

June 25, 1935.

F. C. WENZEL

2,006,004

WINDOW CASEMENT

Filed Aug. 30, 1932

2 Sheets-Sheet 1

Fig 1

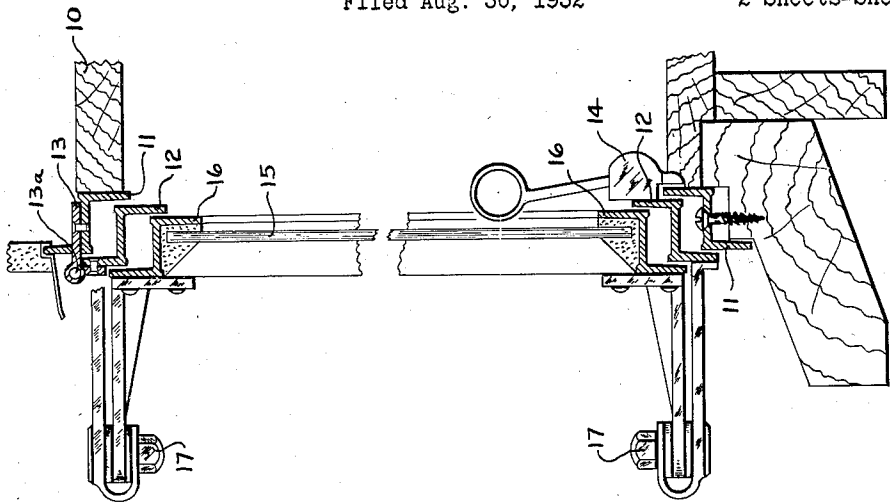


Fig 2

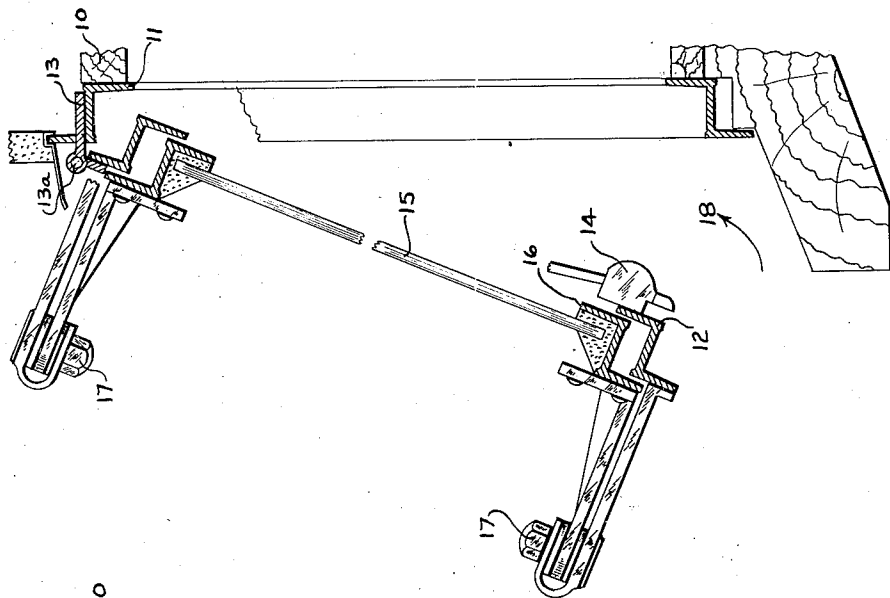
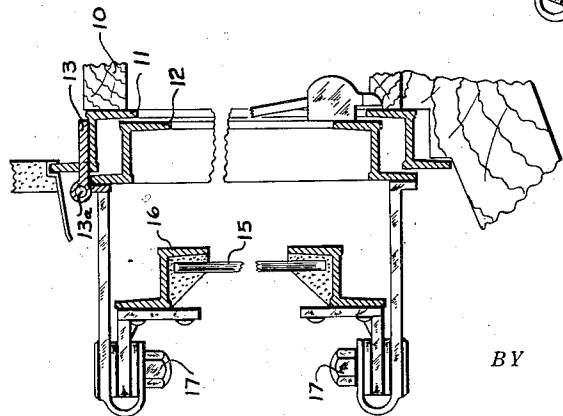


Fig 3



BY

INVENTOR
Frederick C. Wenzel
A. H. Golden
ATTORNEY

June 25, 1935.

