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[54] LOCKING BAR FOR HORIZONTALLY SLIDING BUILDING CLOSURE ASSEMBLIES

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[51] **Int. Cl.** **E05c 17/04,** E05c 19/16

[58] **Field of Search** 292/262, 263, 266; 49/449, 49/450; 211/105.5, 105.6

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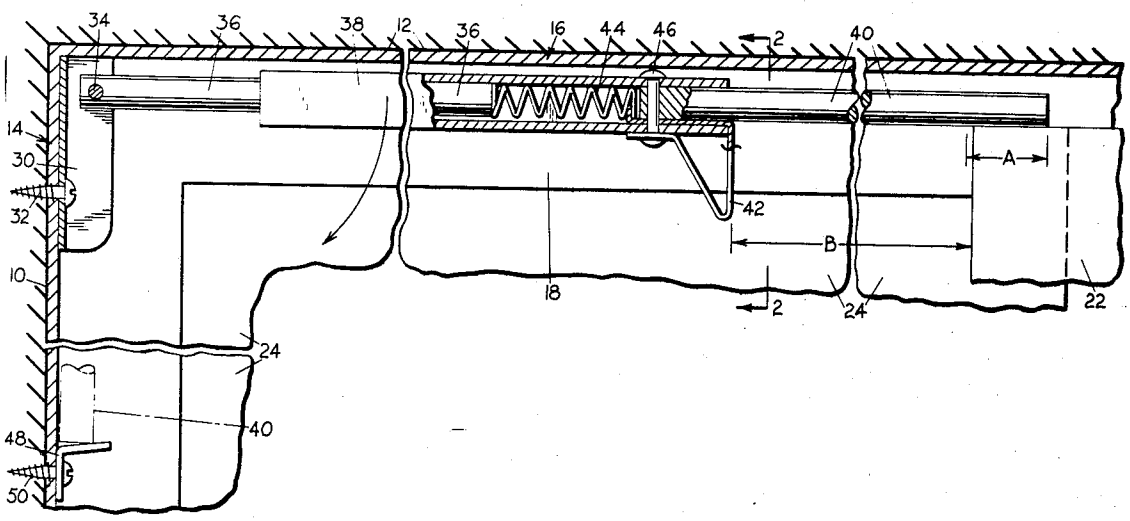
[57] **ABSTRACT**

A locking bar is provided for locking the sliding member of horizontally sliding windows and doors comprising sliding and fixed closure members arranged in lapped relation in parallel planes. The locking bar comprises a base and securing means for securing it adjacent the inner, upper end of the fixed closure member. A bar is pivotally connected to the base. Connecting means connect the inner end of the locking bar to the base while support means support the outer end of the bar parallel and adjacent the sliding closure member. A stop is mounted on the bar in a location predetermined to intercept the sliding closure member in a predetermined location, thereby determining the extent of opening of the sliding closure member.

