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LOCKING BAR FOR PATIO DOOR
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This invention relates generally to locking means for sliding glass doors or windows and, more particularly is concerned with a manually operable locking bar that serves not only to prevent the doors or windows from being opened from the outside thereof, but likewise provides a substantial factor of safety for persons within the building having such doors or windows.

The invention herein is primarily directed to the construction of a locking bar for so-called patio doors of a building, such doors normally extending from the floor a substantial height above the floor and being made of glass for decorative and utilitarian effects. The invention, however, is equally applicable to any kind of installation which uses large glass sliding panels, such as, for example, some types of windows. In order to keep the explanation lucid, and because the invention has particular advantages and applicability to patio doors, reference hereinafter will be made only to such patio doors.

Patio doors as used today are set in to frames of many different constructions and move one relative to the other. Usually there is a panel of glass which is fixed and another panel which is movable relative to the fixed one. Considerable problems have been encountered in recent years with intruders breaking into homes through patio doors, the usual procedure being to force the lock of the sliding door physically by leverage. Of necessity, such locks are required to be in the frame or jamb and thereby by subject to breakage by leverage.

Another important problem with patio doors has been the danger of children or adults not familiar with the doors to walk into the doors thinking that they are open. Doors of tempered glass are quite expensive, and hence, as a general rule, such doors are plate glass and some very serious accidents have occurred because of the optical illusion of openness. Even birds have been known to attempt flying through patio doors thinking that the space was open.

As a general rule, the accidents will occur in connection with the fixed panel because the movable panel may be of a stronger glass and may even have a handle which readily indicates that there may be a glass panel present.

The principal object of the invention is to provide a closure of the character described which has transparent panels sliding one relative to the other and which comprises a locking bar that can be swung from a first or vertical position, which permits the sliding panel to move, to a second or horizontal position, which prevents the sliding panel from being moved to an open position irrespective of whether the jamb locks are engaged, the locking bar serving when in its locking position to warn of the existence of a glass or other transparent panel behind it.

In connection with the object described immediately above, anyone approaching a patio through patio doors which have a clearly visible bar extending across the one panel would know that he cannot pass through the rectangle intersected by the bar and must use the other side of the closure. As to the sliding door side, since that is usually made of heavier glass or has a handle, the observer will be prepared for the requirement of moving the patio doors out of the way before attempting egress from the building. Furthermore, the observer will most likely understand that the patio doors are locked from the inside so that it necessitates moving the bar before the sliding door can be moved.

Other objects of the invention are concerned with the provision of a locking bar installation for transparent sliding doors in which the locking bar is held in a vertical position when not in use and does not in any way interfere with the operation of the sliding doors but is effective to block sliding movement of one of the doors in a horizontal position.

Other objects of the invention are concerned with the provision of this simple design, small number of parts, and economy of manufacture and installation of the locking bar of the invention.

Other objects of the invention will become apparent from the following description of an exemplary embodiment of the invention. Minor variations in the construction of this device will occur to the skilled artisan from a perusal of the drawings and the accompanying specification.

Reference is now had to the accompanying drawing wherein:

FIG. 1 is a perspective view of a pair of so-called patio doors taken from the inside of a building, illustrating a locking bar constructed in accordance with the invention shown in position to prevent sliding movement of one of the doors.

FIG. 2 is an enlarged fragmentary elevational view of the locking bar and left panel of the patio door installation of FIG. 1 with details shown in sectional view and the locking bar illustrated in its inoperative or rest position in broken lines.

FIG. 3 is a fragmentary perspective view showing a bracket for receiving the free end of a locking bar while in its locked or engaged condition.

Basically, the invention comprises a pair of transparent panels, one of which is fixed and the other slideable relative thereto, said panel having a locking bar pivotally secured to a jamb and movable from vertical to horizontal positions, the vertical position permitting sliding movement of one of the panels and the horizontal position physically blocking such movement irrespective of any other locks which the sliding panel may have.

Referring now to the drawings, in FIG. 1 there is illustrated a so-called patio door installation, such as for example, a house. Such an installation comprises right and left panels 10 and 12 respectively, such panels being glass, with the right-hand panel 10, as a rule, having a much more robust type of glass therein than the left-hand panel.

The right-hand panel, or door as it will be termed hereinafter, slides on suitable tracks such as, for example, indicated at 11, and unless otherwise prevented from doing so, being capable of moving to a position in complete congruence with the panel 12. As a general rule also, the panel 12 is fixed and notwithstanding such condition, is normally referred to as a door as well.

Both panels are installed in a side wall 13 of the house and the right-hand door 10 will be engaged when in its closed position against the vertical right-hand jamb 14 and locked in place by a suitable lock 15 of conventional construction. The left-hand framing member 16 of the door 10 will engage against the left-hand door jamb 18 when this patio door is fully opened. The right-hand framing portion of the door, the panel 12, is shown at 16' in FIG. 2, and in the normal construction, this framing member 16' is a permanently secured structural member extend-
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The doors 10 and 12, as seen, extend from the floor 22 of the building a substantial distance upwardly, normally being of a sufficient height to permit an adult readily to pass through the opening 19 without stooping. As thus far described, the installation is conventional and not intended by way of the description to be limiting in character. There are many variations and forms of such patio door installations.

In using these patio doors, one grasps the handle 17 and moves it to the left to open the door or to the right to close it. The panel 12 does not move but is fixed. Accordingly, when the patio doors are closed as shown in FIG. 1, if there is no other identifying means, one readily sees the handle 17 and identifies the door 10 as being closed, but one may only identify the panel 12 as being of glass. Accordingly accidents may occur to one walking through the glass 12. In addition, it can be seen that a lever or other instrument inserted between the right-hand framing member 20 and the jam 14 from the outside can force the lock 15 and break it. It is necessary due to the limited space available for such locks to be fairly compact, but even durable locks are readily forced.

