail perspective view of the keeper shown in Figure 5;

Figure 8 is a transverse section taken approximately on the line 8—8 of Figure 2 showing the means employed for locking the slidable actuating bar against vertical movement and for holding the sashes in any angularly adjusted position;

Figure 9 is a detail elevational view of one adjustably mounted bracket forming a salient part of the hinge unit, showing the position of the parts when the sash is in a closed position;

Figure 10 is a similar view, showing the relationship of the parts when the actuating bar has moved downward, the dotted lines illustrating the position of the parts when the sash is swung to an open position;

Figure 11 is a view taken at right angles to the Figure 9, showing the bracket in edge elevation; taken on the line 11—11 of Figure 9;

Figure 12 is a vertical sectional view taken on the line 12—12 of Figure 11;

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Figure 13 is a transverse section taken on the line 13—13 of Figure 11;

Figure 14 is a detail perspective view of the bracket;

Figure 15 is a detailed perspective view of the offset arm that coacts with the bracket shown in Figure 14;

Figure 16 is a perspective view of the locking means employed for securing the lower sash in its closed position;

Figure 17 is a view similar to Figure 2 showing a modification of the invention as associated with a metal frame and metal window sashes;

Figure 18 is a view taken at right angles to Figure 17 showing the actuating bar and hinge units in edge elevation;

Figure 19 is a vertical sectional view taken approximately on the line 19—19 of Figure 17;

Figure 20 is a similar section taken on the line 20—20 of the same figure;

Figure 21 is a transverse section taken on the line 21—21 of Figure 17;

Figure 22 is a detail perspective view of the hinge unit associated with the actuating bar and the lower sash, and

Figure 23 is a fragmentary view of the locking means employed for the lower sash of the modification.

With reference more particularly to Figures 1 to 16, inclusive, there is disclosed an awning type window embodying my invention as associated with a wooden window frame, the latter being designated by the numeral 1. In the present instance three sashes 2, 3 and 4, respectively, are employed. The manner in which these sashes are mounted and are operated will now be described in detail.

Mounted for vertical slidable movement in a suitable guide channel 5 formed in each side of the window frame 1 is the metal actuating bar 6. There are two of such bars, one in each side of the window frame for cooperation with the respective ends of the several sashes.

Plate-like members 7 are disposed across the slidable actuating bar and are secured to the frame 1 by suitable fasteners 8. These plate-like members not only serve to retain the actuating bar in its channel, but also provide a means for securing one portion of the hinge unit that is associated at the respective sides of each sash.

Each hinge unit includes a link 9 that is pivotally connected at its lower end, as at 10 to the respective plate-like members. The upper end of the link 9 is pivotally connected to the leg member 11 that is fixedly secured to the side edge of each sash. These members 11 constitute the sole means for supporting the sashes.

Each leg member 11 is formed with an offset arm portion 12 at its upper end, as is more clearly illustrated in Figures 2, 3, 4, 9 and 15, respectively.

The leg members that are associated with the uppermost sash 2 have their offset arm portions pivotally connected to the upper portions of the slidable actuating bar 6 as indicated at 13.

The hinge unit that is associated with the central sash 3 includes a bracket 14, having a raised central portion to which the upper end of the offset arm 12 is pivotally connected as at 15. The end portions of this particular bracket are formed with longitudinal slots indicated at 16 and serrations 17 are formed in the outer face of the slotted portions of the bracket to coact with the edges of the lugs 18. Screws 19 extend through the lugs 18 and the respective slots 16 and are

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threaded into suitable openings provided therefor in the slidable bar 6.

This construction provides a means for adjustably securing the hinge unit associated with each side of the central sash 3 to the actuating bar, thereby providing for a tight fit between the several sashes when the latter are in a fully closed position.

The bracket forming a part of the hinge unit that is associated with the lower sash 4 is shown at 20 in Figure 14 of the drawings and this particular bracket has its raised intermediate portion 21 formed with a keyhole slot 22. An arcuate lug or shoulder 23 is formed on the raised portion 21 for a purpose to be presently described.

The end portions of the bracket 20 are also formed with longitudinal slots 24 similar to the slots 16 formed in the end portions of the brackets 14, and transverse serrations 25 are formed in the outer face of the slotted end portions of the bracket 20.