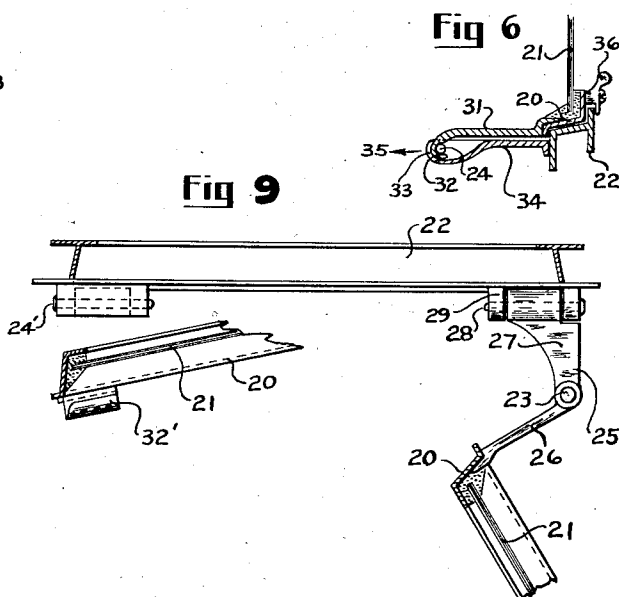
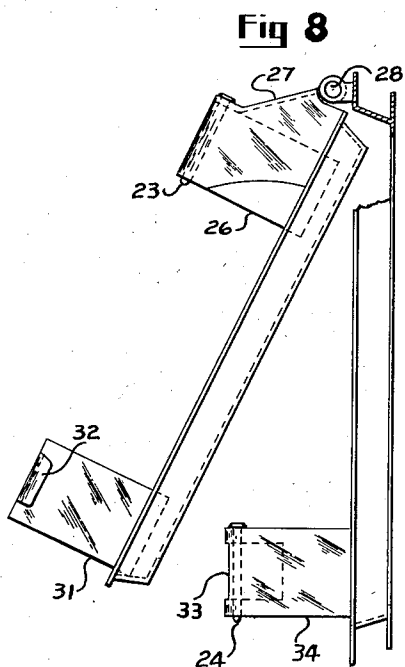
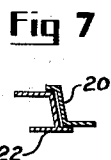
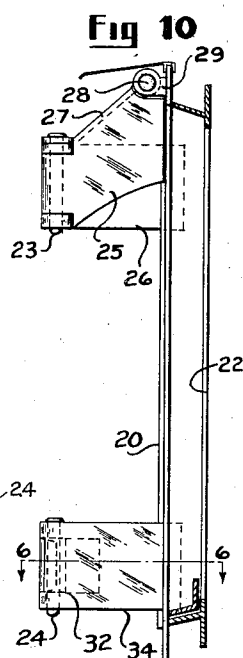
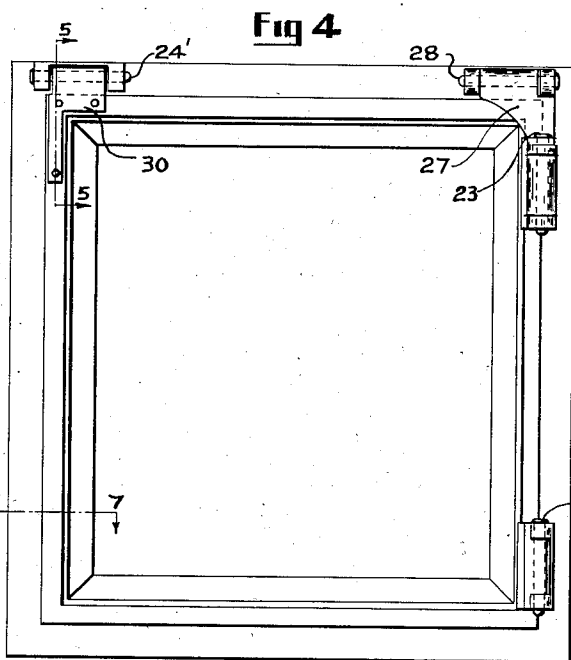
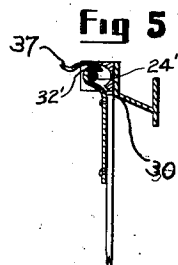
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BY

INVENTOR
Frederick C. Wenzel
A. H. Golden
ATTORNEY

UNITED STATES PATENT OFFICE

2,006,004

WINDOW CASEMENT

Frederick C. Wenzel, Stamford, Conn.

