

PATENT SPECIFICATION

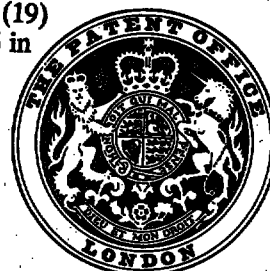
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(54) FANLIGHT OR LIKE FIXED WINDOW WITH IMPROVED MOUNTING MEANS

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumicho, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to windows in general and, in particular, to a fanlight or like fixed window. Even more particularly, the invention deals with such a fixed window having improved means for mounting a panel assembly within an outer frame.

In fanlights and other fixed windows heretofore proposed and used, the installation of a panel assembly within an outer frame has in some instances been a highly troublesome and time-consuming job. Some known fixed windows also cause difficulties in securely holding the panel assembly in position within the outer frame and in weathertightly sealing the windows.

The present invention seeks to provide a fanlight or other fixed window so made that a panel assembly can be easily and speedily mounted within an outer frame.

The invention further seeks to provide a fanlight or other fixed window in which the panel assembly, once mounted within the outer frame, can be securely held in position therein and which at the same time can be sealed effectively.

According to the invention, there is provided a fixed pane window comprising a generally rectangular outer frame having inwardly directed grooves therein, one of the longer sides of the frame having a longitudinal recess therein for receiving a batten which, together with the frame forms the said inwardly directed groove in this side, a window panel including a pane and an inner frame surrounding the pane and of dimensions less than the outer frame so as to form

a gap between the inner and the outer frame, the inner frame having outwardly extending projections seated in the grooves of the outer frame, and sealing means inserted in the gap between the inner and outer frame.

Preferably, the projections of the inner frame have a thickness considerably less than the width of the inwardly opening grooves of the outer frame and the window further comprises a pair of flanges projecting toward each other from the opposed longitudinal edges at the open end of each of the inwardly opening grooves, each of the tongues being caught between the respective pair of flanges whereby the sash is restrained from lateral displacement with respect to the outer frame.

The projections of the inner frame may also have a width considerably less than the depth of the inwardly opening grooves of the outer frame and the window may further comprise support means provided on the bottom of the inwardly opening groove of the base of the outer frame for permitting the sash to rest thereon in a predetermined position with respect to the outer frame.

In a preferred embodiment of this invention, the batten may be adapted to snap into position on one of said longer sides. Thus, for mounting the sash within the outer frame, the tongues of the inner frame may first be manipulated into the respective grooves of the outer frame while the snap-on batten is removed from the longer side. The batten is then snapped onto position on the longer side, and the sealing means such as strips of rubber or like elastic material are then forced into the gaps between the outer and inner frames. The manipulation of the tongues into the grooves is extremely easy since one side of the groove in the longer side is held open by the removal of the snap-on batten.

The invention will now be described in greater detail, by way of example, with

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reference to the drawings, in which:-

Figure 1 is an elevational view of a fanlight provided above a conventional window, with the fanlight being constructed in accordance with this invention; and

Figure 2 is an enlarged vertical sectional view, partly broken away, of the fanlight taken along the line II-II of Figure 1.

In the accompanying drawings this invention is shown adapted for a fanlight, generally designated 10, that is located above a conventional window of, for example, the sliding or rolling sash type. With reference first to Figure 1, the reference numeral 11 generally indicates an outer frame of the conventional window which is intended to be fixed in the usual rough opening in an enclosing wall. The outer frame 11 of the conventional window comprises a header 12 and a base member 13 at the top and bottom and a pair of side jambs 14 secured at their ends in any convenient manner to the header and base member. Additionally, a crossbeam 15 extends horizontally between, and is conveniently secured, at its ends, to the pair of side jambs 14, some distance under the header 12.

It will thus be seen that a rectangular outer frame 16 for the fanlight 10 is formed by the header 12, the crossbeam 15 doubling as the header of the outer frame 11 of the conventional window, and those portions of the side jambs 14 which extend above the crossbeam 15. Fixedly mounted within this outer frame 16, in the manner hereinafter set forth, is a panel assembly 17 comprising a panel or pane 18 of glass or other suitable material and an inner frame 19 extending around and embracing the periphery of the panel.

As illustrated in vertical section and on a greatly enlarged scale in Figure 2, inwardly opening grooves 20 are formed in the respective constituent members 12, 14 and 15 of the outer frame 16 of the fanlight 10 according to the invention so as to be all disposed in the median plane of the fanlight. Of these inwardly opening grooves 20, that formed in the crossbeam 15 is of somewhat different character from the other grooves and is therefore designated 20a, as will be later explained in detail.

