May 22, 1928. 1,670,441

E. H. ELLISON

CASEMENT WINDOW

Filed March 21, 1927 2 Sheets-Sheet 1

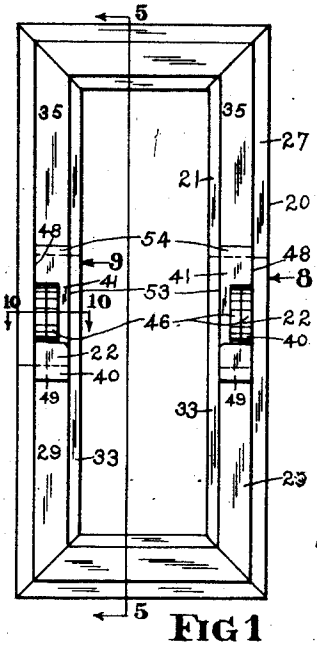


FIG 1

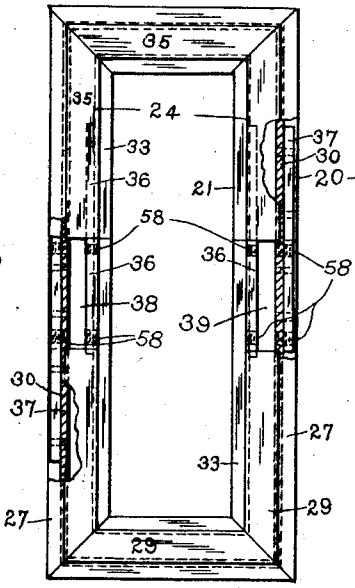


FIG 3

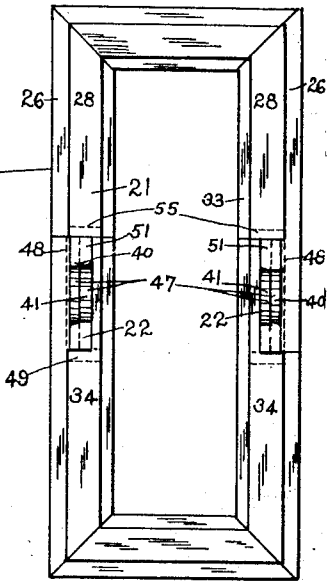


FIG 2

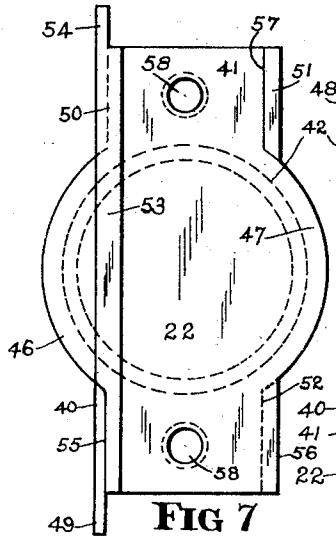


FIG 7

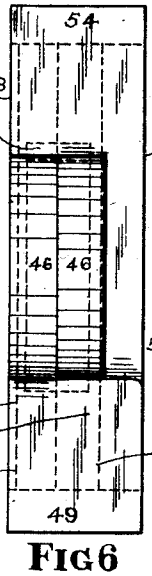


FIG 6

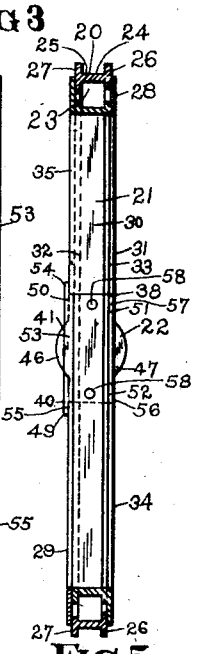


FIG 5

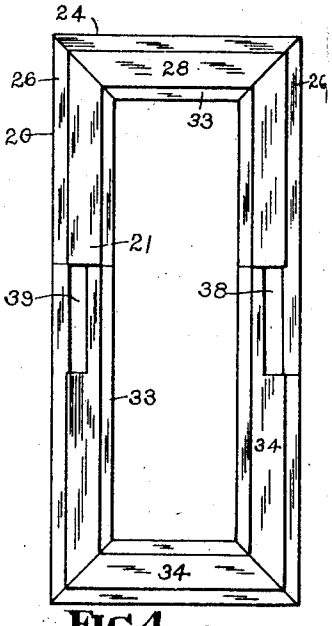


FIG 4

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May 22, 1928. 1,670,441

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CASEMENT WINDOW

Filed March 21, 1927 2 Sheets-Sheet 2

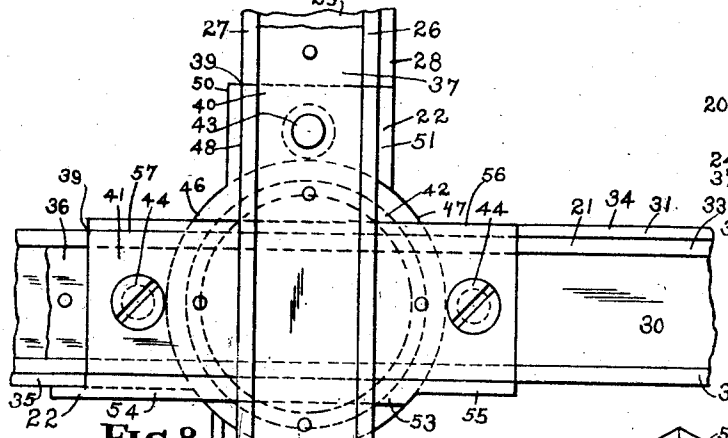


FIG 8

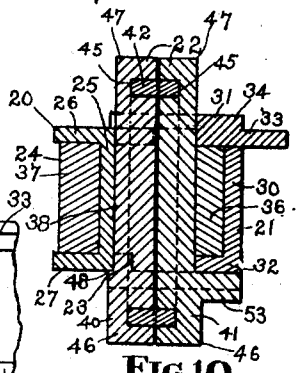


FIG 10

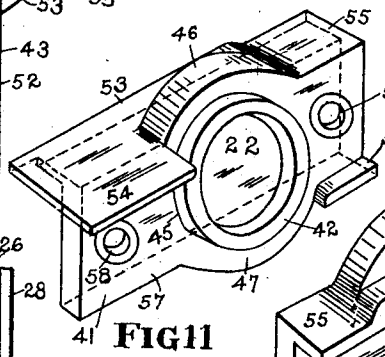


FIG 11

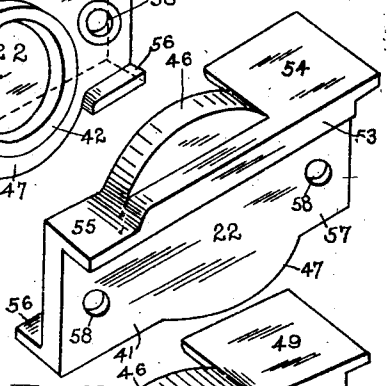


FIG 12

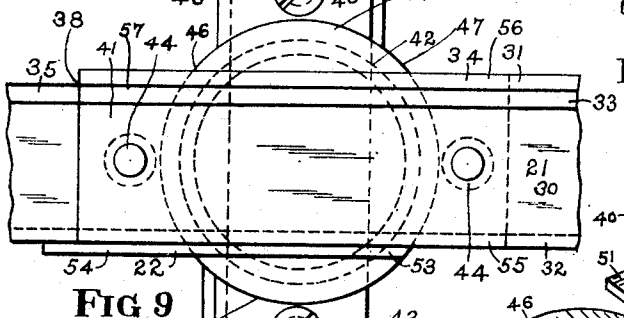


FIG 9

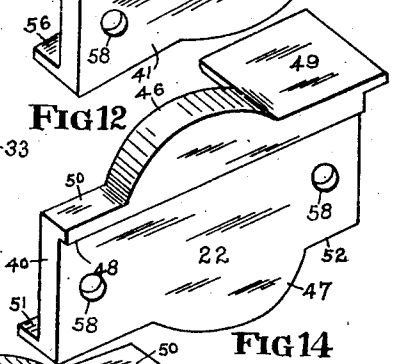


FIG 14

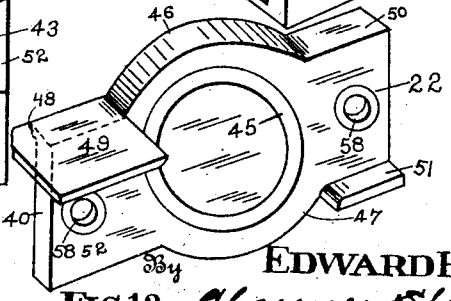


FIG 13

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Patented May 22, 1928. 1,670,441

UNITED STATES PATENT OFFICE.

EDWARD H. ELLISON, OF JAMESTOWN, NEW YORK, ASSIGNOR TO ELLISON BRONZE COMPANY, INC., OF FALCONER, NEW YORK, A CORPORATION OF NEW YORK.

CASEMENT WINDOW.

Application filed March 21, 1927. Serial No. 176,903.