Application August 30, 1932, Serial No. 631,025

24 Claims. (Cl. 189—66)

My invention relates to casement windows, and more especially to casement windows of the type formed of structural steel, and themselves co-operable with structural steel window frames.

More particularly, it is the object of this invention to devise a window casement which will have movement about more than one pivot relatively to its frame, whereby to supply a varied type of ventilation while it is at the same time secured in relatively strong relationship to the window frame.

It is the further object of my invention to mount my casement window in particular hinged relationship to its frame utilizing a type of hinge lending itself to the particular objects of the invention.

For a description of my invention, I shall refer to the drawings, wherein Fig. 1 is a partial section through a window frame and the casement of one of my modifications. Fig. 2 shows the swinging movement of the window casement about one pivot, while Fig. 3 is a side view showing the relationship of the casement to the various structural elements when the window is rotated about a second pivot.

Fig. 4 is a front view of a modification of my invention, while Figs. 5 and 7 are sections along the lines 5—5 and 7—7 of Fig. 4. Fig. 6 is a section along line 6—6 of Fig. 10 which is in itself a side view of Fig. 4. Fig. 8 illustrates the swinging of my casement about a horizontal pivot, while Fig. 9 illustrates the position of the casement in its swinging movement about a vertical pivot.

Referring now more particularly to Figs. 1, 2 and 3, reference numeral 10 indicates the body of the house or other structure to which is secured a structural iron window frame 11 in any usual manner.

A second structural steel frame member 12 is pivoted to the frame 11 by means of a hinge member 13 so as to be capable of movement about a horizontal axis on a pivot 13^a, there being preferably two of such hinges to furnish a secure mounting for the frame 12. The frame 12 lies normally in nested relation to frame 11 and is equipped with a latch member 14 by which it is secured against movement relatively to the frame 11 when desired. The casement window pane 15 is mounted in a third structural steel frame 16, in nested relationship to the frame 12, whereby the relationship of frames 16, 12 and 11 is such as to make it extremely difficult for air to filter through to the inside of the structure. This frame 16 is secured by a pair of hinges 17

to the second or intermediate frame member 12 and for rotation about a vertical pivot thereon. Preferably, also, there are means provided, similar to latch 14 for maintaining the frame 16 secured to the intermediate frame 12.

I shall now describe the manner in which this modification of my invention operates. The latch 14 generally holds the frame 12 in a secured position relatively to the structural frame member 11 so that swinging movement of the frame 12 about its horizontal pivots 13^a is normally prevented. The frame member 16 carrying the window pane 15 may however be swung about its pivotal axis on hinges 17 whenever it is desired to furnish ventilation, whereupon the frame member 16 will occupy the position illustrated in Fig. 3.

Whenever it is desired to obtain ventilation by rotation of the frame 16 about its horizontal pivots 13^a, the latch 14 is released and the two frames 16 and 12 rotate together about the horizontal pivots 13^a to a position shown in Fig. 2. In this position, it is seen that ventilation will be obtained in the direction of the arrow 18, and that, in case of rain, it will be impossible for the rain to enter as might be the case if the pane were positioned as shown in Fig. 3.

Also, it is possible, in the position of the members in Fig. 2 to swing the frame 16 about its hinges 17 to a position relatively to the frame shown in Fig. 3. In this position, ventilation would be obtained as in the direction of the arrow 18, and further ventilation could be obtained by the pivotal relationship between the frame 16 and the frame 12 as is the case in Fig. 3.

Referring now more particularly to Figs. 4 to 9 inclusive, reference numeral 20 indicates a window casement frame carrying a window pane 21 and hinged to the window frame 22 by means of hinge pivots 23 and 24. The frame members are of structural steel, preferably, and are capable of nesting relatively to each other as illustrated in Fig. 7, whereby to facilitate weather stripping.

