March 1, 1938. T. I. MOSELEY 2,109,973

AWNING TYPE WINDOW

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Fig. 1.

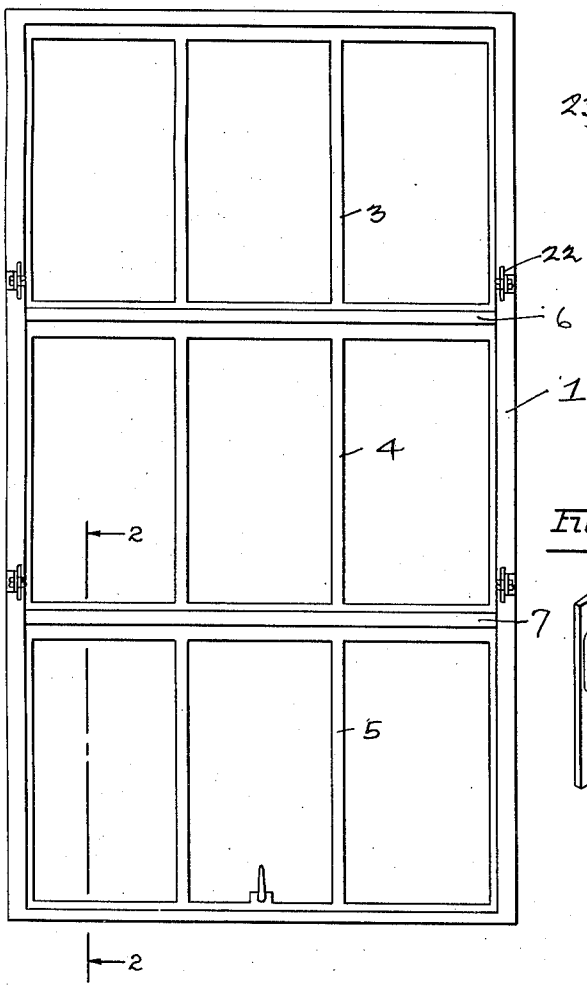


Fig. 2.

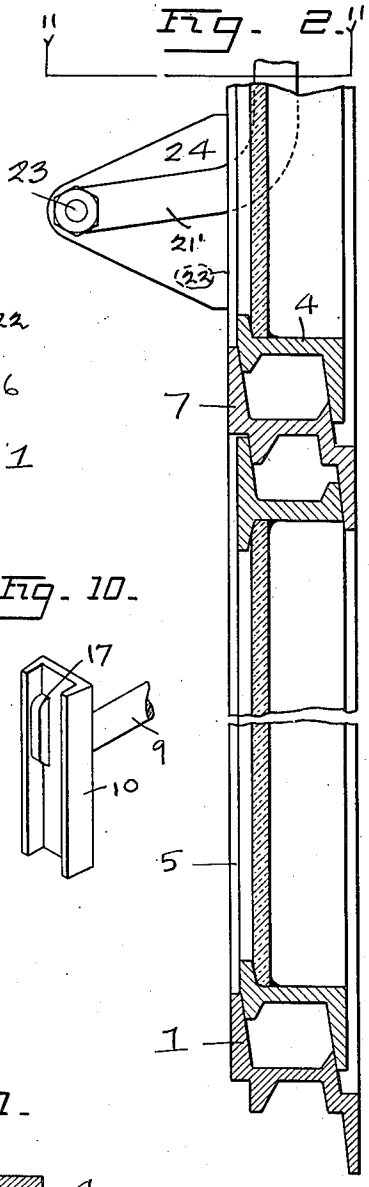


Fig. 10.

Fig. 5.

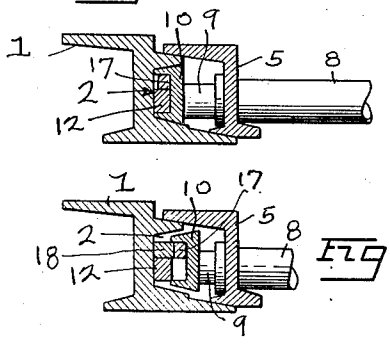
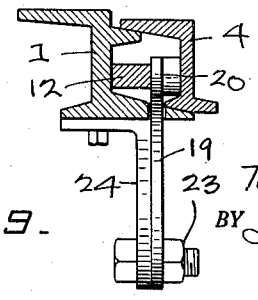


Fig. 9.