This invention relates to an improvement in a casement window, and more particularly in the hinges therefore, and in the means for locating such hinges in position.

One difficulty which has been confronted by manufacturers of casement windows of the pivotally hinged type has been the amount of labor necessarily expended in order to locate the hinges properly, so that when the sash is installed in the window frame it will fit securely and tightly therein.

The usual method followed for installing these hinges is to attach them temporarily to the sash and frame and then follow the cut and try method, shifting the location of the hinged members until a sufficiently tight closure between the sash and frame is obtained, when the window is closed. This obviously results in a considerable loss of time, and hence there has been a demand for a method of instantly and definitely locating the hinges in the window without resorting to the cut and try method, and by which it can be assured that the window will close tightly.

The primary object of this invention is to provide such a method of installing the hinges.

A further object of this invention is to provide suitably formed hinges and so to treat the sash and frame that this method can be carried out.

Other objects of this invention will appear from a consideration of the following description taken in connection with the drawings which form a part thereof, and in which:

Fig. 1 is a front elevation of the inner face of a casement window provided with pivotal hinges in accordance with this invention;

Fig. 2 is a similar view of the outer face of such window;

Fig. 3 is a view similar to Figure 1, the hinges, however, being omitted and a portion of the frame being broken away;

Fig. 4 is a view similar to Figure 2 with the hinges omitted;

Fig. 5 is a sectional view of the sash and frame taken along the line 5—5 of Figure 1;

Fig. 6 is an enlarged front elevation of the left hinge, (the term left being used to designate the hinge at the left hand of an observer when inside the building and looking at the window);

Fig. 7 is a side elevation of such hinge;

Fig. 8 is an enlarged view of a portion of the right side of the window taken, as designated by the arrow 8 in Figure 1, from outside the window opening with the window wide open to illustrate the relation of the hinge to the sash and frame members;

Fig. 9 is a view similar to Figure 8 of the left side of the window taken, as designated by the arrow 9 in Figure 1, from inside the window opening;

Fig. 10 is an enlarged view taken along the line 10—10 of Figure 1;

Figs. 11 and 12 are perspective inner and outer views of the frame plate element of the hinge shown in Figures 6 and 7; and

Figs. 13 and 14 are perspective inner and outer views of the sash plate element of such hinge.

