

PATENT SPECIFICATION

(11)

1 596 301

1 596 301

- (21) Application No. 1072/77 (22) Filed 12 Jan. 1977
(23) Complete Specification filed 6 Jan. 1978
(44) Complete Specification published 26 Aug. 1981
(51) INT. CL.³ E06B 9/52 3/05
(52) Index at acceptance
E1J 810 GD GT
F2M 205 211 233 274 C1
(72) Inventors JACK ERNEST DOUGLAS
RICHARD JOHN BIGLEY



(54) IMPROVEMENTS IN OR RELATING TO FLY SCREENS FOR WINDOWS

(71) We, ARTHUR SHAW MANUFACTURING LIMITED, a British Company of P.O. Box 21, Willenhall, West Midlands WV13 2AS, 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:-

10 This invention concerns improvements, in, or relating to, fly screens for windows and doors.

It is desirable to provide fly screens which can be fitted to cover that part of the window which can be opened, or in the case of a door, the doorway. Conventionally, a fly screen is fitted to the fixed frame of the window or door, either outside or inside, so that the aperture left by an opened window or door is protected. In the case of sliding windows with one fixed light and one sliding light, the fly screen covers the opening of the sliding light. However this type of window has the disadvantage that the whole window cannot be cleaned from inside the building. With windows having two or more sliding lights, the advantage of being able to clean the window from the inside the building is offset by the need to cover the whole window by a fly screen, with the consequent increased cost of same, particularly with large glazed areas, especially as the screen is usually custom made.

It is an object of the present invention to provide a fly screen that can be assembled from a simple kit and which may be simply located and supported on the fixed frame of the window or door and which can be assembled to accommodate a range of sizes.

40 According to this invention we provide a fly screen for a window or door comprising a rectangular frame adapted for mounting on the fixed frame of the window or door, the fly screen frame comprising four elongate frame elements joined together by four corner cleats, a rebate extending lengthwise of each of the frame elements on one face thereof and each corner cleat having an obtuse angled rebate formed therein and
50 extending contiguously with each rebate in

adjacent frame elements so as to extend between and join adjacent rebates of adjacent frame elements at an obtuse angle to form in said one face of the screen frame a continuous groove extending around the screen frame, fly-netting extending over said one face of the screen frame and the marginal edge of the fly-netting extending into said groove and retained therein by an elongate wedging member comprising a strip of flexible and resilient deformable material extending into said continuous groove whereby the wedging member is in continuous engagement with the marginal edge of the fly-netting to retain it on the frame.

In this Specification and the claims thereto the term 'rebate' is intended to mean a channel, groove or slot formed along or in the face or edge of the appropriate member or element.

The elongate frame elements are conveniently formed as extrusions of the appropriate cross-section so that the rectangular screen frame can be assembled to the required size by cutting lengths of the extruded frame elements to the appropriate sizes and then joining the cut lengths together by the corner cleats.

It will be appreciated that the fly screen can be assembled from a simple kit to accommodate a range of sizes of fixed window or door frames simply by cutting lengths of the extruded frame elements and the wedge strip to the required size. In this way the fly screen according to the present invention overcomes the disadvantages of known fly screens which are manufactured to size and cannot be converted to accommodate a range of sizes of fixed window or door frames.

The elongate elements, which in use comprise the upper and lower frame elements and in some cases the corner cleats may be specially adapted for mounting on the fixed frame of the door or window by providing integral mounting means comprising flanges or rebates extending along the peripheral edge of the assembled fly screen frame. These flanges or rebates are designed to complement the design of the fixed frame so

as to enable simple fixing or mounting, such as by dropping into or slidable on the existing guide rails, channel or the like in the fixed frame. The elongate frame elements which in use comprise the side frame elements are adapted to receive sealing means for sealing the fly screen frame relative to the fixed frame and/or an adjacent glazed sash and are therefore often of different cross-section to the top and bottom frame elements.