3 Claims, 2 Drawing Figures



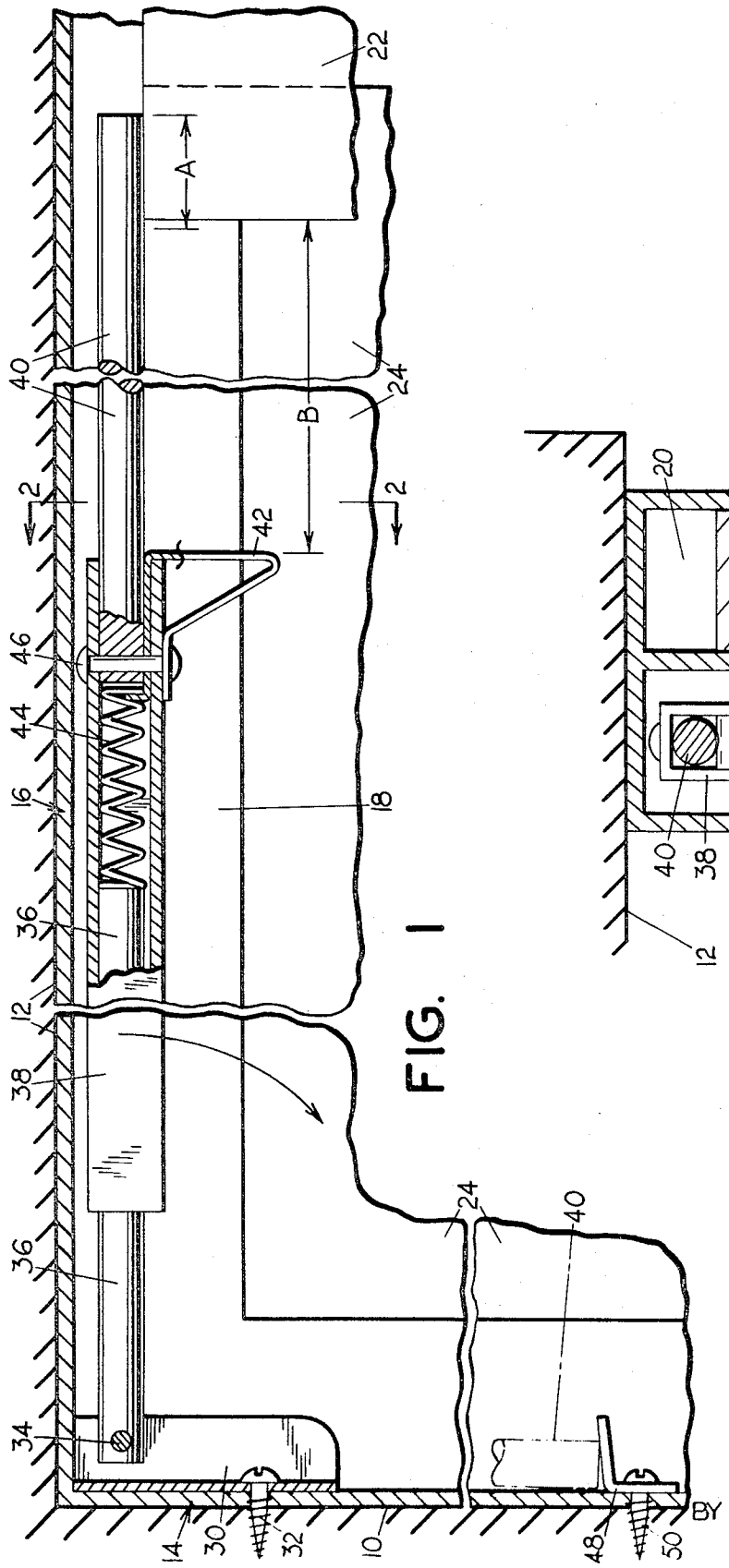


FIG. 1

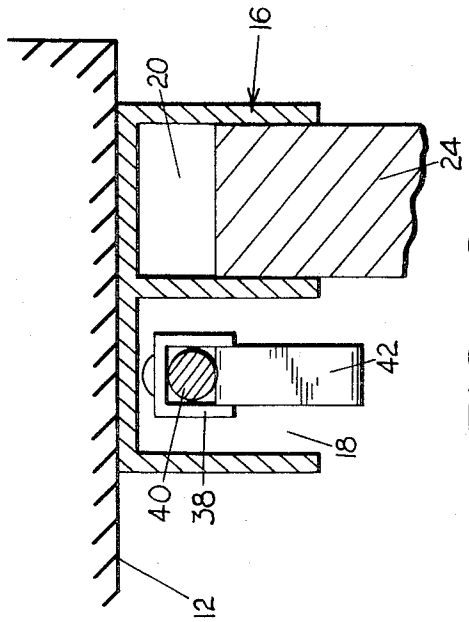


FIG. 2

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LOCKING BAR FOR HORIZONTALLY SLIDING BUILDING CLOSURE ASSEMBLIES

This invention relates to locking bars for building closure assemblies. It pertains particularly to locking bars for building closures including a fixed planar closure member and a horizontally sliding planar closure member arranged in lapped relation in parallel planes, as in the case of horizontally sliding windows and doors.

