April 26, 1955 R. S. STRAND 2,706,839

MULTIPLE WINDOW STRUCTURE

Original Filed Dec. 10, 1949

FIG. 1

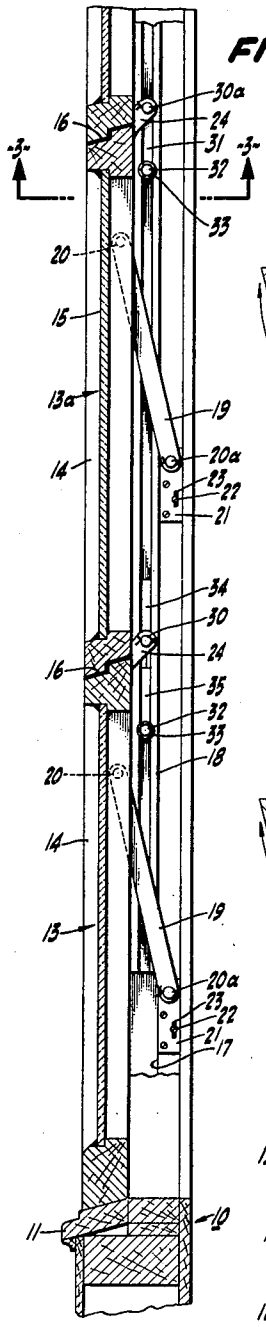


FIG. 2

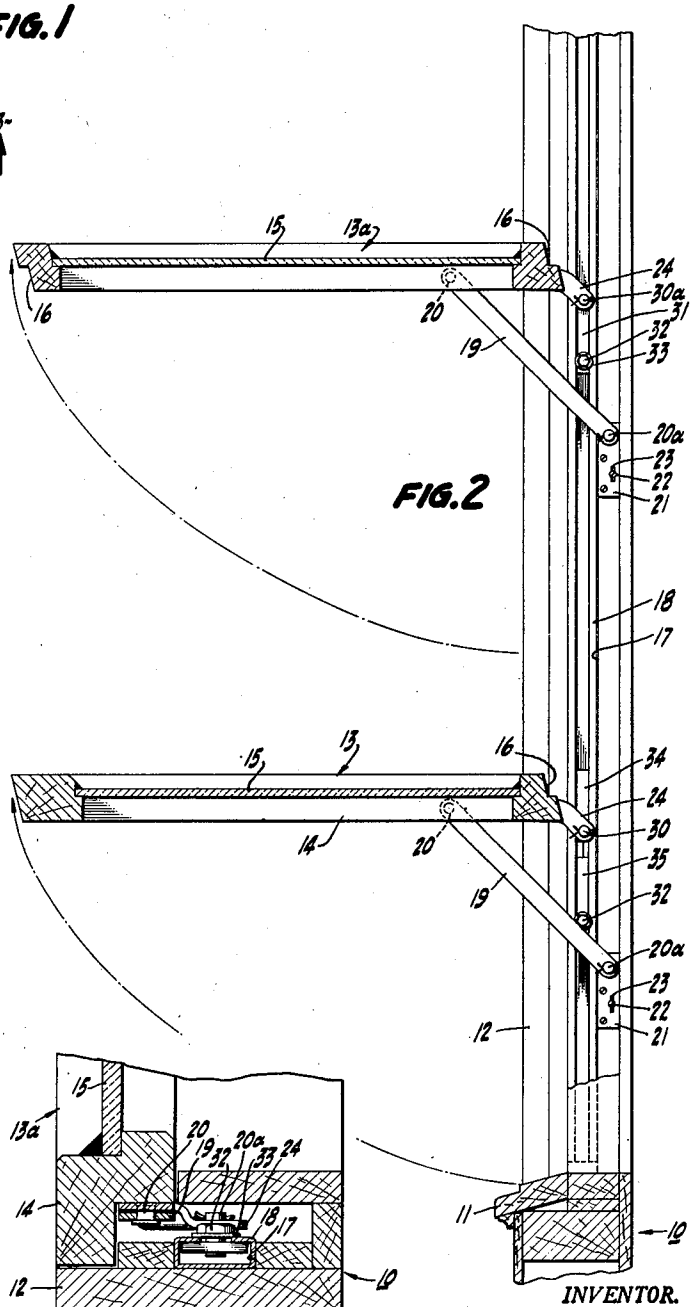


FIG. 3

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MULTIPLE WINDOW STRUCTURE

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Continuation of abandoned application Serial No. 132,250, December 10, 1949. This application November 21, 1952, Serial No. 321,753