The casement window set forth in the drawings comprises a frame 20 and a sash 21 pivotally mounted within said frame upon hinges 22. The frame 20 is channular in cross section having inner and outer channels 23, 24 defined by a cross piece 25 and side pieces 26, 27. At the upper half of the frame is secured to the side piece 26, a flange 28, and a similar flange 29 is secured to the side piece 27 at the lower half of the frame. The sash 21 is also channular, having an outer channel 30, and side pieces 31, 32. The side piece 31 is extended inwardly to form a ledge 33, on which is supported the pane (not shown). The side piece 31 is extended at the lower half of the sash to form a flange 34 and the side piece 32 is extended at the upper half of the sash to form a flange 35. Each flange 28, 29, 34 and 35 is U-shaped as is shown particularly in Figures 3 and 4.

Obviously, when the window is closed the sash 21 is within the frame 20, the flanges 34 and 35 of the sash bearing against the side pieces 26 and 27 of the frame and the side pieces 31 and 32 of the sash bearing against the flanges 28 and 29 of the frame. (See Figure 5.) Thus a double check is provided against drafts entering between the sash and the frame. In the specification and claims the terms inner and outer will be used to designate the position of parts thereof relative to the central opening thereof and the terms "front" and "rear" to designate the parts toward the inside of the room and those toward the outside thereof respectively.

In accordance with the usual custom the sash and frame are each made in two sec-

tions (upper and lower). The upper and lower sections of the sash are joined by bars 36 fixed in the channel 30, while the upper and lower sections of the frame are joined by bars 37 fixed in the outer channels 24.

The inner edges of the side pieces 26 and 27 of the frame are cut away at approximately midway between the top and bottom of the frame and the ends of the flanges 29 and 35 of the frame and sash respectively are spaced apart although when the window is closed they are in the same plane. The flange 28 terminates at the same distance from the top as the flange 35 and the upper ends of the flange 34 are notched out at the same distance from the bottom as the flange 27 terminates, so that above that point the edges of the flange 34 do not project outwardly behind the frame. The flanges 28 and 34 are in the same plane when the window is closed, at which time their ends are in contact, as shown in Figures 2 and 4. Thus are provided rectangular openings 38 and 39, through each side of the window and between the sash and frame, within which the hinges 22 are mounted. The particular location of these openings does not affect the application of this invention, and I am in no way to be limited by the showing here made. Obviously the openings might be set in the sides nearer the top or the bottom or might be in the top and bottom instead of in the sides. The location depends upon the manner in which the sash is to be pivotally supported in the frame.

Each hinge 22 comprises a plate 40, a plate 41 and a ring 42, by means of which each plate can be moved pivotally with respect to the other. When the installation is complete, the plate 40 is secured by screws 43 upon the inner face of the frame between the cutaway ends of the side pieces 26 and 27, while the plate 41 is secured by screws 44 upon the outer face of the sash. The plate 40 will hereafter be referred to as the frame plate, and the plate 41 will hereafter be referred to as the sash plate. The inner face of the frame plate and the outer face of the sash plate are each provided with circular grooves 45, which receive the ring 42. Concentric with the grooves 45 are formed on the front and rear faces of the plates 40 and 41 bosses 46 and 47 which project from the middle of each face.

The front face of the frame plate 40 is provided with a shoulder 48 on its outer edge, which when the hinge is in place rests in front of the side piece 27, so that the edge of the front face forms a continuation of the outer edges of the flanges 29 and 35. Projecting inwardly from the front face of the frame plate 40 below the boss 46 is a tongue 49 which extends below the lower edge of the main body of the plate 40. The portion 50 of the front face above the boss 46 is depressed by the thickness of the tongue. The rear face of the frame plate 40 is provided above the boss 47 with an inwardly projecting tongue 51, while the portion 52 below the boss 47 is depressed by the thickness of the tongue 51. The tongue 49 is substantially double the extent of the tongue 51 for a reason to be pointed out below.