The hinge pin 23 forms part of a hinge 25 which is of rather unusual construction. This hinge comprises a plate 26 carrying the casement frame 20 and a second plate 27, which is in turn, mounted about a hinge pin 28 carried by the member 29 secured to the window frame 22.

The hinge pin 24 forms part of a hinge for the casement which is also of rather unusual construction, and which is embodied also in an upper hinge 30 secured to the frame 20 in its upper left hand corner, as shown in Fig. 4. In each of these hinges, there is a plate 31 which carries

the window casement and which has a curved member 32 cooperating with the hinge pin 24 and with the curved portion 33 of the hinge plate 34 secured to the window frame. The hinge plate 34 is cut away at a point directly opposite the hinge pin 24 so that in the position of Fig. 6, the hinge plate 31 can be moved without any difficulty in the direction of the arrow 35 and away from its cooperation with the hinge pin 24. However, as will readily appear, when the window frame 20 has been rotated but a slight amount from its position of Fig. 6, a portion of the curved member 32 of the plate 31 will lie in such relation to the pin 24 as to prevent outward movement of the plate 31 in the direction of arrow 35.

The construction just described regarding the hinge members used with pin 24, is embodied also in the hinge member 30 illustrated in Fig. 5. The relation of these hinge elements is such that if it is desired to open the window casement 20 to a position illustrated in Fig. 9, initial rotation will take place about hinge pins 23 and 24, with the hinge pin 24 so cooperating with the curved member 32, that immediately upon slight rotation, separation of the hinge members will be impossible. This rotation about the vertical axis of hinge pins 23 and 24 will, however, cause separation of the curved member 32' of hinge 30 from its pin 24' as though there were no hinge at that point.

If, however, it is desired to open the window casement to its position of Fig. 8, rotation then takes place about the upper hinge pin 28 and hinge pin 24' of the auxiliary hinge 30. In this movement, the hinge 25 with its plates 26 and 27 moves as a unit about the pin 28 carrying with it the window frame 20 as though that frame were hinged directly to pin 28. At the same time, the hinge plate 31 with its curved portion 32 will be separated from pin 24 by its movement in the direction of the arrow 35 shown with reference to Fig. 6. At the same time, it will be apparent that the portion 32' of hinge 30 will cooperate with the pin 24' to prevent any separation of the two immediately upon slightest rotation of the casement 20 in the direction of movement illustrated in Fig. 8.

Preferably, but not necessarily, a latch member 36 is mounted on the casement frame 20 for securing the same to the window frame 22 whenever it is desired that rotation take place about the pin 24 upon pressure against the frame 20. The latch 36 prevents the separation of the hinge members 32 and 24 so as to supply rotation about pin 24 rather than about hinge 30 upon outward pressure. Preferably also, in cooperation with my invention, it is desirable to utilize some spring means for cooperating with the hinge plates 32 and 32' so that separation of the plates from the pins 24 and 24' will be accompanied by spring resistance which will not be any material hindrance, however. Such springs are illustrated in Fig. 5 and are denoted by reference numeral 37.

It is also desirable to secure to the frame 20 a universal joint casement holder applied relatively to the window frame 22, so as to maintain the frame 20 in its relation to the window frame regardless of its direction of movement.

Whereas, I have now fully described this modification of my invention, it will be best to summarize by indicating that the window frame 20 is mounted on the frame 22 in the usual manner for movement about vertical hinges, whenever desired. There are a pair of such hinges so that the casement may be held in a rigid and usual

manner relatively to the frame 22, even though the mounting of casement 20 relatively to the frame 22 is such that movement of the casement to a position illustrated in Fig. 9 and in extreme displacement from the frame structure 22 is possible. Similarly, because of the particular arrangement, movement of the casement 20 to its extreme position of Fig. 8 will also be possible, while extreme rigidity is maintained.

It is my combination of elements operating in a distinctive manner to mount the window casement for movement about two different axes, while extreme rigidity is obtained, which forms the essence of the present invention. Since my invention might be embodied in numerous modifications, I do not wish to be limited except as indicated in the claims appended hereto.

