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WINDOW CONSTRUCTION

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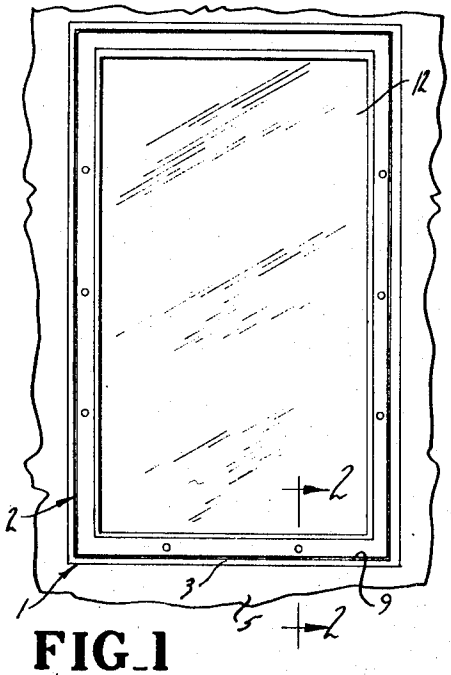


FIG_1

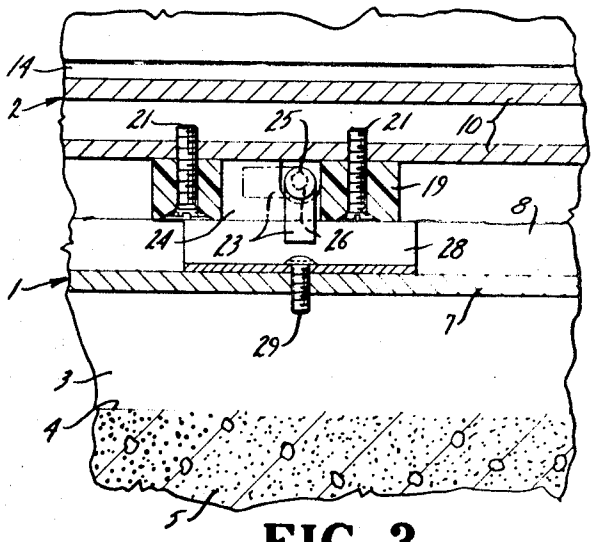


FIG_3

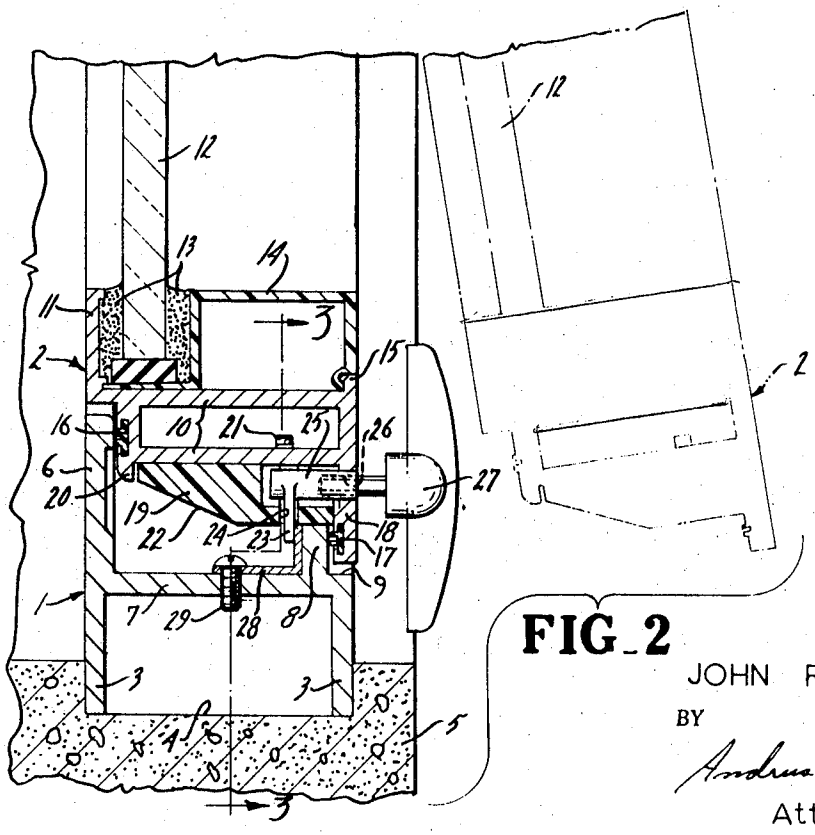


FIG_2

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WINDOW CONSTRUCTION

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ABSTRACT OF THE DISCLOSURE

A sash aligning and locking mechanism for a window. The window sash is hinged to the frame, and a series of locking units are employed to lock the sash within the frame. Each locking unit includes a camming block secured to the sash and the block has inclined camming surface which is adapted to engage the frame as the sash is pivoted to the closed position to cam or wedge the sash into proper alignment within the frame. A locking member is located within a recess in the block and is pivotable by an operating member from an unlocked position, in which the locking member is located wholly within the recess, to an operative or locking position in which the member projects outwardly of the block and engages a strike plate on the frame to lock the sash to the frame.