Each of the inwardly opening grooves 20 in the header 12 and side jambs 14 of the outer frame 16 has a pair of flanges 21 projecting toward each other in coplanar relationship from the opposed longitudinal edges at the open end of the groove. It will be observed that the confronting edges of each pair of flanges 21, disposed parallel to each other with a spacing therebetween, are bent or enlarged outwardly, that is, toward the inside of the respective groove 20, for purposes hereinafter made apparent.

The crossbeam 15 of the outer frame 16 has a recess 22 extending longitudinally

along one of its inside edges. Mounted in this recess 22 and extending therealong is a snap-on batten, generally designated 23, that coacts with the recessed crossbeam 15 to define the aforesaid inwardly opening groove 20a. The batten 23 is shown to be of substantially inverted-U-shaped cross section, comprising a web 24 and first and second side walls 25 and 26 formed along and angled downwardly from the opposite longitudinal edges of the web. The following means are employed to permit the batten 23 to snap into position on the recessed crossbeam 15 following the installation of the panel assembly 17 within the outer frame 16.

Disposed at a right angle with the web 24, the first side wall 25 of the batten 23 terminates in an L-shaped flange 27 designed to make interlocking engagement with a rim 28 formed along the longitudinal edge of the bottom of the recess 22. The second side wall 26, which is shown to be curved away from the first side wall 25 as it extends downwardly, may have its edge 29 slightly bent as shown. For engaging this bent edge 29 of the second side wall 26, the bottom of the recess 22 is stepped at 30 and is further provided with an overhanging flange 31 of comparatively short extent.

Thus, for mounting the snap-on batten 23 on the recessed crossbeam 15, the bent edge 29 of its second side wall 26 may first be placed under the overhanging flange 31 so that it will make abutting contact with the step 30. The web 24 of the batten 23 may then be manually depressed to force the L-shaped flange 27 of its first side wall 25 into interlocking engagement with the rim 28.

Preferably, a suitably angled or rounded guide surface or surfaces should be formed on either or both of the L-shaped flange 27 and the rim in order to permit smooth movement of the former into interlocking engagement with the latter. Furthermore, in spite of the showing of Figure 2, the second side wall 26 of the batten 23 may also be formed in right-angular relationship to its web 24, in which case the edge 29 of the second side wall may be bent right-angularly away from the first side wall 25. If desired, the bent edge 29 of the second side wall 26 and the flanged-step 30 of the recessed crossbeam 15 may also be so shaped and sized relative to each other that the former may snap into interlocking engagement with the latter.

With the batten 23 snapped into position on the recessed crossbeam 15 in the above described manner, its web 24 is disposed in coplanar relationship to the upper surface 32 of the crossbeams, and the first side wall 25 of the batten is disposed flush with the lateral surface 33 of the crossbeam. The



5 snap-on batten 23 may therefore be considered substantially an integral part of the crossbeam 15 in the completed fanlight 10. It will also be seen that the aforementioned inwardly opening groove 20a is defined in part by the second side wall 26 of the batten 23.

10 The batten 23 is further provided with a flange 34 projecting from its web 24 beyond the second side wall 26. Another flange 35 projects from the inside end of the surface 32 of the crossbeam 15 toward the flange 34 in coplanar relationship thereto. As in the case of the pairs of flanges 21 at the open ends of the other inwardly opening grooves 20, the confronting edges of the flanges 34 and 35 are disposed in spaced parallelism and are bent or enlarged outwardly or toward the inside of the groove 20a.

20 Within the outer frame 16 of the foregoing construction there is mounted the panel assembly 17 including the inner frame 19 which, as will be seen by referring back to Figure 1, comprises top and bottom horizontal members and a pair of side vertical members combined rectangulary in any convenient manner. These constituent members of the inner frame 19 are so shaped as to form a continuous, inwardly opening peripheral gap 36 to receive the peripheral portion of the panel 18 which is shown to be conventionally provided with a continuous sealing strip 37 wrapped over the edge of the panel.

35 It is important to point out that the inner frame 19 is made smaller in size than the space bounded by the inside surfaces of the outer frame 16, for purposes to be later described. The inner frame 19 has tongues 38 projecting outwardly therefrom, with all these tongues being disposed in the median plane of the fanlight 10 and extending longitudinally of the respective constituent members of the inner frame. The tongues 38 are received in the respective inwardly opening grooves 20 and 20a of the outer frame 16.