In one widely used type of window, the windowpane is framed by channel members which receive glass panes, one of which is fixed and the other of which slides horizontally in the channels between open and closed positions. To enable mounting the glass panes in the frames, a substantial clearance is provided in the upper channels so that the panes may be lifted up sufficiently to clear the lower channels, whereupon they may be swung into position and dropped downwardly into their operative positions, wherein they may be slid horizontally between opened and closed locations. A suitably disposed latch or lock is provided to lock the sliding pane is closed position.

Regrettably, such windows are highly susceptible to tampering and forced entry, first by breaking or deforming to locks and second by lifting the sliding pane out of the channel frames, i.e., by reversing the sequence by which the pane was installed.

It is the general purpose of the present invention to provide a locking bar which overcomes the foregoing problem and which may be employed to adjust a horizontally sliding window, patio door, or similar building closure between a fully closed and locked position, a partially open and locked position, and a fully open, freely slidable position, which locking bar is further characterized by the following advantages:

It is installed in the clearance space at the top and side of channel frames of the class described so that not only is it invisible and out of the way, but it also prevents absolutely the reverse lifting and removal of the sliding glass pane from the window.

It may be installed rapidly and easily in sliding windows and doors of conventional construction without alteration or modification thereof.

It is easily and quickly adjusted between its operative and inoperative positions.

It may be supplied in a single size which may be adapted to windows of various widths simply by sawing it to length.

It holds the window pane so securely in its locked position that it can be removed only by breaking the pane.

It is reliable in its operation over long periods of time and does not require deformation or mutilation of the window parts either for installation or operation.

The manner in which the foregoing and other objects of the invention are accomplished will be apparent from the accompanying specification and claims considered together with the drawings, wherein:

FIG. 1 is a foreshortened, fragmentary view in side elevation, partly in section, illustrating the construction of the herein described locking bar and its application of the locking in position of the sliding member of a horizontally sliding building closure assembly; and

FIG. 2 is a fragmentary, transverse sectional view, taken along line 2—2 of FIG. 1.

As noted above, the herein described locking bar is designed for use in a building closure assembly including fixed planar and horizontally sliding planar closure members arranged in lapped relation in parallel planes. In its broad aspect, the locking bar comprises a base secured to a structural member adjacent the fixed closure member and a locking bar having its inner end connected to the base. The locking bar extends parallel to the closure members and in close proximity thereto. Suitable means are provided for supporting its outer end.

A stop is mounted on the locking bar in a position in which it intercepts the sliding closure member in a predetermined position of opening.

Means also preferably are provided for swinging the locking bar to a vertical, inoperative position. This enables adjusting the sliding closure member between a fully locked closed position; a locked, partly open position; and a freely sliding, fully opened position, as required by the needs of the user.

Considering the foregoing in greater detail and with particular reference to the drawings:

The building closure assembly with which the herein described locking bar is associated is mounted in an opening defined in part by side jamb **10** and header **12**. Fastened to these members in the usual manner are upper and lower channel members **14, 16**. As shown particularly in FIG. **2**, the channel members may comprise extruded strips of aluminum having two channels **18, 20** side by side. These receive respectively a sliding pane of glass or other closure member **22**, and a fixed pane of glass or other closure member **24**. Similar channels, not illustrated, are provided at the bottom of the opening.

As also is apparent in FIG. **2**, a substantial clearance is left above the sliding glass pane to permit its insertion and removal by the simple expedient of inserting its upper edge in the upper channel to the ceiling thereof. The lower edge thereupon clears the lower frame so that upon registration therewith, it may be dropped into position. This construction has the disadvantage mentioned previously of providing easy access to intruders who have only to reverse the sequence to remove the pane.

The present invention takes advantage of this space invisibly to house the locking bar by means of which the partially open position of the sliding closure member is determined. Furthermore, by its presence in the clearance space above the sliding pane, it prevents lifting and removing the pane, thus doubly locking the window.

The manner in which the locking bar is installed is shown in FIG. **1**.

A channel-shaped base **30** is fixed by means of a screw **32** or otherwise to the side jamb at the upper inner end of fixed pane **24**. The inner end of a segmental locking bar is connected to the base by means of a pivot pin **34**.

