Oct. 17, 1961 W. FRANK 3,004,304

ROTATABLE AND TILTABLE WINDOW STRUCTURES

Filed May 20, 1959 3 Sheets-Sheet 1

Fig. 1

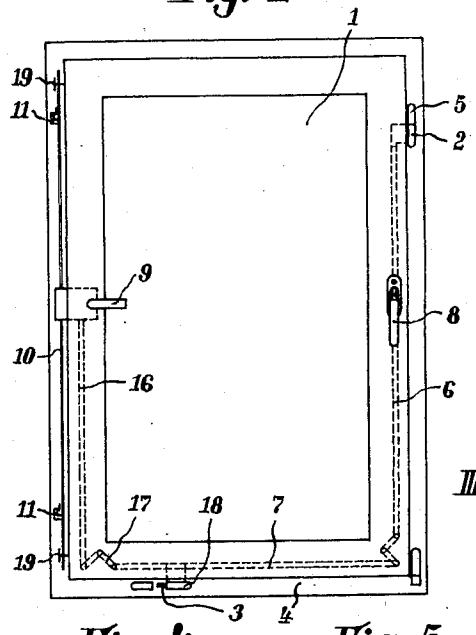


Fig. 2

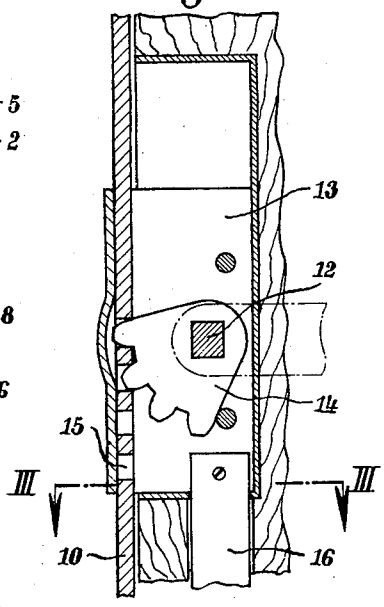


Fig. 4

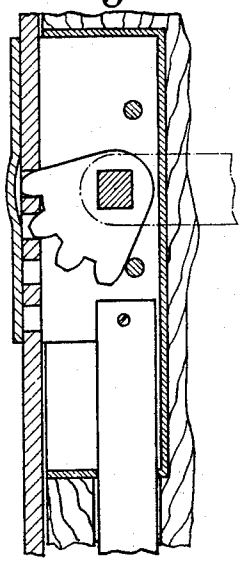
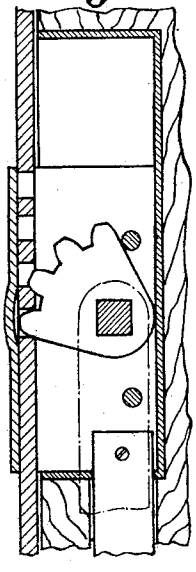