Fig. 11.



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Fig. 6.

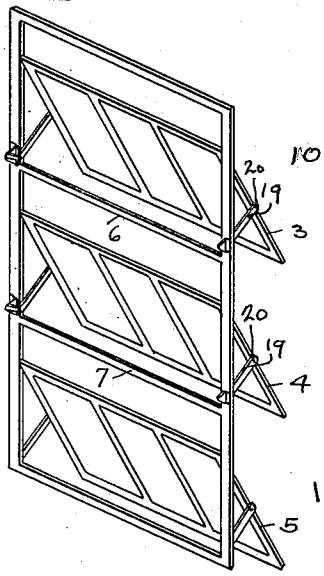


Fig. 3.

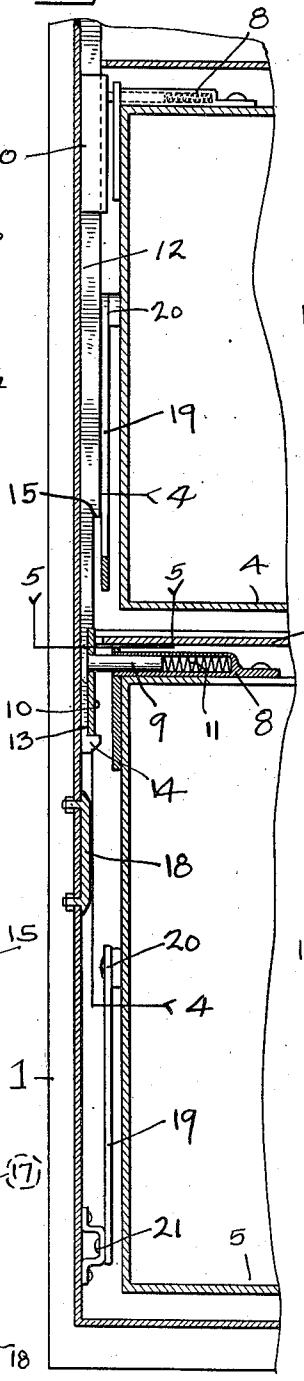


Fig. 7.

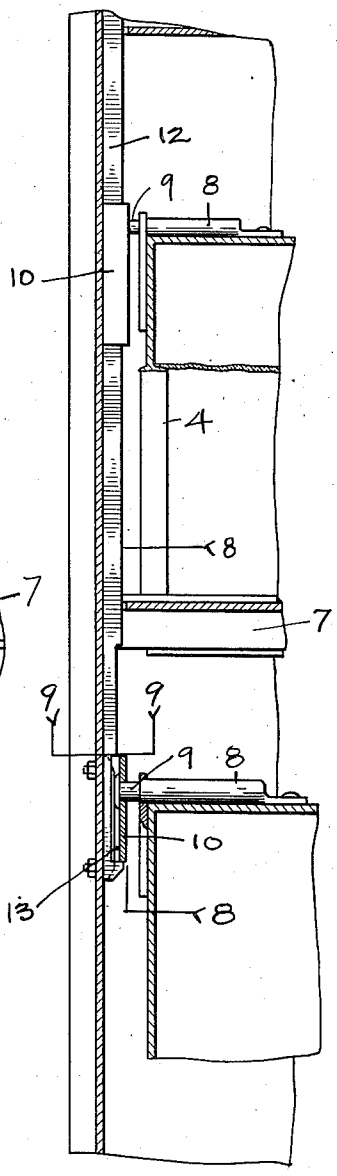


Fig. 4

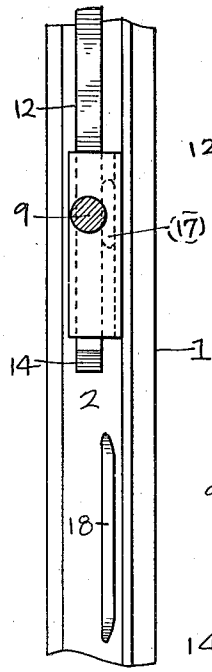
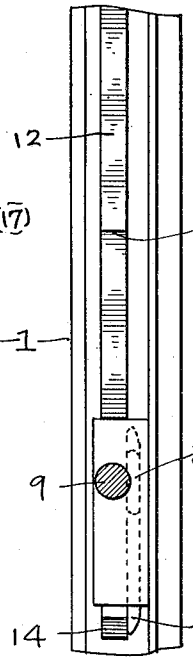


Fig. 8.