In accordance with the invention, a locking bar designated generally by the reference character 30 is installed on the left-hand jam 18 as shown generally in FIG. 1 and with more specific detail in FIG. 2. Such locking bar operates in conjunction with an elongate metal rod 32 of any suitable cross-sectional configuration such as, for example, a square, such rod being preferably hollow so as to be light in weight and easy to fabricate and manipulate. The rod 32 is pivotally secured at 34 to a generally C-shaped bracket 36 by a suitable pin or the like means extending across the lower portion 30 of the bracket 36. The bracket 36 may be channel configuration to provide a rear wall 40 which is capable of being secured to the left-hand jam 18 by screws or the like shown at 42. The lower screw may also secure a leaf spring 43 which is upwardly biased to support the rod 32 somewhat, and the rod 32 may be provided with a rubber tip 44 such as shown at 44 to prevent scratching of the framing member 16. Preferably a bracket 46 having a socket 48 is secured as shown to the framing member 16 to receive into said socket the free end and tip 44 of the rod 32 so that it may not drop past any desired location.

The bracket 36 will have a pair of inwardly flared fingers at 49 which are formed to provide a pinching clamp to receive the rod 32 when it is rotated in a counterclockwise direction in FIG. 2 to the broken line position shown. This position locks the bar in its inoperative condition so that the door 10 may be moved to its open position. It will be seen that since the rod moves completely out of the way when it is in its broken line position, as shown in FIG. 2, the patio door 10 may slide fully to the left to its open condition. Further the framing members and jams of such installations as a rule are formed of extruded metal shapes, such as aluminum channels and the like. Accordingly the bar 30 may be installed at the base of such channel and be fully concealed thereby. For example, FIG. 2 may be considered a sectional view through a channel whose base is designated 50 so that the jam 18 completely covers the locking bar when the locking bar is in inoperative condition.

In use, the locking bar 30 extends completely across the panel 12 and physically prevents sliding movement of the door 10. Furthermore, since movement of the door to an open position is required to cause collapse of the rod 32 and the rod 32 has substantial strength in compression as with any metal elongate member, it will be almost im-

possible to force the door 10 open. In addition, the presence of the locking bar 30, as shown, calls attention as a warning to the fact that there is a glass panel being of a sufficient height to permit an adult readily to pass through the opening 19 without stooping. In accordance with the invention, the locking bar is of a construction readily installed on practically any patio door arrangement. The rod 32, bracket 36, pin 34, and spring 43 are a unitary assembly and may be sold as such with the rod 32 being of a length normally much greater than conventional patio door width. The householder is supplied with the bracket 46 which is easily installed and a removable rubber tip 44. He measures the distance between the web 50 and the framing member 16 when the patio doors are fully closed and cuts off a sufficient portion of the rod to end and enable the rod 32 to fit which he installs the resilient tip 44 and the shaft 34 and the installation is complete.

Inasmuch as many changes could be made in the above structure without departing from the principles embodied therein, it is intended that the appended claims shall be broadly construed commensurate with the improvement in the arts and sciences to which this invention appertains.

What is desired to be secured by Letters Patent of the United States is:

1. In combination with a building closure which includes a pair of transparent panels, one of which panels is fixed and the other of which panels is slidably in a plane parallel to the fixed panel, and the sliding panel being of a size to permit passage of a person into and out of the building, said closure including a vertically extending first support means mounted adjacent to a vertical edge of the fixed panel, said first support means comprising a bracket having a central portion and a pair of arms extending outwardly from said central portion, a locking bar, one end of said locking bar and said pair of arms having cooperating pivotal connecting means, said locking bar being swingable between an inoperative, vertical position parallel to said first support means to said sliding panel toward said support means, and an operative, horizontal position in which position said bar physically engages a vertical edge of said sliding panel to block movement thereof, second support means mounted adjacent to the vertical edge of the sliding panel supporting said bar in its operative position, said support means being disposed in a clear, visible view across and fixed panel when in said second, operative position, said first support means including a pair of inwardly flared fingers spaced vertically from said pair of arms firmly grasping and retaining said locking bar in operative position parallel to said vertical portion of said bracket, and a leaf spring which exerts an upward force on said locking bar when said bar is in operative position.

2. In combination with a building closure which includes a pair of transparent panels, one of which panels is fixed and the other of which panels is slidably in a plane parallel to the fixed panel, the sliding panel being of a size to permit passage of a person into and out of the building and means locking the sliding panel in the closed position, said locking means comprising:

(a) a pivotal locking bar,
(b) first support means comprising a bracket with a vertically extending central portion mounted adjacent to said fixed panel and a pair of arm portions extending outwardly from one end of said central portion,
(c) said arm portions and one end of said bar having cooperative pivot means connecting together whereby to permit sliding movement of said bar about said pair of arm portions in a vertical plane,
(d) said first support means having holding means formed thereon spaced vertically from said arm portions to hold said locking bar in a substantially vertical, inoperative position parallel to said central portion to permit sliding movement of said sliding panel toward said first support means,
(e) said holding means consisting of a pair of fingers spaced apart a distance slightly less than the cross-sectional dimension of said locking bar,
(f) second support means mounted on said sliding door panel at a position substantially on the same horizontal level as the location of said pivot means, and adapted to be engaged by the second end of said bar,
(g) and said bar being pivotal between said inoperative position and an operative, horizontal position in which latter position the second end of said bar is supported by said second support means in physical engagement with a vertical edge of said sliding panel to block movement thereof, said bar being disposed in clear, visible view across said fixed panel when in said second, operative position.