Fig. 5



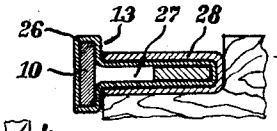


Fig. 3

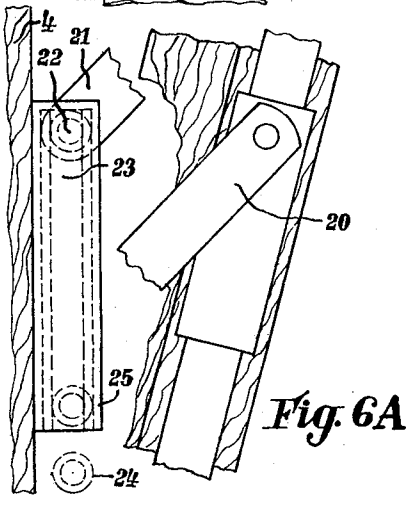


Fig. 6A

Fig 6B

ROTATABLE AND TILTABLE WINDOW STRUCTURES

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Fig. 7

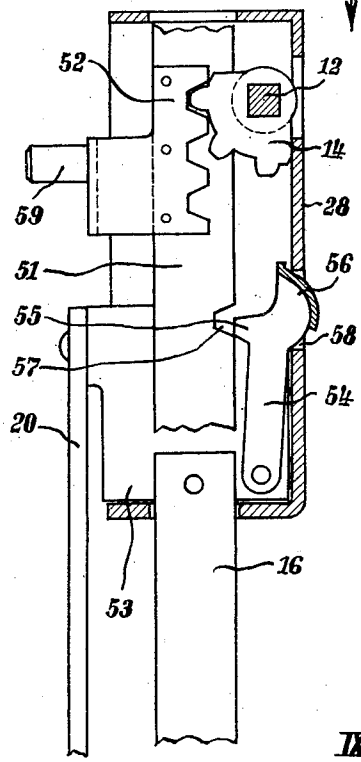


Fig. 8

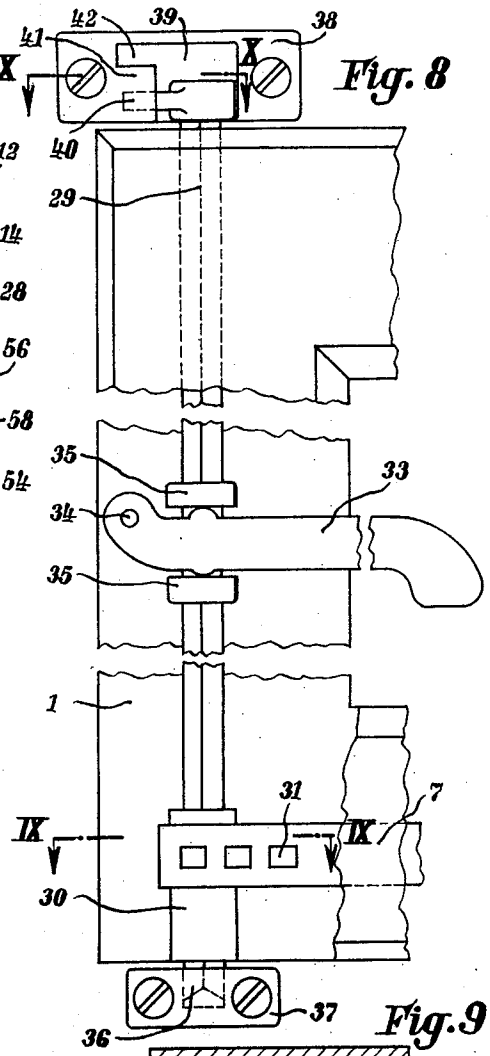


Fig. 10

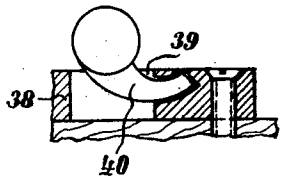
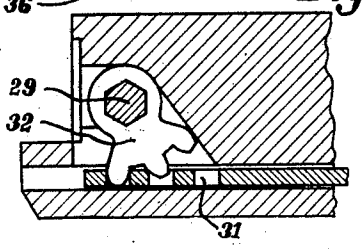


Fig. 9



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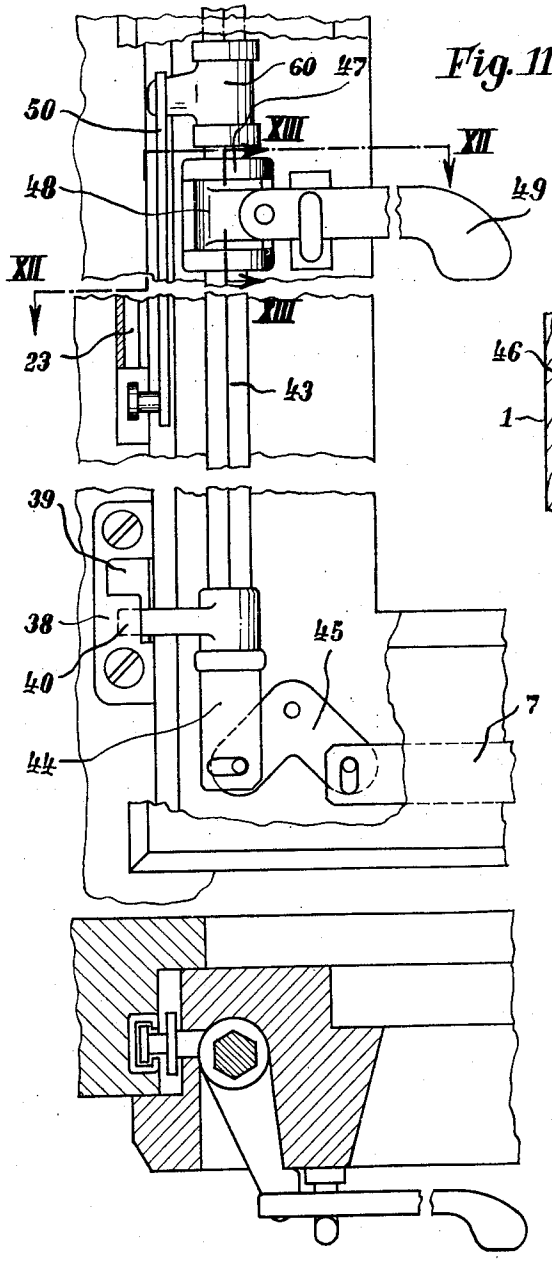