The front face of the sash plate 41 is provided inside the boss 46 with a projection 53, which when the hinge is in place extends in front of and conceals the portion of the side piece 32 of the sash between the ends of the flanges 29 and 35 (see Figures 1 and 3). Projecting outwardly from the front face of the sash plate 40 is a tongue 54, which is a continuation of the front face of the projection 53, and which extends above the upper edge of the main body of the plate 41. The portion 55 of the front face of the plate 41 below the boss 46 and the adjoining portion of the front face of the projection 53 is depressed by the thickness of the tongue 54. Projecting inwardly from the rear face of the sash plate 41 below the boss 47 is a tongue 56, while the portion 57 of the rear face above the boss 47 is depressed by the thickness of the tongue 56.

When the frame and sash plates are assembled to form the hinge the tongue 49 extends in front of and bears against the portion 55, while the tongue 54 extends in front of and bears against the portion 50. In the same way the tongue 51 extends behind and bears against the portion 57 while the tongue 56 extends behind and bears against the portion 52. The rear face of the complete hinge is of the same length and width as the main body of the hinge and corresponds to the dimensions of the openings while the front face by reason of the shoulder 48 and the tongue 49 of the frame plate and the projection 53 and tongue 54 of the sash plate extends beyond the edges of the main body on all sides. The result is that when the hinge 22 is introduced into one of the openings the shoulder 48 will bear against the side piece 27, the projection 53 will bear against the side piece 32 and the tongues 49 and 54 will bear against the ends of the flanges 29 and 35 respectively, thus insuring the proper positioning of the hinge in its opening.

In place of the old cut and try method mentioned above, the hinges are located in the window in the following manner, by which the location of the hinges is definitely determined. The sash and frame are first assembled as shown in Figures 3, 4 and 5, and clamped into such position with the flanges 28 and 29 of the frame in contact with the side pieces 31 and 32 respectively of the sash and the flanges 34 and 35 of the sash in contact with the side pieces 26 and 27 re-

spectively of the frame. The openings 38 and 39 are thus formed, as shown in Figures 3 and 4.

The hinges 22 having been assembled are introduced into the openings 38 and 39 until the positions determined by the shoulder 48, projection 53 and tongues 49 and 54 have been reached. The hinges are held in that position and holes 58 are drilled through the bar 36 in the channel 24, the cross piece 25, the hinge plates 40 and 41, the bar 36, the sash 21, the sash 21, the bar 36, the hinge plates 41 and 40, the cross piece 25 and the bar 36, one hole being above and one below the grooves 45. The hinges are then removed, the sash and frame are separated and all or parts of said holes 58 are tapped. The sash and frame are again assembled, the hinges inserted in the holes 38 and 39 and the sash swung at right angles to the frame, as in Figures 8 and 9. In that position the screws 43 and 44 are inserted and the hanging of the sash in the frame is completed. Since the holes by which the hinge plates are fixed to the sash and frame are determined at a time when the sash and frame occupy the desired relation it must of necessity follow that the hinges will be quickly and accurately located and that the old cut and try method is eliminated.

While one embodiment only of this invention has been shown and described, applicant is not limited thereto, since it is obvious that other embodiments can be made without departing from the spirit and scope of this invention, as set forth in the following claims.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:

1. In a casement window comprising a frame, and hinges by which said sash is pivotally mounted in said frame, the method locating said hinges in position consisting of the following steps: first, placing said sash in said frame in the closed position; second, inserting said hinges between said sash and frame; third, drilling a plurality of holes through said assembled frame, hinges and sash; fourth, securing said hinges to said sash and frame by means of screws set in the holes previously formed in said hinges, sash, and frame.

2. In a casement window comprising a frame, a sash and hinges by which said sash is pivotally mounted in said frame, said hinges each including a frame plate and a sash plate, the method of locating and securing said hinges in position consisting of the following steps: first, placing said sash in said frame in the closed postion; second, inserting said hinges between said sash and frame; third, drilling a plurality of holes through said assembled frame, hinges and sash; fourth, separating said frame, hinges and sash; and fifth, securing the sash plates of said hinges to said sash by means of screws set in the holes formed in said frame, hinges and sash.

In testimony whereof I have affixed my signature.

EDWARD H. ELLISON.