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Patented Mar. 1, 1938

2,109,973

UNITED STATES PATENT OFFICE

2,109,973

AWNING TYPE WINDOW

Tomlinson I. Moseley, San Francisco, Calif., assignor to Dalmo Sales Corporation, San Francisco, Calif., a corporation of California

Application April 29, 1935, Serial No. 18,726

5 Claims. (Cl. 189—67)

This invention relates to improvements in multi-sash windows of the type comprising a plurality of adjustable sashes mounted one above the other in a window frame.

An object of this invention is to provide in a multiple sash window of the character described, a simple, inexpensive, reliable and easily operable means for simultaneously opening and closing the several sashes through manipulation of one of the sashes, which means also provides for independent opening and closing of the said operating sash while other of the sashes are maintained in the opened position.

A further object of the invention is to provide an awning type window construction having a plurality of swinging sash mounted in the frame, together with connecting mechanism associated with said sashes for connecting the same together, said sash connecting mechanism being capable of operation automatically by manipulation of one sash to connect said sashes together for operation in unison, or to permit independent operation of said one sash.

A further object of the invention is to provide an awning type window construction embodying an operating mechanism designed to operate with a minimum of effort and to insure reliability and ease of operation, said operating means being capable of being readily and easily set up in a window frame and maintained in proper working condition while practically concealed from view.

In this specification and the annexed drawings, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms; and it is also to be understood that in and by the claims following the description, it is desired to cover the invention in whatsoever form it may be embodied.

In the accompanying drawings:

Fig. 1 represents a front elevation of a window frame having sashes therein and operating mechanism therefor constructed in accordance with my invention.

Fig. 2 is an enlarged fragmentry section taken thru Fig. 1 on the line 2—2.

Fig. 3 is an enlarged elevation taken through a fragmentary portion of the window frame and two of the sashes, and showing the multiple sash operating mechanism.

Fig. 4 is a view taken through Fig. 3 on the line 4—4.

Fig. 5 is an enlarged section through the window frame and sash, on the line 5—5 of Fig. 3.

Fig. 6 is a reduced sized perspective view showing a window frame with awning sash therein, in the opened position.

Fig. 7 is a sectional elevation similar to Fig. 3, but showing the operating parts of the sash control mechanism when the said sash are in the opened position.

Fig. 8 is a view taken through Fig. 7 on the line 8—8.

Fig. 9 is an enlarged section taken through Fig. 7 on the line 9—9.

Fig. 10 is a perspective view of the lower sash slide shoe.

Fig. 11 is a section taken through the window frame and sash showing the pivotal connection of the fulcrum arm to the frame work, taken on the line 11—11 of Fig. 2.

In detail the construction illustrated in the drawings comprises a window frame 1 of rectangular shape, and formed of structural bar members of conventional or selected cross-section. The vertical side members of the frame 1 constitute jambs and the inner face of each jamb is formed with a vertical channel 2 therein. A plurality of sashes designated 3, 4 and 5 are mounted in the frame so as to be swung into and out of a closed position in planar alignment with the frame, the operating mechanism for the said windows being confined in the channels of the jambs. The sashes are preferably made of bar sections which will complement and engage the flanges of the frame bar sections to provide a relatively tight joint at the points of contact. The fixed bar sections 6 and 7 are disposed transversely between the opposite jamb members of the frame between the bottom rail of the upper sash and the head rail of the middle sash and between the bottom rail of the middle sash and the head rail of the lower sash, thus when all of the sashes are in the closed position, the top and bottom rails thereof will contact and engage fixed sections on the frame. The window frame with the sashes therein, would be factory assembled and would be installed as a unit in the window opening of a building.

The head rail of each sash at each of the opposite sides thereof, is provided with a casing 8 within which a shaft pivot 9 is reciprocatingly and rotatably confined. The shaft pivots extend in a horizontal plane in order that the sashes may swing in a vertical plane. Each shaft pivot 9 is provided with a channel-like slide shoe 10 thereon, and the opposite vertical faces of said slide shoe have a taper which conforms to the section of the guide channels 2 in the jambs of the window frame. The slide shoes 10 thus func-

tion as slides to move up and down in the channels of the jambs, for guiding the window sashes through all evolutionary movements and when swung from the closed into the open position and vice versa. Each pivot 9 is provided with an expansion spring 11 behind the rear end thereof within the casing 8, to urge the said slide shoe into frictional engagement with the channel guides.