Fig. 11

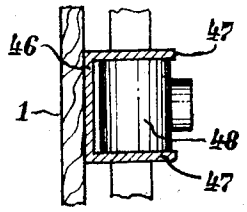


Fig. 13

Fig. 12

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ROTATABLE AND TILTABLE WINDOW STRUCTURES

Wilhelm Frank, Oberaichen, Kreis Boblingen, Wurttemberg, Germany

Filed May 20, 1959, Ser. No. 814,637
15 Claims. (Cl. 20—53)

The present invention relates, in general to windows and, in particular, to windows of the type in which the window is rotatable about a vertical axis as well as tiltable about a horizontal axis.

Prior art windows, of the type to which the present invention relates, are provided with a locking lever at the side of the window opposite the side thereof which is rotatable about a vertical axis.

For operating such windows, the locking lever acts on push-pull rods which are usually mounted in the intersection of a vertical pivot, about which the window rotates, and of a horizontal pivot, about which the window tilts. The lever must be set either for turning or tilting of the window, after which the desired window motion can be effected by loosening the locking lever. However, this type of window operation is somewhat cumbersome, and has the further disadvantage that improper manipulation of the locking lever, for example, might cause the window flap or sash to fall and be damaged. Safety devices have been provided to eliminate this hazard but, of necessity, they require additional parts and thus increase the cost.

Therefore, it is an object of the present invention to provide means aiming at the elimination of the disadvantages of the prior art.

Another object of the present invention is to provide means ensuring independent movement, on the one hand, of the locking lever and its associated parts and, on the other hand, of the push-pull rods so as to superimpose the two movements upon each other.

Another object of the present invention is to provide means conducive to a very efficacious construction where only one part has to be operated either to turn the window about a vertical axis or to tilt it about a horizontal axis.

A further object is to provide means affording a generally simplified window construction of the type to which the present invention relates.

A still further object is to provide means facilitating the prevention of improper manipulation of the window.

Pursuant to one important feature of the present invention, the disadvantages of the prior art are eliminated by the provision that the push-pull rods in the window fittings are connected with locking elements and the locking lever, with its associated parts, is movable independently of the push-pull rods in such manner that the two movements are superimposed.

According to another feature of the invention, a longitudinally displaceable member or casing is mounted at the side of the window which has the lock. The casing is operatively connected to the push-pull rods which act on locking elements. The locking lever is preferably mounted for free rotation on the longitudinally movable housing. The movements of the push-pull rods are transmitted to the movable casing so that the locking lever and its locking elements move in a corresponding manner. In this manner, it is possible to open the locks, which

are disposed on the side of the window opposite the vertical axis of rotation thereof, for tilting the window by moving the actuating lever for the push-pull rods. In order to lock the window flap after return thereof from its tilted position, it is necessary also to actuate the lever which moves the push-pull rods, since the other locks are also closed by movement of the locking lever. Therefore, it is necessary only to actuate the locking lever to effect rotary movement of the window flap.

In the above described arrangement, the actuating or locking lever is vertically reciprocated when the push-pull rods are moved so that a corresponding large opening must be provided in the window frame.

In order to obviate such movement of the actuating lever, it can be mounted on the window so that it is freely rotatable but fixed against displacement. In this arrangement a pawl engages the longitudinally displaceable casing during movement of the latter and operatively connects the latter with the locking elements. When the push-pull rods are reciprocated, there is no longitudinal displacement of the actuating or locking lever, but only a rotary movement thereof, which is desirable since the opening for the locking lever can be made relatively small. The longitudinally displaceable casing can, in addition, constitute a side bearing for a locking bar movable by the locking lever, so that the necessity for an additional part is obviated. The pawl, which is provided for coupling the locking bar with the displaceable casing, is preferably supported with its lower end freely rotatable on the movable casing, and is provided at its upper end with two oppositely directed lugs, one of which is adapted to engage in a complementary recess in the locking bar, and the other is rounded off so that, in the lower position of the casing, it engages a cut-out in the casing guide. This results in a particularly simple and safe construction.

The movable housing is preferably T-shaped in cross-section. The transverse portion or head serves as a guide for the locking bar and the longitudinal portion receives the locking lever, its driving element and a connecting rod. In order to facilitate sliding of the casing, the latter is mounted in a guide having a U-shaped cross-section which is inserted in the window. As previously indicated, the present invention provides a simple protection against improper manipulation of the window by limiting the major motion of the locking elements by suitable stops. In the rotary setting or condition of the window flap, the locking elements of the locking lever are open and, according to the present feature, in a limited position so that no movement of the pull rods is possible.