Preferably the elongate frame elements are of similar cross-section and the frame further comprises four elongate adaptor members, each adaptor member being located on a respective one of the frame elements. The adaptor members which are located on the upper and lower frame elements include the mounting means which can then be selected so as to vary the outer side edge configuration of the frame to suit the design of any fixed frame. The adaptor members which are located on the side frame elements include locating means for locating and receiving the sealing means. The sealing means preferably comprises a pile strip of wool, neoprene, foamed plastics or any other suitable deformable material secured to one face of a strip.

Preferably the fly-netting is of the flexible type which can be cut easily, for example, a plastics coated fibre-glass netting. Additionally, the wedge strip is also preferably flexible and easily cut, and a rubber or elastomeric or plastics strip is suitable for forcing into the rebate.

Conveniently, the elongate elements are formed from extruded metal/alloy such as an aluminium alloy. However, the elongate elements could be plastics coated metal or a suitable plastics material. Separate mounting means may be provided which is suitable for mounting the fly screen frame in an unglazed aperture or to cover a glazed window or door without utilising the existing frame to hold the fly screen frame in position.

The invention will now be described in more detail with reference to the accompanying drawings wherein:-

Figure 1 is a front view of a fly screen according to the present invention;

Figure 2 is a perspective rear view of the top and bottom corners of one end of the fly screen shown in Figure 1 and showing the mounting of the fly screen on a fixed frame;

Figure 3 is an exploded perspective view of one corner of the fly screen frame;

Figure 4 is an exploded perspective view showing the assembly of the adaptor elements and pile seal;

Figure 5 is a perspective view of a modified frame element; and

Figure 6 is an end view showing separate mounting means for the fly screen frame

shown in Figure 1.

The fly screen shown in Figures 1 to 4 comprises a rectangular frame 1 with fly-netting 2 extending over one face of the frame and a wedge strip 3 received in a rebate 4 in the frame over the marginal edge of the fly-netting so as to clamp and retain the fly-netting in position.

The frame 1 comprises four elongate elements 1a, 1b, 1c and 1d of which the adjacent ends are joined together by a respective corner cleat 5. The frame elements 1a, 1b, 1c and 1d are similar to each other and are cut to size from an extrusion of aluminium alloy of constant cross-section. Each frame element comprises a main body 6 of generally C-section, defining an undercut channel 7, and an upstanding flange 8 of T-section. The corner cleats 5 which may be die castings or injection mouldings each have two extensions 5a, 5b of generally channel section extending normal to each other. The extensions are received within the channels 7 of the associated frame elements to locate the adjacent ends of the frame elements together. The extensions 5a, 5b each having a pair of longitudinally extending pips or lugs 5c (one only of which is shown) which are deformed during assembly so that the extensions are a tight interference fit in the channel 7 of the associated frame elements. In this way the use of securing screws or other attachment means for the frame elements is avoided. Additionally the corner cleats 5 each have a groove 9 formed in one face and a respective upstanding flange 10 of T-section on each extension 5a, 5b. In the assembled frame the groove 9 is contiguous with the channel 7 of the associated frame elements and the upstanding flanges 10 are contiguous with the upstanding flange 8 of the associated frame elements.

The channel 7 of each frame element and the groove 9 of each corner cleat define the above-mentioned rebate 4 in which the marginal edge of the fly-netting 2 is received and clamped in position by the wedge strip 3. The fly-netting 2 is of the flexible type which can be cut easily, for example, a plastics coated fibre-glass netting. The wedge strip 3 comprises a flexible rubber or elastomeric or plastics strip which can be cut to size and is suitable for forcing into the rebate 4.