Channel shaped lugs 26, similar to the lugs 18 have their edges coacting with the serrations 25 in the manner as clearly illustrated in Figures 9, 11 and 12 and accommodate the screws 27 that extend through the slots 24 and screw into threaded openings provided therefor in the slidable actuating bar 6. In this manner, the hinge unit associated with the lower sash 4 is also adjustably connected to the slidable actuating bar.

The arm 12 of the hinge unit, that is carried by the lower sash 4, is formed at its upper end with the flanged finger portion 28 that is adapted to cooperate with the shoulder 23, in the manner to be presently described.

A flat faced pin 29 extends laterally from the arm 12 adjacent the flanged finger portion 28 and this pin is operable in the keyhole slot 22 formed in the raised intermediate portion 21 of the bracket 20, in a manner also to be hereinafter explained.

The aforementioned hinge unit construction as associated with the lower sash provides for the delayed opening of the lower sash, which is a salient feature of the present invention.

The central or intermediate sash 3 is employed to constitute the operator for opening and closing the several sashes, although I do not wish to limit myself to this arrangement as the top sash may serve as the operator or an entirely independent operator may be employed to effect the operation of the actuating bar.

A handle 30 is associated with the lower rail of the central operating sash and this handle may also serve as a closure for cooperation with a suitable keeper 31 carried by the top rail of the lower sash 4 for locking these two sashes together when the sashes are in a fully closed position.

Forming an important part of the present invention is the locking means provided for the upper sash 2. To this end, there is mounted on the frame 1 a bracket 32. A hook-like fastener 33 is pivotally mounted on the bracket 32, for cooperation with the keeper 34 that is secured on the adjacent side edge of the upper sash 2.

A lip 35 extends laterally from the pivoted hook-like fastener for cooperation with the pin 36 that is carried by the slidable actuating bar 6 for moving the hook into locking engagement with the keeper 34 when the bar 6 is moved upwardly.

A bent finger 37 extends from the lower portion of the pivoted hook and is adapted to engage with the lower portion of the bracket 32 to limit the

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swinging movement of the pivoted hook in one direction. It is, of course, understood that this hook-like fastener is gravity actuated, so that the same will be released from the keeper 34 when the pin 36 is moved downwardly away from engagement with the lip 35, upon the actuating bar 6 being moved downwardly.

For the purpose of locking the lower sash 4 in its fully closed position, I provide the lower end of the slidable actuating bar 6 with an offset hook 38, (see Figure 16 of the drawings). This hook cooperates with the lug 39 mounted on the bracket 40 that is secured on the lower sash 4.

Also forming an important feature of my improved awning type window is the means for holding the slidable actuating bar in any vertically adjusted position and thus hold the swinging sashes in any angularly adjusted position.

This means comprises in providing transverse serrations 41 in the outer face of the lower end portion of the actuating bar 6 and forming similar serrations on the inner face of the lower plate-like member 7.

A short shaft 42 is mounted for oscillatory movement in the window frame 1, an actuating handle 43 being secured to the outer end of this shaft. A cam forming pin or projection 44 is carried by the inner end of the shaft 42 and is operable in a suitable cavity 45 provided therefor in the window frame.

The outer free end of this pin 44 is disposed adjacent the inner face of the serrated portion of the actuating bar 6 and is adapted to force the teeth 41 on said bar into locking engagement with the serrations on the inner face of the lowermost plate-like member 7 when the shaft is turned in one direction, thereby locking and holding the bar against sliding movement and holding the sashes in any adjusted open position.

The operation of this awning type window may be stated as follows. With the parts disposed in the position shown in Figure 2, all of the vertically swinging sashes are locked in their fully closed position and the actuating bar is in its uppermost position in its guides. When it is desired to open the window the handle 30 is first swung out of locking engagement with the keeper 31. Then the central sash 3 is pushed outwardly.

This will automatically cause the hinge units associated with the upper and intermediate sashes to move the actuating bar 6 downward. During the downward movement of the bar 6 the locking means for the top and lower sashes will be released.

By referring to Figure 3 of the drawings it will be observed that the top and intermediate sashes have been partially swung to an open position, while the lower sash 4 still remains in its closed position. In this manner, the ventilation through the window can be controlled or regulated, preventing drafts, etc.