40 As will be apparent from Figure 2, the tongues 38 are of thickness considerably less than the width of the inwardly opening grooves 20 and 20a. However, since the tongues 38 are caught securely between the pairs of bent or enlarged flanges 21 at the open ends of the grooves 20 and by the pair of bent or enlarged flanges 34 and 35 at the open end of the groove 20a, the panel assembly 17 is restrained from any lateral displacement relative to the outer frame 16.

45 It will be further noted from Figure 2 that the width of the tongues 38 is also considerably less than the depth of the inwardly opening grooves 20 and 20a. Preferably, a suitable support such as that shown at 39 should be provided on the bottom of the inwardly opening groove 20a to allow the panel assembly 17 to rest thereon at the time

of its installation in the outer frame 16. Since the inner frame 19 of the panel assembly 17 is less in size than the space bounded by the outer frame 16 as aforesaid, gaps will be created all around the inner frame as one of its tongues 38 is placed upon the support 39 at the time of installation.

70 These gaps between the outer and inner frames 16 and 19 are for receiving sealing strips 40 of the rubber or like elastic material which are intended to serve the dual purposes of weathertightly sealing the gaps and making the inner frame immovable with respect to the outer frame. Preferably, suitable rims or ridges should be formed on either or both of the outer and inner frames 16 and 19, as shown for example at 41, in order to preclude the possibility of any accidental dislodgement of the sealing strips 40. While in the illustrated embodiment the sealing strips 40 are shown to be provided on both sides of the tongues 38, it is possible to provide such sealing means only on one side of the tongues.

80 For mounting the panel assembly 17 within the outer frame 16, the top and side tongues 38 of the inner frame 19 may first be manipulated into the respective inwardly opening grooves 20 of the outer frame by suitably moving the entire panel assembly relative to the outer frame, and the bottom tongue 38 of the inner frame may be placed upon the support 39, while the snap-on batten 23 is removed from the recessed sill 15 of the outer frame. The batten 23 is then snapped into position on the recessed crossbeam 15 in the above described manner, thereby completing the inwardly opening groove 20a in which is received the bottom tongues 38 of the inner frame 19 resting on the support 39. Subsequently, the sealing strips 40 are forced into the gaps between the outer and inner frames 16 and 19 from the opposite sides of the fanlight 10.

100 Although the present invention has been shown and described as adapted specifically for a fanlight, it will be apparent that the invention is adaptable for any fixed window regardless of its place of installation. Further, while the snap-on batten is shown attached to the crossbeam of the outer frame in the illustrated embodiment, it is possible to attach such a batten to the header by forming a longitudinal recess therein instead of in the sill. This and other modifications or changes may be resorted to by one skilled in the art without departing from the scope of the invention as defined by the following claims.

110 WHAT WE CLAIM IS:-

125 1. A fixed pane window comprising a generally rectangular outer frame having inwardly directed grooves therein, one of the longer sides of the frame having a longitudinal recess therein for receiving a batten

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5 snap-on batten 23 may therefore be considered substantially an integral part of the crossbeam 15 in the completed fanlight 10. It will also be seen that the aforementioned inwardly opening groove 20a is defined in part by the second side wall 26 of the batten 23.

10 The batten 23 is further provided with a flange 34 projecting from its web 24 beyond the second side wall 26. Another flange 35 projects from the inside end of the surface 32 of the crossbeam 15 toward the flange 34 in coplanar relationship thereto. As in the case of the pairs of flanges 21 at the open ends of the other inwardly opening grooves 20, the confronting edges of the flanges 34 and 35 are disposed in spaced parallelism and are bent or enlarged outwardly or toward the inside of the groove 20a.

15 Within the outer frame 16 of the foregoing construction there is mounted the panel assembly 17 including the inner frame 19 which, as will be seen by referring back to Figure 1, comprises top and bottom horizontal members and a pair of side vertical members combined rectangularly in any convenient manner. These constituent members of the inner frame 19 are so shaped as to form a continuous, inwardly opening peripheral gap 36 to receive the peripheral portion of the panel 18 which is shown to be conventionally provided with a continuous sealing strip 37 wrapped over the edge of the panel.

20 It is important to point out that the inner frame 19 is made smaller in size than the space bounded by the inside surfaces of the outer frame 16, for purposes to be later described. The inner frame 19 has tongues 38 projecting outwardly therefrom, with all these tongues being disposed in the median plane of the fanlight 10 and extending longitudinally of the respective constituent members of the inner frame. The tongues 38 are received in the respective inwardly opening grooves 20 and 20a of the outer frame 16.