Frame 1 further includes four elongate adaptor members 1e, 1f, 1g and 1h which are located on the above described upstanding flanges 8, 10 of the frame. The members 1e, 1g are mounted on one pair of opposed frame elements, the upper and the lower elements 1a, 1c, and provide mounting means for mounting the fly screen on a fixed door or window frame. The member 1f and 1h are mounted on the other pair of opposed frame elements, the side elements 130

1b, 1d, and provide locating means for receiving and locating sealing means 11 for sealing the fly screen relative to the fixed door or window frame and/or an adjacent glazed sash. The adaptor members 1e and 1g are similar to each other and each has an outwardly extending pair of flanges 12 which define an open channel section 13 and a longitudinally extending groove 14 of T-section complementary to the upstanding flanges 8, 10 of the frame so that the members can be slid onto the frame as shown in Figure 4. The adaptor members 1f and 1h are also similar to each other and each has a longitudinally extending groove 15 of T-section in one face and a longitudinally extending groove 16 of T-section complementary to the flanges 8, 10 of the frame in the opposed face so that the members can be slid onto the frame 1 as shown in Figure 4. The adaptor members 1e, 1f, 1g and 1h all comprise extrusions of aluminium alloy of the appropriate section which is cut to length. Screws 17 are provided for securing the adaptor members in position. The sealing means 11 comprises a pile 18 of wool, neoprene, foamed plastics or similar deformable material secured to one side of a strip 19. The strip 19 is located in the groove 15 of the adaptor members 1f and 1h and is slid into position as shown in Figure 4. One or more lifting rings 20 are secured to the frame elements 1c to facilitate both the locating of the frame in position and the subsequent lifting and removal of the frame.

The above described fly screen is suitable for mounting in the fixed frame of a window comprising one or more sliding lights. The upper and lower guide rails or runners 21 and 22 respectively of such a fixed frame are shown in Figure 2. The upper guide rail 21 comprises two adjacent channel sections 21a, 21b extending parallel to each other. The opposed faces of each channel section are formed with a respective longitudinally extending groove 23 in which pile strip 19 is located. The lower guide rail 22 has three upstanding flanges 22a, 22b and 22c extending parallel to each other. The flanges 22a, and 22c provide runners for respective sliding glazed sashes (not shown) the upper ends of which are received between the facing pile strips of the associated channel sections 21a and 21b. In use of the fly screen a glazed sash (not shown) is slid to one side and the upper adaptor member 1e is inserted between the facing pile strips of channel section 21a until the lower adaptor member 1g can be lowered with its open channel section 13 onto the flange 22a. In position the pile strip 19 mounted on the side adaptor members 1f, 1h seals the fly screen relative to the fixed window frame and the adjacent sliding glazed sash.

It will be appreciated that because the fly

screen actually locates on, and is supported by, the existing window frame, when the fly screen is fitted in place the sliding sash in the typical window described above is maintained open by the interference of the fly screen. Thus with a fly screen according to the invention, the window of the typical kind described above does not have to be modified to take the fly screen, nor does the fly screen have to be factory assembled to a predetermined size. Furthermore, opening-closing movement of the sash can be achieved once the fly screen is removed, for example for cleaning.

It will be appreciated that the invention is not limited to the particular shape and construction of the frame elements, corner cleats and adaptor member described above. Thus where the frame elements and adaptor members are provided with interengageable formations comprising complementary T-section flanges and grooves which allow a sliding fit between the components as well as locking the components together it will be understood that the flanges and grooves are interchangeable or may even be replaced by any other suitable interengageable complementary formations. Additionally the upstanding flanges 10 provided on the corner cleats may be omitted.

The adaptor members 1e and 1g which provide the mounting means can be selected so as to complement the design of the fixed frame. However in a modification illustrated in Figure 5 the frame elements 1a and 1c and the corresponding adaptor members 1e and 1g are combined in a single component 24 in which the mounting means comprises a channel section 25 integral with the frame element. The component 24 is also formed as an extrusion of aluminium alloy. Likewise the side elements 1b and 1d and the corresponding adaptor members 1f and 1h may also be combined to give a single component which is formed as an extrusion of aluminium alloy. In yet another modification when the fly screen is intended for mounting in a door frame it is envisaged that the fly screen frame would be provided with support rollers or guides to provide improved sliding movement of the frame on the upstanding flanges defining the runners. It will also be understood that while the frame elements and adaptor members have been described as extrusions of aluminium alloy they may in fact comprise extrusions of any other suitable metal/alloy, a plastics coated metal, or even a suitable plastics material. Cover beads or trims may be provided to cover the wedge strip and prevent interference.