Further outward pushing on the handle 30 will cause the upper and intermediate sashes to swing to a still further open position and at the same time cause further downward movement of the bar 6, resulting in the keyhole slot 22 in the bracket 20 cooperating with the pin 29 so that when this pin reaches the enlarged portion of the keyhole slot, the flanged finger 28 will coact with the arcuate shoulder 23 to cause the lower sash 4 to swing outward to an open position. This movement is what I term as the delayed opening of the lower sash.

By reason of the construction and arrangement of parts as shown and described, it will be ob-

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served that the upper and intermediate sashes will operate simultaneously.

When all of the sashes have been swung to their fully open position, the parts assume the position illustrated in Figure 4. As heretofore stated, the sashes may be held in any angularly adjusted position by actuating the shaft 42 and the locking means controlled thereby.

When the sashes are returned to a closed position, the lower sash will assume its fully closed position ahead of the other two sashes. Thus the lower sash opens last and closes first.

The locking means for the upper sash will be brought into operation as the upper sash approaches a fully closed position, while the locking means for the delayed opening sash is brought into operation upon the further upward movement of the sliding bar, after the delayed opening sash is in its fully closed position.

Upon the sashes being moved to their fully closed position, the upward movement of the bar 6 will automatically operate the locking means for the upper and lower sashes in the manner heretofore explained. When the several sashes are locked in their fully closed position there will be rattling or loose fit of the sashes.

By adjusting the hinge units, the degree of opening of the sashes may be regulated in a positive and efficient manner, and also faster closing of the delayed sash can be effected, and tight closing of all of the sashes will be attained, so that the automatic locking means will properly function.

Attention is now directed to Figures 17 to 23, inclusive, wherein I have shown my invention as associated with a metal window frame and wherein metal sashes are employed. However, the principles of operation are the same.

In this form, the channeled metal window frame is designated by the numeral 46 and the metal frame of the sashes designated at 47, 48 and 49, respectively.

Mounted for vertical slidable movement, in the channeled metal frame 46 is the actuating bar 50. This bar is formed with longitudinal slots 51 through which extend the pivot forming screws 52 that are threaded into the base portion of the channel shaped frame 46.

The hinge unit for the upper metal sash 47 comprises a leg member 53 that is fixedly attached to the side edge of the sash 47. An offset arm 54 is formed at the upper end of the leg member 53 and this arm is pivotally connected to the upper end portion of the sliding bar 50 as at 55.

A link 56 is pivotally connected at its upper end to the lower portion of the leg member 53 as at 57, while the lower end of this link is pivotally connected to the uppermost screw 52.

The hinge unit that is associated with the intermediate sash 48 comprises the leg member 58 that is fixedly secured to the side edge of said intermediate sash. A link 59 is pivotally connected at its upper end to the lower portion of the leg member 58 as indicated at 60. The lower end of this link has pivoted connection with the intermediate pivot forming screw 52.

The upper end of the leg member 58 is formed with an offset arm portion 61 and this arm portion is pivotally secured to the upper portion of the adjustably mounted bracket 62 as at 63. This bracket 62 is adjustable vertically on the bar 50 and is secured thereon by the means indicated generally at 64.

The upper end of the bracket 62 is formed with a curved edge 65 with which coacts the arcuate flange 66 formed on one side edge portion of the arm 61.

The hinge unit provided for the lower sash 49 which embodies the delayed opening principle, includes a leg member 67 that is fixedly attached to the side edge of the lower sash. A link 68 is pivotally connected at its upper end to the lower portion of the leg member 67 as at 69. The lower end of this link has pivotal connection with the lowermost pivot forming screw 52.

The upper end of the leg member 67 is formed with an offset arm portion 70 and a curved flange 71 extends from one side edge of this arm portion, as clearly shown in Figure 22.

A bracket 72 is secured on the actuating bar 50 and is formed with a longitudinal slot 73 to accommodate the pivot pin 74 that extends through the offset arm portion 70. A laterally extending lug 75 is formed on the lower end of the bracket 72 and is adapted to cooperate with the stop forming flange 76 formed on one side edge of the leg member 67. The lower end of this flange 76 is formed with a projecting ear 77.