5 Claims. (Cl. 20—42)

This invention relates to a multiple window structure. More particularly, it relates to louver-type windows which swing about a horizontal axis between open and closed positions, and to certain items of hardware or operating members employed to mount and operate a vertical bank of windows of the character described. The present application is a continuation of my copending application Serial No. 132,250, filed December 10, 1949, and entitled "Multiple Window Structure," and now abandoned.

It is an object of the present invention to provide window structures of the character described in which certain manufacturing economies are achieved.

It is a further object of the invention to provide window structures of the character described wherein two or more windows are provided, one above the other, each to be swung about a horizontal axis, and which are provided with means connecting them together for movement in unison.

Another object is to provide window operating means for a structure of the type disclosed which may be readily assembled and applied and easily adjusted after assembly and application and which means are simple, efficient and effective and well designed to meet the demands of economic manufacture.

These and other objects of the invention will be apparent from the ensuing description and the appended claims.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a fragmentary, vertical sectional view through a window frame showing the window structure of the invention installed therein and showing the windows in closed position.

Fig. 2 is a view similar to that of Fig. 1 but showing the windows in open position.

Fig. 3 is a section taken along the line 3—3 of Fig .1.

Referring now to the drawings and more particularly to Figs. 1 and 2, a window frame **10** is shown comprising the usual sill **11** and one of the stiles **12**. A lower window **13** and an upper window **13*a*** are shown mounted in the frame. It will be evident, of course, that any desired number of windows may be provided and from the ensuing description it will be apparent that three or more windows will operate in the same manner as two windows.

Each window **13** or **13*a*** comprises the usual sash **14** and pane **15**, and the sashes are rabbeted at **16** in the usual manner. The window frame **10** is formed on each side with a longitudinal channel **17** to slidably receive a channel-shaped track member or slide **18**. Each window **13** or **13*a*** is connected to the window frame by a pair of arms **19**, only one of which is shown, there being one such arm on each side of the windows. Each arm **19** is pivotally connected at **20** to the window sash and at **20*a*** to an arm plate **21** which is adjustably fixed to the window frame as by means of screws **22** and a slot **23**. Each window is also provided with a pair of sash plates **24**, there being one sash plate on each side of the window which is connected at one end to the sash. Each sash plate **24** of the upper window or windows **13*a*** is pivotally connected at **30*a*** to a shoe **31** which is adjustable in the track member **18** and is clamped in adjusted position by means of a cap screw **32** and a washer **33**.

The sash plates **24** of the lowermost window **13** are connected somewhat differently. It will be seen that each of these lower sash plates is pivotally connected at **30** to what I call a release shoe **34**. This release shoe may be

slidable in the track member **18** and it may be latched to or unlatched from a latch shoe **35** which, like the shoes **31**, is adjustable in the track member **18** and is clamped in adjusted position by means of a cap screw **32** and a washer **33**.

In the operation of the present invention when the lowermost window **13** is opened or closed, it will also open or close the upper window or windows **13*a***, as shown in Fig. 2.

In mounting a bank of windows by means of the fixtures or hardware items of my invention, the slide shoes **31** and **35** will be adjusted to space the several windows properly relatively to one another and to the window frame. This is possible by reason of the fact that the slide shoes **31** and **35** are free to be adjusted in the track members **18**. After suitable adjustment has been made, these slide shoes are clamped tightly in adjusted position by means of the cap screws **32** and washers **33**. The slide shoes and the track member then constitute a single unit which slide together in the channel **17**.

A latch structure is described and claimed in my copending application entitled "Independently Operable Multiple Window Structure," Serial No. 132,249, filed December 10, 1949, now Patent No. 2,598,619, dated May 27, 1952, by which the slide release shoe **34** and the latch shoe **35** operate so that the lowermost window **13** can then be lowered or completely closed without disturbing the upper window. However, for purposes of the present invention it may be assumed that each slide release shoe **34** and its latch shoe **35** are permanently latched or locked together to form in effect a single slide shoe equivalent to the upper slide shoes **31**. One of the latter is shown in end view in Fig. 3.