A travelling bar 12 is provided in each of the channel guides, and each travelling bar is fixedly connected to the vertically aligned slide shoes 10 of the upper sash 3 and middle sash 4, thus tying said upper and middle sash together so that said sashes will move in unison at all times.

The lower end of each travelling bar extends down to a point opposite the side shoe 10 on the lower sash 5. The extreme lower end of the said travelling bar has a socket or recess 13 provided in the side thereof facing the slide shoe, and the length of said socket is equal to that of the length of the slide shoe, in order that the said slide shoe on the lower sash may rest in said socket. A shoulder or projection 14 is provided at the extreme lower end of the travelling bar, and a shoulder 15 is provided on the face of the bar by cutting out a portion thereof, the said shoulder 15 being spaced from the upper end of the socket 13 by a distance equal to the length of the slide shoe. A projection 17 is provided on the interior of each slide shoe 10 of the lowermost sash 5, which projections 17 are adapted to engage and ride upon cams 18 resting in the bed of the channel guide 2 for disengaging the slide shoes on said lowermost sash from the sockets in the travelling bars. When the slide shoes on the lowermost sash rest in the sockets in the travelling bars, then all three of the sashes will move together throughout all evolutionary movements. When the sashes are swung into a selected open position and to a point where the slide shoes on the lowermost sash will register with the fixed cams 18 on the channel guides, then said lowermost sash will be disengaged from the said travelling bars, and said lowermost sash may be opened and closed independently of the upper sashes, both of which would remain in the opened position. The lowermost sash may not be opened and closed independently of the upper sashes, when all of said sashes are in the closed position.

Each sash is connected with the frame by a pair of fulcrum links 19. These fulcrum links are disposed on the outer opposite sides of the sashes and are concealed between the sashes and jambs when the sashes are closed. The fulcrum links are arranged on opposite sides of the sash and frame and in horizontal alignment. The upper ends of the fulcrum links are pivotally connected to the sides of the sash at a point 20, intermediate the ends thereof. The fulcrum links 19 on the lowermost sash are pivoted to a bracket 21 seated in the bed of the channel guide 2. The fulcrum links 19 on each of the uppermost sashes are elbowed or bent as at 21', and the said bent end thereof projects out through a slot 22 in the face of the frame, said projecting end being pivotally secured at 23 to a bracket 24 which extends out from the face of the frame 1. By offsetting the lowermost pivotal connection of the fulcrum arms on the upper sashes, beyond the plane of the frame, the leverage necessary for opening and closing the sashes is amplified to a point where the sashes may be opened and closed with a minimum of effort. Likewise, the angularity of the fulcrum links on the uppermost sashes is utilized for creating a pressure upon the said sashes when in the closed position, and serves to hold the said sashes tightly closed and to eliminate opening movement actuated by wind pressure or the like.

The windows operate as follows. Assuming all of the sash to be closed, the same are opened by pushing outwardly on the lower rail of the lowermost sash, which causes all of the sashes to open simultaneously. The opening movement will proceed to a point where the traveling bars will descend and bring the slide shoes on the lowermost sash into registry with the fixed cams 18 on the jambs 6, disengaging said slide shoes from the traveling bars. The sashes may be thus left in this open position, or if it should be desired to close the bottom sash while letting the upper sashes remain open, this may be done by swinging the lower sash back into the closed position. Such movement of the lower sash causes the upper end of the slide shoes on said lower sash to engage the shoulders 15 on the traveling bars, and to raise said traveling bars a distance sufficient to bring the lower end of the said traveling bars out of registry with the fixed cams on the jambs. Through the movements last described, the lower sash will be closed and the upper sashes will remain open. When the lower sash is again swung into the opened position, the slide shoes thereon will immediately snap into engagement with the sockets 13 in the traveling bars whenever and at such times as said slide shoes register with said sockets, the spring behind the pivot pin on said slide shoes urging the aforementioned parts into engagement. When the slide shoes of the lower sash are reengaged with the traveling bars, then all of the sashes will operate in unison for any desired closing or opening movements. It will be noted that the slide shoes on the lowermost sash when disengaged from the traveling bars, move in the guide channels 2 provided in the jambs, and do not depend in any respect upon the traveling bars for any guiding movement thereof.