The invention relates to a window construction and more particularly to a mechanism for aligning and locking the window sash within the frame.

In many newly constructed air conditioned buildings, such as dormitories, hotels, office buildings, hospitals and the like, window sashes are locked within the frames so that the sashes cannot be opened by occupants of the building to disrupt the air conditioning system. As it is necessary on occasion to wash the outside of the windows, a provision is made with windows of this type to unlock the sash from the inside so that the sash can be pivoted or swung inwardly to a position where the outside of the glass can be washed. In this type of unit, the sash is unlocked by use of an operating member or tool which engages an opening in the sash and operates the locking mechanism. In many cases the tool takes the form of a key, having a polygonal shaped end, which engages a similarly shaped opening in the locking mechanism. By rotating the key, the locking mechanism can then be moved from the locked to unlocked position.

As the window sashes used in commercial buildings are relatively large in size, it is common practice to attach a series of camming blocks to the sash to aid in aligning the sash within the frame. As the sash is swung to the closed position the camming blocks engage the frame and act to wedge the sash into proper alignment.

The present invention is directed to an improved locking mechanism for a window which serves to properly align and lock the sash within the frame. According to the invention, a series of locking units are employed and each unit includes a cam block secured to the sash. Each block has an inclined or camming surface which engages the frame as the sash is swung to the closed position and acts to cam or wedge the sash into alignment within the frame.

A locking member is pivotally mounted within a recess in the camming block and the locking member is pivoted by an operating key from an inoperative or unlocked position, in which the locking member is located wholly within the recess, to a locking position in which the locking member extends outwardly of the recess and engages a strike plate on the frame to lock the sash to the frame.

The device of the invention acts to accurately set or align the sash within the frame and provides alignment regardless of whether the sash is small or relatively large and heavy. As the locking members are centered with respect to the cam blocks an improved locking action is provided which securely locks the sash against the frame.

As the latching member is associated with the cam block a fewer number of parts are required than conventional window locking units, thereby providing a less expensive construction.

Other objects and advantages will appear in the course of the following description.

The drawings illustrate the best mode presently contemplated of carrying out the invention.

In the drawings:

FIG. 1 is a side elevation of the inside of a window embodying the construction of the invention;

FIG. 2 is a transverse section taken along line 2—2 of FIG. 1; and

FIG. 3 is a section taken along line 3—3 of FIG. 2.

The drawings illustrate a window construction including a frame 1, which is mounted in the wall of a building and a sash 2 is pivotally connected along its upper edge to the frame so that the sash can be pivoted or swung inwardly about the pivotal connection for cleaning purposes. The hinges used to connect the sash to the frame are a conventional concealed type which are not visible from the interior of the building.

As best shown in FIG. 2, the frame includes a pair of generally parallel spaced legs 3 which extend within a recess 4 formed in the wall 5, which can be formed of concrete block, or the like. The joint between the legs 3 and the recess 4, can be sealed by a suitable caulking material to provide a watertight joint between the members.

In addition to the legs 3, the frame 1 also includes an outer flange 6 which projects from the web or central wall 7, and the outer surface of flange 6 is flush with the outer surface of the outer leg 3. A second flange 8 extends from the web 7 and is offset from the inner leg 3 to provide a shoulder or a ledge 9.

The sash includes a central box section 10 and a glazing leg 11 projects from the central box section and when the sash is in the closed position, the outer surface of the leg 11 is substantially flush with the outer surface of flange 6 of frame 1. A glass pane or light 12 is supported on the central section 10 and glazing strips 13 are positioned on both sides of the glass pane. The glass pane 12 is urged against the leg 11 by a vision strip 14 which is engaged with a lip 15 that projects from the central box section 10.

To seal the joint between the sash and the frame a sealing member 16 is disposed within a recess in the box section 10, and when the sash is in the closed position, engages the inner surface of flange 6 of the frame. A second seal is provided by a sealing member 17 located within a recess formed in flange 18 which projects from the central section 10. Sealing member 17 bears against the flange 7 of the frame when the sash is in the closed position to provide a watertight joint between the two members.

According to the invention, a series of locking units are employed which act to properly align the sash within the frame and lock the sash to the frame. As the sash 2 is designed for use in an air conditioned building, such as a hospital, dormitory, office building, or the like, the sash will normally have a considerable size and weight. To properly align or plumb the sash within the frame as the sash is moved to the closed position, a cam block 19 is associated with each locking unit, and the cam block extends between the flange 18 and a lip 20 which projects from the central section 10 of the sash. Cam block 19 is secured to the central section 10 of sash 2 by a pair of screws 21.