25 As will be apparent from Figure 2, the tongues 38 are of thickness considerably less than the width of the inwardly opening grooves 20 and 20a. However, since the tongues 38 are caught securely between the pairs of bent or enlarged flanges 21 at the open ends of the grooves 20 and by the pair of bent or enlarged flanges 34 and 35 at the open end of the groove 20a, the panel assembly 17 is restrained from any lateral displacement relative to the outer frame 16.

30 It will be further noted from Figure 2 that the width of the tongues 38 is also considerably less than the depth of the inwardly opening grooves 20 and 20a. Preferably, a suitable support such as that shown at 39 should be provided on the bottom of the inwardly opening groove 20a to allow the panel assembly 17 to rest thereon at the time

of its installation in the outer frame 16. Since the inner frame 19 of the panel assembly 17 is less in size than the space bounded by the outer frame 16 as aforesaid, gaps will be created all around the inner frame as one of its tongues 38 is placed upon the support 39 at the time of installation.

35 These gaps between the outer and inner frames 16 and 19 are for receiving sealing strips 40 of the rubber or like elastic material which are intended to serve the dual purposes of weathertightly sealing the gaps and making the inner frame immovable with respect to the outer frame. Preferably, suitable rims or ridges should be formed on either or both of the outer and inner frames 16 and 19, as shown for example at 41, in order to preclude the possibility of any accidental dislodgement of the sealing strips 40. While in the illustrated embodiment the sealing strips 40 are shown to be provided on both sides of the tongues 38, it is possible to provide such sealing means only on one side of the tongues.

40 For mounting the panel assembly 17 within the outer frame 16, the top and side tongues 38 of the inner frame 19 may first be manipulated into the respective inwardly opening grooves 20 of the outer frame by suitably moving the entire panel assembly relative to the outer frame, and the bottom tongue 38 of the inner frame may be placed upon the support 39, while the snap-on batten 23 is removed from the recessed sill 15 of the outer frame. The batten 23 is then snapped into position on the recessed crossbeam 15 in the above described manner, thereby completing the inwardly opening groove 20a in which is received the bottom tongues 38 of the inner frame 19 resting on the support 39. Subsequently, the sealing strips 40 are forced into the gaps between the outer and inner frames 16 and 19 from the opposite sides of the fanlight 10.

45 Although the present invention has been shown and described as adapted specifically for a fanlight, it will be apparent that the invention is adaptable for any fixed window regardless of its place of installation. Further, while the snap-on batten is shown attached to the crossbeam of the outer frame in the illustrated embodiment, it is possible to attach such a batten to the header by forming a longitudinal recess therein instead of in the sill. This and other modifications or changes may be resorted to by one skilled in the art without departing from the scope of the invention as defined by the following claims.

WHAT WE CLAIM IS:-

1. A fixed pane window comprising a generally rectangular outer frame having inwardly directed grooves therein, one of the longer sides of the frame having a longitudinal recess therein for receiving a batten

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5 which, together with the frame forms the said inwardly directed groove in this side, a window panel including a pane and an inner frame surrounding the pane and of dimensions less than the outer frame so as to form a gap between the inner and the outer frame, the inner frame having outwardly extending projections seated in the grooves of the outer frame, and sealing means inserted in the gap

10 between the inner and outer frame.

2. A fixed pane window as claimed in claim 1, wherein the projections of the inner frame have a thickness considerably less than the width of the inwardly opening grooves of the outer frame, and wherein the window further comprises a pair of flanges projecting toward each other from the opposed longitudinal edges at the open end of each of the inwardly opening grooves, each of the

15 tongues being caught between the respective pair of flanges whereby the sash is restrained from lateral displacement with respect to the outer frame.

20 3. A fixed pane window as claimed in claim 1 or claim 2, wherein the projections of the inner frame have a width considerably less than the depth of the inwardly opening grooves of the outer frame, and wherein the window further comprises support means

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provided on the bottom of the inwardly opening groove of the base of the outer frame for permitting the sash to rest thereon in a predetermined position with respect to the outer frame.

4. A fixed pane window as claimed in any one of claims 1 to 3, wherein the batten is adapted to snap into position on one of the said longer sides of the outer frame.

5. A fixed pane window as claimed in claim 4, wherein the batten is of substantially U-shaped cross section.

6. A fixed pane window as claimed in any one of claims 1 to 5, wherein means are provided for preventing the detachment of the sealing means from within the gaps.

7. A fixed pane window as claimed in any one of claims 1 to 6, wherein the sealing means is disposed at least on one side of the tongues of the inner frame.

8. A fixed pane window substantially as herein described with reference to the drawings.

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