In order to limit the tilting of the window flap, an arm can be used in addition to bars arranged on the upper horizontal edge of the flap. According to another feature of the invention this arm is mounted for free rotation on the movable casing, and its free end glides in a guide arranged on the window frame, said arm being disengaged from the guide in the rest position of the flap.

Pursuant to a particular embodiment, a longitudinally displaceable and pivotally movable locking bar is secured on the side of the window having the locking lever. Movement of the locking bar is effected, on one hand, by the push-pull rods and, on the other hand, by the locking lever, the locking bar cooperating with the locking elements secured to the other window part which can be locked and unlocked by lifting and turning. In

this embodiment, one bar can be eliminated since the locking bar and the connecting bar are combined in one part. The rotary movement of the locking bar is derived preferably from the push-pull rods and the longitudinal motion in this case is effected by the locking lever. The locking bar is preferably provided at its lower end with a longitudinally displaceable but non-rotary sleeve which is equipped on its circumference with a toothed segment which engages recesses provided in horizontal push-pull rods. The freely rotatable locking lever, secured on the window, abuts the locking bar between two annular lugs fixed on the locking bar. In order to minimize parts, the locking bar is formed, at its lower end, as an angle hinge pin and cooperates with a complementary fitting.

For special uses, provision is made for a modified form wherein longitudinal movement of the locking bar is derived from push-pull rods, and rotary motion is effected by the locking lever. The locking bar is provided at its lower end with a rotary but non-displaceable sleeve which is connected with the horizontal push-pull bar by an angle lever pivoted on the window. The locking lever is mounted for free rotary movement on the displaceable but non-rotary sleeve and the latter is secured between the arms of a forked bearing mounted on the window. In order to mount an additional bar, another freely rotatable but non-displaceable sleeve is mounted on the locking bar which receives, in free rotation, the arm cooperation with a guide. In this embodiment, the locking bar can be provided with one or more locking hooks which engage L-shaped recesses in parts secured on the other window part.

These and other objects of the invention will become further apparent from the following detailed description, reference being made to the accompanying drawings showing preferred embodiments of the invention.

In the drawings which illustrate the best modes presently contemplated for carrying out the invention:

FIG. 1 is a view, in elevation, of a window pursuant to the present invention;

FIG. 2 is a longitudinal section, on an enlarged scale, taken through the part of the window provided with the locking lever, the latter being in the closed position thereof;

FIG. 3 is a sectional view taken on the line III—III of FIG. 2;

FIG. 4 is a view similar to FIG. 2 with the window in tilted-open position;

FIG. 5 is a view similar to FIG. 2 with the window in rotated-open position;

FIGS. 6A and 6B are fragmentary side views, on an enlarged scale, of the window in tilted-open position;

FIG. 7 is a view similar to FIG. 2 and illustrates another embodiment;

FIG. 8 is a fragmentary front view of the window pursuant to the embodiment of FIG. 7, showing the side provided with the locking lever;

FIG. 9 is a sectional view taken on the line IX—IX of FIG. 8;

FIG. 10 is a sectional view taken on the line X—X of FIG. 8;

FIG. 11 is a view similar to FIG. 9 and illustrates another embodiment;

FIG. 12 is a sectional view taken on line XII—XII of FIG. 11; and

FIG. 13 is a sectional view taken on line XIII—XIII of FIG. 11.

Referring now to FIGS. 1 through 6 in detail, there is shown a window **100** pursuant to the present invention. Said window comprises a fixed window frame **4** on which there is hung a movable flap **1** which comprises a sash **101** provided with a window pane **102**. The window flap or movable window member **1** is mounted both for rotary or turning movement about a vertical axis by a pivot **2** and for tilting movement about a horizontal axis by a pivot **3**. The window **100** is shown in its closed condition in FIG. 1. Pivot **2** is receivable in a complementary lock element **5**, in which it is freely rotatable, and constitutes therewith the lock **5A**.