The inner segment **36** of the segmental locking bar comprises a tube or rod of steel, aluminum or other suitable metal. It telescopes within a hollow box-shaped segment **38**. The latter has a rod extension **40** of sufficient length to extend beyond and overlie sliding pane **22** in sliding relation therewith.

It is to be noted that this construction makes possible using a single model of the locking bar for windows of varying width, simplifying the stocking problems of the distributor. A bar may be provided having an extension rod **40** of length sufficient to accommodate all of the commonly sized windows. The bar then may be adapted to particular windows by sawing off the extension until the degree of overlap "A" is provided. This may be, for example, from one-half to 1 inch.

Rod extension **40** also serves to support the outer end of the locking bar on the top edge of the sliding pane, eliminating the necessity of using a hanger bracket or other means of attachment of the window frame.

Stop means are provided for stopping the sliding movement of sliding pane **22** at a predetermined location. This location may be, for example, one predetermined to provide an opening sufficient to admit ventilating air but insufficient to prevent an intruder from entering. This distance is represented by the distance "B" of FIG. **1**.

In the illustrated form of the invention, the stop means **42** comprises an angularly bent, flat strip of metal shaped to provide: (1) a clip by means of which it is clipped to box-shaped segment **38**, (2) an abutment surface for abutting against the edge of sliding pane **22**, and (3) a retainer on its inner end which engages a coil spring **44**. The latter is interposed between the end of rod extension **40** and locking bar segment **36**.

The elements of the stop assembly are held in position by suitable means, for example, by means of a rivet **46**.

Further included in the assembly is a catch **48**, held in position by screw **50** and located releasably to retain the locking bar in its inoperative position, as also appears in FIG. **1**.

In the installation and use of the locking bar, rod section **40** first is cut to length and the entire bar assembly mounted by means of screw **32**, which attaches base **30** to the side frame of the window. This locates the locking bar within the channel recess in which sliding panel **22** moves back and forth.

The outer end of the locking bar is placed in its operative position, overlying sliding panel **22** and in sliding engagement with its upper edge, by retracting locking bar segment **38** against spring **44** until rod **40** has been retracted by distance "A." This is sufficient to enable it to clear sliding pane **22** and to enter the recess immediately thereabove.

In the fully closed and fully locked position of sliding pane **22**, the pane is kept from sliding by the usual latch. It can not be lifted out of the frame because of the obstruction provided by the locking bar.

If the conventional latch is forced, the pane may be slid only until it abuts against stop **42**, which is the normal, partially opened but locked position of the pane. Thus the window may be opened partially to provide ventilation, but without permitting free entry.

When it is desired to have the window open freely, bar segment **38** is retracted against the force of spring **44** by a distance equal to distance "A." This enables the end of bar extension **40** to clear the leading edge of the sliding pane and to swing to its vertical, dotted line position. In this position the end of extension **40** engages catch **48**, thus holding the bar concealed and out of the way, pending further use.

Having thus described my invention is preferred embodiments, I claim:

1. For use in a building closure assembly including a fixed planar closure member and a horizontally sliding planar member, to two closure members being arranged in lapped relation in parallel planes, a locking bar comprising:

a. a base,

b. securing means for securing the base to a structural member adjacent the fixed closure member,

c. a first locking bar segment,

d. connecting means connecting one end of the first locking bar segment to the base,

e. a second locking bar segment telescoping the first locking bar segment and overlying the sliding closure member and bearing against the same in sliding relation, thereby providing support for the outer end of the second locking bar segment, and

f. stop means on the second locking bar segment positioned in the path of travel of the sliding closure member for arresting the travel of the same at a predetermined location.

2. The locking bar segment of claim **1** including coil spring means interposed between the telescoping first and second locking bar segments for permitting axial retraction of the second locking bar segment for a distance at least equal to the distance of its lapping of the sliding closure member.

3. The locking bar of claim **2** wherein the connecting means comprises pivot means permitting angular movement of the locking bar segments between an elevated working position in which the second locking bar segment overlies and bears against the sliding closure member and a lowered inoperative position upon retraction of the second locking bar segment.

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