1. In a casement window assembly, a casement window, a series of hinges for supporting said window, one of said hinges being operable to permit swinging of said window about two different axes, the others of said hinges being operable as hinges only when said window is rotated about those hinges, said windows being releasable from said hinges by direct outward pressure.

2. In a casement window assembly, a frame, a casement window nested in said frame, a series of hinges for supporting said window relatively to said frame, one of said hinges being operable to permit swinging of said window about two different axes, the others of said hinges being operable as hinges only when said window is rotated about those hinges.

3. In a casement window assembly, a hinge for a casement window having a portion to be secured to a frame, a pivot, a swinging portion carrying said casement window mounted on said pivot, said swinging portion being formed so that when it is in closed relation to the frame secured portion, it may be readily released from its pivot, and means whereby when it has been rotated a slight amount it will become locked relatively to said secured portion for regular hinge movement on the pivot.

4. In a casement window assembly, a frame, a casement window, a hinge for the casement window having a portion adapted to be secured to the frame, a pivot for said hinge, a swinging portion of said hinge carrying said casement window and rotatable on the axis of said pivot, one of the said hinge portions being formed so that when the casement swinging portion is in closed relation to the frame secured portion, the swinging portion may be readily released from pivotal engagement with the frame secured portion.

5. In a casement window assembly, a frame, a casement window, a hinge for the casement window having a portion adapted to be secured to the frame, a pivot for said hinge, a swinging portion of said hinge carrying said casement window and rotatable on the axis of said pivot, one of the said hinge portions being formed so that when the casement swinging portion is in closed relation to the frame secured portion, the swinging portion may be readily released from pivotal engagement with the frame secured portion, and when said swinging portion has been rotated a slight amount said portions will become locked relatively to one another for regular hinge movement.

6. In a casement window assembly, a casement window, a pair of hinges for mounting said window about a vertical pivot, a second pair of hinges mounting said window for movement on a horizontal pivot, one of the hinges of each group forming with a hinge of the other group a combination

hinge swingable on either a vertical or horizontal pivot, the other hinge of each group being readily releasable by outward pressure rather than rotation, whereby said window may be readily released from a particular hinge for swinging movement about the compound hinge and the other of said hinges.

7. In a casement window assembly, a frame, a casement window frame hinged to said frame, a hinge upon which said window is mounted to permit swinging about a horizontal or a vertical pivot, auxiliary hinges supporting said frame in its closed position, each of said hinges having means whereby to permit said window frame to be readily released therefrom to permit swinging of said frame about an axis other than the axis of the particular hinge, and adapted to act as a hinge to permit swinging of the frame about it as a pivot.

8. In a casement window assembly, a frame, a casement window frame nested within and hinged to said frame, a hinge upon which said window is mounted to permit swinging about a horizontal or a vertical pivot, auxiliary hinges supporting said frame in its closed position, each of said hinges having means whereby to permit said window frame to be readily released therefrom to permit swinging of said frame about an axis other than the axis of the particular hinge, and adapted to act as a hinge to permit swinging of the frame about it as a pivot.

9. In a casement window assembly, a frame, a casement window hinged to said frame, independent hinges supporting said window for swinging movement about a horizontal axis and about a vertical axis, each of said hinges being constructed to permit ready release of the window therefrom by mere swinging movement of the window about the other of said hinges whereby said window may be released from one hinge and for movement about the other.

10. In a casement window assembly, a frame, a casement window hinged to said frame, independent hinges supporting said window for swinging movement about a horizontal axis and about a vertical axis, each of said hinges being constructed to permit ready detachment of the window from pivotal movement thereon, said detachment being effective upon simple swinging movement of the window about the other of said hinges, whereby said window may be released from one hinge and for movement about the other.

11. In a casement window assembly, a frame, a casement window hinged to said frame simultaneously about a plural number of vertical hinge pivots and a plural number of horizontal hinge pivots and movable only in a pivotal manner on said pivots relative to said frame, and means whereby the window may be swung about either its horizontal or vertical pivots.

12. In a casement window assembly, a frame, a casement window hinged to said frame simultaneously about a plural number of vertical hinge pivots and a plural number of horizontal hinge pivots and held in fixed relation to said frame when the window is in its closed position, and means whereby the window may be swung about either its horizontal or vertical pivots, said means comprising hinges which are releasable.