Similarly, pivot **3** is receivable in a complementary lock element **18**, in which it is freely rotatable, and constitutes therewith the lock **18A**. In order to open and close locks **5A** and **18A**, provision is made for the vertically reciprocable push-pull rod **6** and the horizontally reciprocable push-pull rod **7** mounted in sash **101**. Rod **6** mounts pivot **2** to move the latter into and out of complementary lock part **5** and rod **7** mounts pivot **3** to move the latter into and out of complementary lock part **18**. Rods **6** and **7** are coupled by the pivoted angle lever **6A**. A manually operable lever **8**, mounted on sash **101** and secured to rod **6**, effects reciprocation of both rods in conventional manner. A locking lever **9** is mounted on the sash on the side thereof opposite the side on which lever **8** is mounted. Lever **9** actuates a locking bar **10** that cooperates with locks **11** vertically spaced on the window frame **4**. Lever **9** is provided with a rotary shaft **12** which is mounted in a vertically displaceable casing **13**, as best shown in FIG. 2. Shaft **12**, which is freely rotatable in the casing **13**, mounts a toothed gear segment **14** which engages in complementary recesses **15** provided on the locking bar **10**. It will be understood that turning of locking lever **9** will effect rotary movements of shaft **12** and segment **14** to raise and lower bar **10** to open or close locks **11**.

Movable casing **13** is coupled by connecting rod **16** and the pivoted angle lever **17** with the horizontal push-pull rod **7**. Consequently, it will be apparent that actuation of lever **8** will also effect vertical reciprocation of casing **13**. FIG. 2 illustrates the window in its closed condition. The casing **13** and the locking bar **10** are both in their lowermost positions so that the locks **11** are closed. Lock **18A** is open and lock **5A** is closed, as shown in FIG. 1, so that the window flap **1** can be turned and rotated about pivot **2**, which in the illustrated condition, constitutes a vertical axis of rotation. This can be accomplished by a corresponding rotation of the locking lever **9** to the rotated position thereof shown in FIG. 5 wherein the manual lever **9** has been turned down from the position thereof in FIG. 1, so that segment **14** has moved locking bar **10** up to open locks **11**. Movement of segment **14** to its upper and lower positions are limited by detents **14A** and **14B**, respectively.

In order to open the window to the tilted position thereof, the flap **1** must first be in the closed position thereof shown in FIG. 1. Thereafter, lever **8** is operated or turned to open lock **5A** and to close lock **18A**. The resultant movement of rod **7** is transmitted to connecting rod **16** so that casing **13** and locking bar **10** are pushed up to release locks **11**.

Consequently, it will be apparent that lever **9** is operated in order to effect rotary movement of window member **102** about a vertical axis and lever **8** is operated to effect tilting movement of said member about a horizontal axis, whereby to simplify the operation of said window member.

Stops **19** limit movements of the locking bar **10**. When locking bar **10** is in its uppermost position by operation of locking lever **9**, as shown in FIG. 5, actuation of lever **8** is no longer possible since the locking bar is fixed in its position and the friction of segment **14** relative to bar **10** is very large.

FIGS. 6A and 6B illustrate another feature of the invention. An arm **20** is mounted, as at **20A**, for free rotation on movable cvasing **13**. The arm is provided at its free end **21** with a bolt **22** which rides in a guide member **23** mounted on window frame **4**. In the tilted open position shown in FIG. 6A, upward movement of bolt **22** is limited by the top of the guide member **23**. When the window member **1** is returned to its closed position from its tilted open position, bolt **22** is in the position

thereof indicated at 24, due to the movement of casing 13. An intermediate position of the bolt is shown at 22.

As best shown in FIG. 3, the casing 13 is T-shaped in cross-section. The hollod bend or transverse portion 26 serves as a guide for the locking bar 10, while the shaft 12 of the locking lever, with the segment 14 and the connecting rod 16, is supported by the longitudinal portion 27. In order to facilitate sliding of the casing 13, the latter is mounted in a U-shaped guide 28 inserted in the wooden frame or sash 101.

In the embodiment illustrated in FIGS. 1–6, operation of lever 8 is accompanied by a longitudinal movement of locking lever 9. This requires a relatively large recess 13A in sash 101. FIG. 7 illustrates an embodiment in which longitudinal movement of lever 9 is obviated. Shaft 12 of lever 9 in FIG. 7 is not secured to casing 13 but is secured to sash 101. Locking bar 51, which is cut off at both top and bottom, is mounted above connecting rod 16 and is provided with ratchet teeth 52 which engage gear segment 14. Londitudinally displaceable casing 53 has a slightly different form than corresponding casing 13 and, in addition, has a freely rotatable pawl 54. Pawl 54 has two lugs 55 and 56. Lug 55 engages recess 57 in bar 51 and lug 56 protrudes, in the lowermost position of the casing, into a cutout 58 in guide 28.