It is obvious from the foregoing that by manipulation of the lowermost sash that all of the sashes may be operated in unison or the bottom sash may be opened and closed independently of the upper sashes when the said upper sashes are in the opened position.

The flanges on the bar sections out of which the sashes and frame are formed, are so designed that the same will contact snugly and tightly when in the closed position and thus provide an effective watertight joint for the most exacting of all weather conditions. Furthermore, the off-center placement of the fulcrum links in relation to the pivots of the sash, cause the flanges on the sash bars to be cinched tightly into engagement with the corresponding sections on the window frame, and to thereby provide effective water-proofing. In my window construction, each of the plurality of sashes engages a fixed part of the frame around all four sides thereof when in the closed position, thus insuring that the entire surface of the window will be sealed against inclement weather conditions, dust, drafts and the like.

Having thus described this invention, what I claim and desire to secure by Letters Patent is:

1. A window of the character described comprising a frame having jambs, the inner face of each jamb being formed with a vertical channel;

a plurality of sashes mounted in the frame; vertically reciprocable travelling bars disposed in the channels of the guides; pivots on the upper ends of the sashes; a shoe on the outer end of each pivot secured to a travelling bar to guide the same in the channels of the jambs for vertical reciprocation; shoes on the opposite pivots of one sash being detachably engageable with said travelling bars; a cam in the vertical channel of each jamb to automatically disengage the shoes on said one sash from the travelling bars when said one sash is manipulated to bring the shoes thereon into registry with said cam and to automatically engage said shoes with the travelling bars when the sash is manipulated to place the said shoes out of registry with said cam; and fulcrum links pivotally connected to the frame and to the sashes.

2. A window of the character described comprising a frame having jambs, the inner face of each jamb being formed with a vertical channel; a plurality of sashes mounted in the frame; vertically reciprocable travelling bars disposed in the channels of the guides; pivots on the upper ends of the sashes; a shoe on the outer end of each pivot secured to a travelling bar to guide the same in the channels of the jambs for vertical reciprocation; shoes on the opposite pivots of one sash being detachably engageable with said travelling bars; a cam in the vertical channel of each jamb to automatically disengage the shoes on said one sash from the travelling bars when said one sash is manipulated to bring the shoes thereon into registry with said cam, and to automatically engage said shoes with the travelling bars when the sash is manipulated to place the said shoes out of registry with said cam; and fulcrum links pivotally connected to the sashes and extended through slots in the sashes into pivotal connection with projecting brackets on the face of the frame.

3. A window of the character described comprising a frame; a plurality of swinging sashes mounted in said frame; connecting mechanism associated with said sashes for connecting said sashes together, said mechanism including reciprocable members pivotally connected with the uppermost sashes; slide shoes associated with the bottom sash and adapted to connect the same to said members whereby all of the sashes will operate in unison; and means on the frame to effect the disengagement of said bottom sash slide shoes from the reciprocable members only when the upper sashes are in open position so as to permit the bottom sash to be opened and closed independently of the upper sashes in said position.

4. A window of the character described comprising a frame; a plurality of swinging sashes mounted in said frame; connecting mechanism associated with said sashes for connecting said sashes together, said mechanism including reciprocable members pivotally connected with the uppermost sashes and having sockets adjacent the lowermost sash; slide shoes associated with the bottom sash and adapted to connect the same to the sockets in said members whereby all of the sashes will operate in unison; and means on the frame to effect the disengagement of said bottom sash slide shoes from the said reciprocable members only when the upper sashes are in open position so as to permit the bottom sash to be opened and closed independently of the upper sashes in said position.

5. A window of the character described comprising a frame; a plurality of swinging sashes mounted in said frame; connecting mechanism associated with said sashes for connecting said sashes together, said mechanism including reciprocable members pivotally connected with the uppermost sashes; and having sockets adjacent the lowermost sash; spaced shoulders on said members on opposite sides of said sockets; slide shoes associated with the bottom sash adapted to seat in the sockets in said members whereby all of the sashes will operate in unison; means on the frame to automatically effect the disengagement of said bottom sash slide shoes from said sockets in the reciprocable members only when the upper sashes are in open position whereby the bottom sash may be swung from the opened and into the closed position and vice versa, and the action of said bottom sash in swinging from the opened and into the closed position engages the shoulders and moves the sockets in said reciprocable members to permit reengagement of the bottom sash slide shoes therewith when the bottom sash swings from the closed and into the opened position.

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