13. In a casement window assembly, a frame, a casement window hinged to said frame simultaneously about a plural number of vertical hinge pivots and a plural number of horizontal hinge pivots, and means whereby the casement may be swung about either its horizontal or vertical

pivots, said means comprising a combination vertical and horizontal hinge to which said window is secured, and releasable horizontal and vertical hinges.

14. In a casement window assembly, a frame, a casement window hinged to and in nested relation to said frame, independent hinges supporting said window for swinging movement about a horizontal axis and about a vertical axis, each of said hinges being constructed to permit release of the window from movement thereabout, whereby said window may be released by a mere outward thrust from one hinge and for movement about the other.

15. In a casement window assembly, a frame, a casement window hinged to and in nested relation to said frame, independent hinges supporting said window for swinging movement about a horizontal axis and about a vertical axis, each of said hinges being constructed to permit ready release of the window therefrom by mere swinging movement of the window about the other of said hinges whereby said casement window may be released from one hinge and for movement about the other.

16. In a casement window assembly, a frame, a casement window in nested relation and hinged to said frame simultaneously about a plural number of vertical hinge pivots and a plural number of horizontal hinge pivots, and movable only in a pivotal manner on said pivots relatively to said frame, and means whereby the casement window may be swung about either its horizontal or vertical pivots.

17. In a casement window assembly, a frame, a casement window in nested relation and hinged to said frame simultaneously about a plural number of vertical hinge pivots and a plural number of horizontal hinge pivots, and held in fixed relation to said frame when the window is in its closed position, and means whereby the window may be swung about either its horizontal or vertical pivots, said means comprising hinges which are releasable.

18. In a casement window assembly, a frame, a casement window in nested relation and hinged to said frame simultaneously about a plural number of vertical hinge pivots and a plural number of horizontal hinge pivots, and means whereby the casement may be swung about either its horizontal or vertical pivots, said means comprising a combination vertical and horizontal hinge to which said window is secured, and releasable horizontal and vertical hinges.

19. In the combination of claim 10, a combination hinge adapted to permit pivotal movement about a vertical or a horizontal axis, and which forms one of the hinges to which said window is secured.

20. In a casement window assembly, a frame, a casement window hinged to said frame, independent hinges supporting said window for swinging about a horizontal axis and about a vertical axis, each of said hinges having a pivot pin, and means whereby said casement may be released from movement about one hinge and for movement about the other hinge, said hinges being constructed to permit ready reassembly about all the hinges as the casement is swung into closed position.

21. In a casement window assembly, a frame, a casement window hinged to and in nested relation to said frame, independent hinges supporting said window for swinging about a horizontal axis and about a vertical axis, each of

said hinges having a pivot pin, and means whereby said casement may be released from movement about one hinge and for movement about the other hinge, said hinges being constructed to permit ready reassembly about all the hinges as the casement is swung into closed position.

22. In a casement window assembly, a frame, a casement window hinged to and in nested relation to said frame, independent hinges supporting said window for swinging movement about a horizontal axis and about a vertical axis, each of said hinges having a pivot pin, and means whereby said casement window may be released from the pivot pin of the horizontal hinge and for movement about the other hinge, said hinges being constructed to permit ready reassembly about all the hinges as the casement is swung into closed position.

23. In a casement window assembly, a frame, a casement window hinged to and in nested relation to said frame, independent hinges supporting said window for swinging movement

about a horizontal axis and about a vertical axis, each of said hinges having a hinge pin, and means whereby said casement window may be released from the hinge pin of the horizontal or vertical hinges, for movement about the other of said hinges, said detachment being effective upon movement of the frame about the other of said hinges, and means whereby said hinges become attached upon movement of the frame back into closed position.

24. In a casement window assembly, a frame, a casement window in nested relation and hinged to said frame simultaneously about a plural number of vertical hinge pivots and a plural number of horizontal hinge pivots, and means whereby the casement window may be released from either the horizontal or the vertical pivots and rotated about the reverse set of pivots, and means for reassembling the casement window relatively to all of said pivots upon its movement into closed position.

FREDERICK C. WENZEL.