As soon as casing 53, and consequently pawl 54, are moved up by motion of connecting rod 16, pawl 54 turns to the left, as shown by arrow 54A, due to cooperation of its rounded lug 56 and cutout 58, so that its lug 55 engages in recess 57 of bar 51 to establish a rigid connection between the bar and the connecting rod so that the bar is also moved upwardly. This carries along the segment 14 causing the latter, and consequently shaft 12 and lever 9 to rotate but not to be moved upwardly. However, if the lever 9 and the shaft 12 are moved, while in the position thereof shown in FIG. 7, lug 55 does not engage in recess 57 and bar 51 is moved without any change in the position of rod 16.

In the present embodiment bar 51 can also be provided with a locking journal 59 which cooperates in conventional manner with a complementary fitting (not illustrated). In addition, arm 20 can be connected to the casing 53.

There are several possibilities of superposing the two motions of the individual locking elements. Instead of two longitudinally movable bars, as shown in FIGS. 1–7, it is possible to use two rotary bars.

In addition, it is also possible to arrange the two bars so that one is pivoted while the other is longitudinally displaceable. This results in another embodiment depending on whether the rotary bar constitutes a locking bar or a connecting bar. In two additional embodiments represented in the drawings, the functions of the connecting and locking bars are combined and only one bar is provided to perform both functions simultaneously.

Referring now to FIG. 8 in detail, locking bar 29 is connected with a sleeve 30 so that the locking bar can be displaced longitudinally therein but not rotated. Sleeve 30 is secured on window member 1 in a manner not illustrated. The horizontal push-pull rod 7 has recessed 31 at its free end. As shown in FIG. 9, said recesses are engaged by a toothed gear segment 32 mounted at the circumference of sleeve 30. Movements of push-pull rods 6 and 7 are thus transmitted, as a rotary motion, to locking bar 29.

Lifting motion is achieved by locking lever 33 pivotally mounted on window member 1. Lever 33 is pivoted, as at 34, and abuts two annular vertically spaced lugs 35, rigidly connected with bar 29, so that lever 33 can turn freely. At its lower end bar 29 is formed into a hinge pin 36 and cooperates in conventional fashion with complementary fitting 37. In this manner, the need for lock part 18 in FIG. 1 is obviated.

In order to open the window member 1 to rotate about a vertical axis, locking lever 33 is pivoted upwardly so as

to move bar 29 upwardly. This disengages pin 36 from fitting 37. A fitting 38 is mounted on frame 4 above the upper end of the locking bar. The fitting has an L-shaped recess 39. A hook-shaped part 40, at the upper end of bar 29, extends behind a lug 41, provided on part 38, in the lowermost position of bar 29. Upon upward movement of bar 29, hook 40 moves upwardly beyond lug 41 into the upper portion 42 of cutout 39 whereby to release bar 29 so that the window member can be rotated.

To tilt the window, lever 8 is moved whereupon the bar 29 is rotated about its own axis by the push-pull rod 7 so that hook 40 can move out of recess 39. Hinge pin 36 remains in hinge fitting 37 since this permits a tilting motion.

FIG. 11 illustrates another embodiment of the invention wherein longitudinal motion of locking bar 43 is effected by push-pull rod 7. Bar 43 is rotatable but not axially displaceable within a sleeve 44. Sleeve 44, in turn, is hinged by an angle lever 45, pivoted on window member 1 as at 45A, on rod 7.

As best seen in FIG. 13, a forked bearing 46 is secured on window member 1. Bearing 46 receives between its arms 47—47 a sleeve 48 which is connected with locking bar 43 for displacement but not for rotation thereby. Locking lever 49 is hinged, as at 49A, freely rotating in sleeve 48.

Bar 43 is again provided with a hook-shaped element 40 which engages an L-shaped recess 39 of fitting 38. The method of operation is substantially the same as in FIG. 8. The only difference is in the derivation of the individual movements. In FIG. 11, the longitudinal motion of bar 43 is obtained by rod 7 and rotary motion by turning lever 49 after its release from catch 49B, and thereby turning sleeve 48 on bar 43.

In order to provide an additional arm 50 in this embodiment, another sleeve 60 is mounted on bar 43, freely rotatable but nondisplaceable, to carry arm 50. Arm 50 cooperates with guide 23 in the same manner as described in connection with FIG. 6.

In the embodiment illustrated in FIG. 1, the various moving parts are mounted on window member 1, while the fixed parts are mounted on window frame 4.

It is within the scope of the present invention to utilize the opposite arrangement wherein the movable parts are mounted on frame 4 and the fixed parts on member 1. It is also possible to mount, selectively, moving and fixed parts both on the frame and on the window member. The securement of the locking lever 9 on frame 4 provides a particularly simple embodiment. The connecting rod 16 illustrated in FIG. 1 can also be extended at the top and can even be conducted about the whole frame. It is possible also to couple the connecting rod with the push-pull rod 7 so that a closed rod drive is obtained.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking bar operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking bar and said actuating lever to transmit the motion of said actuating lever to said locking bar for operating the latter, said locking lever and said locking bar being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first

releasable pivot means constituting said vertical axis at said one side of said assembly, and a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in opposite senses, respectively, under the control of said reciprocable means.