An automatic locking means designated generally by the numeral 78 is provided for the locking of the upper sash in its fully closed position. This lock is identical with the lock construction employed for securing the upper sash of the wooden frame and sash structure and operates in the same manner as that heretofore described in detail.

For the purpose of locking the lower sash 49 in its fully closed position, I provide an ear portion 78 that is struck out from the lower end portion of the slidable actuating bar 50 and is adapted to have engagement with the laterally extending finger 79 that projects from the lower sash 49.

The operation of the metal awning type window may be briefly stated as follows. With the parts arranged in the position shown in Figures 17 and 18, all of the vertically swinging sashes are locked in their fully closed position and the actuating bar is in its uppermost position.

By pushing outwardly on the operator associated with the intermediate sash 48, the hinge units associated with the upper and intermediate sashes will cause the bar 50 to move downwardly. During the downward movement of the bar 50, the locking means for the top and lower sashes will be released.

The upper and immediate sashes will swing outwardly to a partially open position while the lower sash still remains in its closed position.

Further downward movement of the actuating bar 50 will cause the slotted bracket 72 to move downwardly on the pin 74 until the lug 75 is disposed below the lower edge of the flange 76 and is clear of the ear 77.

When the parts have reached this position, the curved flange 71 will be clear of the adjacent side edge of the bracket 72 and will be ready to ride over the curved upper end 80 of this bracket, whereupon, further outward movement of the operator sash will cause the lower sash 49 to also swing outwardly to an open position. Thus a delayed opening of the lower sash is effected by this particular hinge construction.

When the sashes are returned to their closed position, the lower sash will assume its fully closed position ahead of the other sashes.

When the sashes are all in their fully closed position, the upward movement of the actuating

bar in the meantime will have actuated the automatic locking means provided for the upper and lower sashes.

Means may be provided for holding the metal sashes in any angularly adjusted position similar to that employed in conjunction with the wooden sashes.

It will thus be seen from the foregoing description that I have provided an awning type window that can be readily and easily assembled, installed and operated and due to its simplicity will be inexpensive, yet strong and durable and at all times positive and efficient in its operation.

While I have shown the preferred embodiment of my invention, it is to be understood that various changes in the size, shape and arrangement of parts without departing from the spirit of the invention and the scope of the appended claims, may be made.

What I claim is:

1. A window construction comprising in combination, a frame, a plurality of vertically swinging sashes mounted in the frame, an actuating bar mounted for vertical sliding movement in the frame, means for pivotally connecting all of the sashes to the sliding bar, one of said sashes constituting the means for actuating the sliding bar, whereby the sashes may be opened or closed depending upon the direction of movement of the sliding bar, certain of said sashes being actuated simultaneously, means interconnecting the sliding bar and another of the sashes for causing a delayed opening of said last mentioned sash, and interengaging means carried by the sliding bar and the delayed opening sash for automatically locking the latter sash when the same is in a fully closed position, upon further continued movement of the sliding bar.

2. A window construction comprising in combination, a frame, a plurality of vertically swinging sashes mounted in the frame, an actuating bar mounted for vertical sliding movement in the frame, means for pivotally connecting all of the sashes to the sliding bar, one of said sashes constituting the means for actuating the sliding bar, whereby the sashes may be opened or closed depending upon the direction of movement of the sliding bar, certain of said sashes being actuated simultaneously, means interconnecting the sliding bar and another of the sashes for causing a delayed opening of said last mentioned sash, interengaging means carried by the sliding bar and the delayed opening sash for automatically locking the latter sash when the same is in a fully closed position, upon further continued movement of the sliding bar, and additional interengaging means carried by the sliding bar and one of the first mentioned sashes for automatically locking said sash as the same approaches a fully closed position.

3. A window construction comprising in combination, a frame, a plurality of vertically swinging sashes mounted in the frame, an actuating bar mounted for vertical sliding movement in the frame, means for pivotally connecting all of the sashes to the sliding bar, one of said sashes constituting the means for actuating the sliding bar, whereby the sashes may be opened or closed depending upon the direction of movement of the sliding bar, certain of said sashes being actuated simultaneously, means interconnecting the sliding bar and another of the sashes for causing a delayed opening of said last mentioned sash, and interengaging means carried by the sliding bar

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and one of the first mentioned sashes for automatically locking the latter as the same approaches a fully closed position.

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