As best shown in FIG. 2, each cam block 19 includes an inclined surface 22 which is arranged to ride on the top of the flange 7 as the sash is swung downwardly to the closed position. The engagement of the inclined sur-

face 22 with the flange 7 acts to wedge or cam the sash into proper alignment within the frame 1.

To lock the sash within the frame, a latch 23 is mounted for pivotal movement within a recess 24 formed in the cam block 19. As shown in FIG. 2, a shaft 25 is secured to the latch 23 and extends through aligned openings in the cam block and in the flange 18. The outer end of the shaft 25 defines a recess 26 having a polygonal shape, and a key 27 or other operating member, having a complementary polygonal end is adapted to be inserted within the recess 26. By rotating the key 27, the latch 23 will be pivoted within the recess 24. Rotating the key 27 in one direction will move the latch 23 to an inoperative or open position in which the latch will be located wholly within the recess 24. By rotating the key 27 in the opposite direction the latch will be rotated out of the recess 24 and the tip of the latch will engage a strike plate 28 which is secured to the web 7 of the frame 1 by screw 29. The latch 23 is provided with a tapered surface which engages the strike plate and serves to gather the sash tightly against the frame. Strike plate 28 serves as a wear surface so that it is not necessary for the latch 23 to operate against the frame itself.

The key 27 is not normally maintained within the recess 26, so that the occupant of the room cannot open the window and thereby disrupt the air conditioning system. The locking units are designed to be opened only by a window washer or maintainence personnel, so that the sash can be pivoted inwardly for purposes of washing the window or repair.

The locking construction of the invention precisely aligns the sash within the frame so that the sash, regardless of its size and weight, will not be misaligned within the frame when it is swung to the closed position. The locking member which is associated with the cam block securely gathers the sash against the frame and locks the frame in this position. As the latch or locking member is associated with the cam block a more effective locking action is provided.

The present invention substantially reduces the number of parts required to align the sash within the frame and to lock it in the closed position over conventional constructions. As the number of parts are reduced, the overall cost of the window unit is correspondingly decreased.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. In a window construction having a frame and a sash hinged to the frame, a locking unit for aligning the sash within the frame and locking the sash to the frame, comprising an aligning member secured to the sash and having an inclined surface arranged to engage the frame as the sash is moved to the closed position to align the sash within the frame, said member having a recess therein with the open end of the recess facing said frame when the sash is in the closed position, a locking member disposed within the recess and pivotally connected to the sash, said locking member being pivotable from a first position in which the locking member is disposed substantially entirely within the recess to a second position in which the locking member projects outwardly of said recess, and means located on the frame and arranged to be engaged by the locking member when the locking

member is in the second position to thereby lock the sash to the frame.

2. The construction of claim 1, and including operating means connected to said locking member for pivoting said locking member between said first and second positions.

3. The construction of claim 1, wherein said inclined surface extends transversely of said sash and said recess is located adjacent said inclined surface.

4. The construction of claim 3, wherein said inclined surface includes a first end disposed adjacent the outer surface of said sash and a second end disposed adjacent the inner surface of said sash, said inclined surface tapering toward the frame in a direction from the first end to the second end.

5. The construction of claim 4, wherein said recess is located adjacent the second end of said inclined surface.

6. In a window construction, a frame, a sash, said sash being hinged to the frame and adapted to swing inwardly to an open position, said frame including a first wall projecting toward said sash when the sash is in the open position, said sash including a second wall projecting toward the frame when the sash is in the closed position and disposed generally flatwise to said first wall, sealing means between said first and second walls, a cam block secured to the sash and including an inclined camming surface, said camming surface being disposed to ride on the outer extremity of said first wall as the sash is moved between the open and closed position, said camming member including a recess facing said frame, a locking member mounted for pivotal movement within the recess, said locking member being movable from a first position whereby the locking member is disposed substantially wholly within the recess to a second position in which the locking member projects outwardly of said recess, means located on the exterior of the sash and operably connected to the locking member for pivoting the locking member between the first and second positions, and means located on said frame and disposed to be engaged by the locking member as the locking member is moved to the second position to thereby lock the sash to the frame.

7. The construction of claim 6, wherein said last named means constitutes a portion of said first wall.

8. The construction of claim 6, wherein said cam block includes a relatively thin end and a relatively thick end, said thick end being located adjacent the second wall and said camming surface extending from said thick to thin end and being normal to said second wall.

9. The construction of claim 8, wherein said recess is located in said thick end adjacent said second wall.

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KENNETH DOWNEY, Primary Examiner

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49—401, 395; 52—208; 292—101, 202