2. A window assembly as set forth in claim 1, wherein provision is made for a longitudinally displaceable member at said other side, said displaceable member being operatively coupled to said reciprocable means for movement in response thereto and being operatively coupled to said locking member to actuate the latter.

3. A window assembly as set forth in claim 1, wherein provision is made for a longitudinally displaceable member at said other side, said displaceable member being operatively coupled to said reciprocable means for movement in response thereto and being operatively coupled to said locking member to actuate the latter, the operative coupling of said displaceable member to said reciprocable means comprising a connecting rod and angle lever.

4. A window assembly as set forth in claim 1, wherein provision is made for a longitudinally displaceable member at said other side, said displaceable member being operatively coupled to said reciprocable means for movement in response thereto and being operatively coupled to said locking bar to actuate the latter, said locking lever being mounted for free rotary movement on said displaceable member.

5. A window assembly as set forth in claim 1, wherein provision is made for a longitudinally displaceable member at said other side, said displaceable member being operatively coupled to said reciprocable means for movement in response thereto and being operatively coupled to said locking bar to actuate the latter, said displaceable member comprising a casing which forms a slidable bearing for said locking bar.

6. A window assembly as set forth in claim 1, wherein provision is made for a longitudinally displaceable member at said other side, said displaceable member being operatively coupled to said reciprocable means for movement in response thereto and being operatively coupled to said locking bar to actuate the latter, said displaceable member comprising a casing which forms a slidable bearing for said locking bar, an arm having one end pivotally mounted on said casing, and a guide member mounted in said frame, the other end of said arm being slidable in said guide member.

7. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking member operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking member and said actuating lever to transmit the motion of said actuating lever to said locking member for operating the latter, said locking lever and said locking member being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first releasable pivot means constituting said vertical axis at said one side of said assembly, and a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in opposite senses, respectively, under the control of said reciprocable means, said locking member being mounted at said other side of said assembly both for longitudinal displacement and for rotary movement, said locking member being rotatable by said reciprocable means and being displaceable by said locking lever, said locking means including a fitting on said window frame with which said locking member cooperates and from which it is releasable both by longitudinal displacement and rotary movement.

8. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking member operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking member and said actuating lever to transmit the motion of said actuating lever to said locking member for operating the latter, said locking lever and said locking member being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first releasable pivot means constituting said vertical axis at said one side of said assembly, a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in opposite senses, respectively, under the control of said reciprocable means, said locking member being mounted at said other side of said assembly both for longitudinal displacement and for rotary movement, said locking member being rotatable by said reciprocable means and being displaceable by said locking lever, said locking means including a fitting on said window frame with which said locking member cooperates and from which it is releasable both by longitudinal displacement and rotary movement, a sleeve mounted on said locking member at the lower end thereof, said sleeve being retained against longitudinal movement but being rotatable, a gear segment provided on said sleeve, and cooperating recesses provided in said reciprocable means.

9. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking member operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking member and said actuating lever to transmit the motion of said actuating lever to said locking member for operating the latter, said locking lever and said locking member being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first releasable pivot means constituting said vertical axis at said one side of said assembly, a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in oposite senses, respectively, under the control of said reciprocable means, said locking member being mounted at said other side of said assembly both for longitudinal displacement and for rotary movement, said locking member being rotatable by said reciprocable means and being displaceable by said locking lever, said locking means including a fitting on said window frame with which said locking member cooperates and from which it is releasable both by longitudinal displacement and rotary movement, a sleeve mounted on said locking member at the lower end thereof, said sleeve being retained against longitudinal movement but being rotatable, a gear segment provided on said sleeve, cooperating recesses provided in said reciprocable means, said locking lever being mounted for pivotal movement on said window member, and vertically spaced abutments provided on said locking member between which said locking lever extends.

10. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at

one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking member operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking member and said actuating lever to transmit the motion of said actuating lever to said locking member for operating the latter, said locking lever and said locking member being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first releasable pivot means constituting said vertical axis at said one side of said assembly, a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in opposite senses, respectively, under the control of said reciprocable means, said locking member being mounted at said other side of said assembly both for longitudinal displacement and for rotary movement, said locking member being rotatable by said reciprocable means and being displaceable by said locking lever, said locking means including a fitting on said window frame with which said locking member cooperates and from which it is releasable both by longitudinal displacement and rotary movement, a sleeve mounted on said locking member at the lower end thereof, said sleeve being retained against longitudinal movement but being rotatable, a gear segment provided on said sleeve, cooperating recesses provided in said reciprocable means, a hinge pin provided in said locking member below said sleeve, and a complementary hinge part for said hinge pin provided on said frame.

11. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking member operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking member and said actuating lever to transmit the motion of said actuating lever to said locking member for operating the latter, said locking lever and said locking member being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first releasable pivot means constituting said vertical axis at said one side of said assembly, a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in opposite senses, respectively, under the control of said reciprocable means, said locking member being mounted at said other side of said assembly both for longitudinal displacement and for rotary movement, said locking member being rotatable by said reciprocable means and being displaceable by said locking lever, said locking means including a fitting on said window frame with which said locking member cooperates and from which it is releasable both by longitudinal displacement and rotary movement, said first mentioned pivot means being a sleeve mounted on said locking member, said sleeve being rotatable but fixed against vertical displacement, and an angle lever pivotally mounted on said window member and interconnected between said reciprocable means and said sleeve.

12. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking member operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking member and said actuating lever to transmit the motion of said actuating lever to said locking member for operating the latter, said locking lever and said locking member being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first releasable pivot means constituting said vertical axis at said one side of said assembly, a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in opposite senses, respectively, under the control of said reciprocable means, said locking member being mounted at said other side of said assembly both for longitudinal displacement and for rotary movement, said locking member being rotatable by said reciprocable means and being displaceable by said locking lever, said locking means including a fitting on said window frame with which said locking member cooperates and from which it is releasable both by longitudinal displacement and rotary movement, said first mentioned pivot means being a first sleeve mounted on said locking member, said first sleeve being rotatable but fixed against vertical displacement, an angle lever pivotally mounted on said window member and interconnected between said reciprocable means and said sleeve, a second sleeve mounted on said locking member, said second sleeve being longitudinally displaceable but fixed against rotation, said locking lever being pivotally mounted on said second sleeve, and a forked bearing mounted on said window member, said second sleeve being mounted between the arms of said bearing.

13. In a window assembly having a window frame in fixed disposition and a window member mounted on said frame for movement selectively about vertical and horizontal axes, respectively, an actuating lever mounted at one side of said assembly, a locking lever mounted at the other side of said assembly, means for locking said window member in closed condition on said frame including a locking member operable by said locking lever to open and close said locking means, reciprocable means operatively interconnecting said locking member and said actuating lever to transmit the motion of said actuating lever to said locking member for operating the latter, said locking lever and said locking member being operable independently of said reciprocable means to superpose the motions resulting from operation of said levers, a first releasable pivot means constituting said vertical axis at said one side of said assembly, a second releasable pivot means constituting said horizontal axis at the bottom of said assembly, said pivot means being operable in opposite senses, respectively, under the control of said reciprocable means, said locking member being mounted at said other side of said assembly both for longitudinal displacement and for rotary movement, said locking member being rotatable by said reciprocable means and being displaceable by said locking lever, said locking means including a fitting on said window frame with which said locking member cooperates and from which it is releasable both by longitudinal displacement and rotary movement, said first mentioned pivot means being a first sleeve mounted on said locking member, said first sleeve being rotatable but fixed against vertical displacement, an angle lever pivotally mounted on said window member and interconnected between said reciprocable means and said first sleeve, a second sleeve mounted on said locking member, said second sleeve being longitudinally displaceable but fixed against rotation, said locking lever being pivotally mounted on said second sleeve, a forked bearing mounted on said window member, said second sleeve being mounted between the arms of said bearing, a fitting provided with an L-shaped recess mounted on said frame and said locking member having a hook engageable in said recess.

14. A window assembly as set forth in claim 1, wherein provision is made for a longitudinally displaceable member at said other side, said displaceable member

being operatively coupled to said reciprocable means for movement in response thereto and being operatively coupled to said locking member to actuate the latter, said locking bar having a plurality of recesses therein, said locking lever being mounted for free rotary movement on said displaceable member, and pawl means fixed to said locking lever responsive to the movement of said locking lever engaging said locking bar, said pawl means having teeth extending into said recesses.

15. A window assembly as set forth in claim 14, wherein said displeaceable member includes a casing forming a slidable bearing for said locking member, said pawl being pivotally mounted in said casing, a guide in which said casing is mounted for slidable movement thereof, said casing being T-shaped in cross-section, the transverse portion of said casing constituting a guide for said locking member and the longitudinal portion of said casing mounting a shaft for said locking lever.

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