Among the advantages of this structure is the fact that manufacture is greatly simplified. Thus, the track members **18** may be manufactured and stocked in relatively few lengths. Standard lengths will be supplied to a particular job and all that is required in the way of special fabrication for that particular job is to cut the track members **18** to fit and slide within the window frames. No drilling of screw holes is required. Adjustment of the slide shoes is all that is required other than the simple task of mounting the hardware items on the window sashes and mounting the arm plates on the window frames. When the slide shoes have been properly adjusted they are very easily clamped in adjusted position.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

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

1. A structure of the character described comprising a longitudinally extending slide adapted to be slidably received in a channel in a window frame, the said slide being of channel shape throughout its length to form a continuous track from end to end of the slide, a shoe member engaging the track and adjustable therealong, said slide having inwardly extending lips formed thereon for retaining the shoe member within the track, but permitting sliding movement of the shoe member therealong, means for releasably securing the shoe member to the slide in any position of adjustment including a screw having the shank thereof extending between the lips of the slide and threadedly received by the shoe, and a washer disposed beneath the head of the screw and engaging the outer faces of the lips, a sash, and means for pivotally connecting the shoe member to the sash.

2. A structure of the character described, comprising an elongated slide adapted to be reciprocably disposed in a channel in a window frame, a shoe slidably engaging the slide and adjustable therealong, said shoe being prevented from dislodgment and separation from the slide by the provision of flanges on one of the parts extending toward one another and slidably embracing the other part, means for releasably securing the shoe to the slide in any position of adjustment, including a screw carried by the shoe and threadable to clamp the shoe against the slide, and means for pivotally connecting the shoe to a sash.

3. A device of the class described, comprising a window frame providing vertical channels on the inner opposed side faces thereof, a unitary channel-shaped slide member reciprocably disposed in each channel, the channel-shaped slide members opening toward one another, an upper opposed pair of shoes one slidably engaging each of the opposed slide members, means for adjustably securing the shoes to the slide members, an upper sash swingably mounted in the frame and being pivotally connected to the shoes to be moved by movement of the slide members, a lower opposed pair of shoes one slidably engaging each of the opposed slide members, each of the above-named shoes being prevented from dislodgment and separation from the slide member which it engages by the provision of flanges on the slide member extending toward one another and slidably embracing the shoe, a lower sash swingably mounted in the frame and being pivotally connected to the lower shoes, and means for latching the lower shoes to the slide member to permit opening and closing of the sashes in unison and being operable to unlatch the lower shoes to permit independent closing movement of the lower sash.

4. A device of the class described, comprising a window frame providing vertical channels on the inner opposed side faces thereof, a unitary channel-shaped slide member reciprocably disposed in each channel, the channel-shaped slide members opening toward one another, upper opposed pair of shoes one slidably engaging each of the opposed slide members, means for adjustably securing the shoes to the slide members, an upper sash swingably mounted in the frame and being pivotally connected to the shoes to be moved by movement of the slide members, a lower opposed pair of shoes one slidably engaging each of the opposed slide members, each of the above-named shoes being prevented from dislodgment and separation from the

slide member which it engages by the provision of flanges on the slide member extending toward one another and slidably embracing the shoe, a lower sash swingably mounted in the frame and being pivotally connected to the lower shoes, and means for latching the lower shoes to the slide member to permit opening and closing of the sashes in unison and being operable to unlatch the lower shoes to permit independent closing movement of the lower sash, the first-named means including for each upper shoe and its channel member a screw for clamping the parts against one another.

5. A structure of the character described comprising a longitudinally extending slide adapted to be slidably received in a channel in a window frame, the said slide being of channel shape throughout its length to form a continuous track from end to end of the slide, a shoe member engaging the track and adjustable therealong, said slide having inwardly extending lips formed thereon for retaining the shoe member within the track, but permitting sliding movement of the shoe member therealong, means for releasably securing the shoe member to the slide in any position of adjustment including a screw having the shank thereof extending between the lips of the slide and threadedly received by the shoe, and a washer disposed beneath the head of the screw and engaging the outer faces of the lips, and means for pivotally connecting the shoe member to a sash.

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