In the above described embodiments the mounting means comprising an open channel is provided on each of a pair of opposed frame elements or adaptor members so that

either component could be mounted on the lower guide rail with the other component being received between the pile strip in the upper channel section. It will be appreciated therefore that the mounting means may only be provided on one of the components. Furthermore, although the mounting means has been described as an open channel which is located on an upstanding flange of the fixed frame it will be appreciated that the mounting means may comprise any suitable locating formations which complement the design of the fixed frame.

Figure 6 illustrates alternative mounting means 26 for mounting the above described fly screen comprising upper and lower members 27, 28 respectively of similar cross-section. Each member comprises a base 29 an outer or face flange 30 and an inner flange 31 which is shallower than the face flange 30 and extends parallel to the face flange to define a channel section recess 32. The members 27, 28 are formed as an extrusion, preferably of aluminium alloy and are cut to size to correspond to the width of the aperture to be covered. In use the upper member 27 is secured along the upper face 33 of the aperture to be covered. An insert 35 is located in the recess 32 of the lower member 28 and the lower member is secured along the lower face 34 of the aperture. The configuration of the recess 32 and the insert 35 are selected so that the insert has to be slid longitudinally into the recess and cannot be removed once the lower member is in position. Preferably the insert comprises a length of the extrusion from which the above-described adaptor members 1f and 1h are formed. Once the members 27, 28 are in position the upper adaptor member 1e is inserted into the recess 32 in the upper member 27 allowing the lower adaptor member 1g to pass over the inner flange 31 of the lower member 28 whereupon the fly screen frame is lowered so that the lower adaptor member is seated on the insert 35 while the upper adaptor member is still retained within the recess 32 of the upper member 27.

It will be appreciated that the mounting means 26 is particularly suited for mounting the fly screen in an unglazed aperture or to cover a glazed door or window without utilising the door or window frame to hold the fly screen frame in position. It will also be understood that although the mounting means 26 has been described for mounting a fly screen frame which includes mounting means on the fly screen frame itself suitable for mounting the fly screen frame on an existing window frame the mounting means 26 could be used for mounting a fly screen frame which is not adapted for mounting on an existing window frame.

Finally it will be appreciated from the

foregoing that the fly screen according to the invention may be sold as a kit for a designated maximum size of frame and the parts may be cut to length to suit the particular frame size. A range of such maximum sizes could even be provided.

WHAT WE CLAIM IS:-

1. A fly screen for a window or door comprising a rectangular frame adapted for mounting on the fixed frame of the window or door, the fly screen frame comprising four elongate frame elements joined together by four corner cleats, a rebate extending lengthwise of each of the frame elements on one face thereof and each corner cleat having an obtuse angled rebate formed therein and extending contiguously with each rebate in adjacent frame elements so as to extend between and join adjacent rebates of adjacent frame elements at an obtuse angle to form in said one face of the screen frame a continuous groove extending around the screen frame, fly-netting extending over said one face of the screen frame and the marginal edge of the fly-netting extending into said groove and retained therein by an elongate wedging member comprising a strip of flexible and resilient deformable material extending into said continuous groove whereby the wedging member is in continuous engagement with the marginal edge of the fly-netting to retain it on the frame.

2. A fly screen according to claim 1 wherein the fly-netting comprises flexible plastics coated fibre-glass netting.

3. A fly screen according to claim 1 or claim 2 wherein the rebate comprises a respective undercut channel in each of the frame elements.

4. A fly screen according to claim 3 wherein each corner cleat comprises two extensions extending normal to each other and each extension is received in the undercut channel of the associated adjacent frame element.

5. A fly screen according to claim 4 wherein each extension is an interference fit in the undercut channel of the associated adjacent frame element and includes at least one deformable pip or lug.

6. A fly screen according to any one of the preceding claims wherein each of a first pair of opposed frame elements include integral mounting means arranged and adapted for mounting the fly screen frame on the fixed frame of the window or door.

7. A fly screen according to any one of Claims 1 to 5 wherein the frame elements are of similar cross-section and the screen frame further comprises four elongate adaptor members, each adaptor member being located on a respective one of the frame elements and each of a first pair of opposed adaptor members including mounting



either component could be mounted on the lower guide rail with the other component being received between the pile strip in the upper channel section. It will be appreciated therefore that the mounting means may only be provided on one of the components. Furthermore, although the mounting means has been described as an open channel which is located on an upstanding flange of the fixed frame it will be appreciated that the mounting means may comprise any suitable locating formations which complement the design of the fixed frame.

Figure 6 illustrates alternative mounting means 26 for mounting the above described fly screen comprising upper and lower members 27, 28 respectively of similar cross-section. Each member comprises a base 29 an outer or face flange 30 and an inner flange 31 which is shallower than the face flange 30 and extends parallel to the face flange to define a channel section recess 32. The members 27, 28 are formed as an extrusion, preferably of aluminium alloy and are cut to size to correspond to the width of the aperture to be covered. In use the upper member 27 is secured along the upper face 33 of the aperture to be covered. An insert 35 is located in the recess 32 of the lower member 28 and the lower member is secured along the lower face 34 of the aperture. The configuration of the recess 32 and the insert 35 are selected so that the insert has to be slid longitudinally into the recess and cannot be removed once the lower member is in position. Preferably the insert comprises a length of the extrusion from which the above-described adaptor members 1f and 1h are formed. Once the members 27, 28 are in position the upper adaptor member 1e is inserted into the recess 32 in the upper member 27 allowing the lower adaptor member 1g to pass over the inner flange 31 of the lower member 28 whereupon the fly screen frame is lowered so that the lower adaptor member is seated on the insert 35 while the upper adaptor member is still retained within the recess 32 of the upper member 27.

It will be appreciated that the mounting means 26 is particularly suited for mounting the fly screen in an unglazed aperture or to cover a glazed door or window without utilising the door or window frame to hold the fly screen frame in position. It will also be understood that although the mounting means 26 has been described for mounting a fly screen frame which includes mounting means on the fly screen frame itself suitable for mounting the fly screen frame on an existing window frame the mounting means 26 could be used for mounting a fly screen frame which is not adapted for mounting on an existing window frame.

Finally it will be appreciated from the

foregoing that the fly screen according to the invention may be sold as a kit for a designated maximum size of frame and the parts may be cut to length to suit the particular frame size. A range of such maximum sizes could even be provided.

WHAT WE CLAIM IS:-

1. A fly screen for a window or door comprising a rectangular frame adapted for mounting on the fixed frame of the window or door, the fly screen frame comprising four elongate frame elements joined together by four corner cleats, a rebate extending lengthwise of each of the frame elements on one face thereof and each corner cleat having an obtuse angled rebate formed therein and extending contiguously with each rebate in adjacent frame elements so as to extend between and join adjacent rebates of adjacent frame elements at an obtuse angle to form in said one face of the screen frame a continuous groove extending around the screen frame. fly-netting extending over said one face of the screen frame and the marginal edge of the fly-netting extending into said groove and retained therein by an elongate wedging member comprising a strip of flexible and resilient deformable material extending into said continuous groove whereby the wedging member is in continuous engagement with the marginal edge of the fly-netting to retain it on the frame.

2. A fly screen according to claim 1 wherein the fly-netting comprises flexible plastics coated fibre-glass netting.

3. A fly screen according to claim 1 or claim 2 wherein the rebate comprises a respective undercut channel in each of the frame elements.

4. A fly screen according to claim 3 wherein each corner cleat comprises two extensions extending normal to each other and each extension is received in the undercut channel of the associated adjacent frame element.

5. A fly screen according to claim 4 wherein each extension is an interference fit in the undercut channel of the associated adjacent frame element and includes at least one deformable pip or lug.

6. A fly screen according to any one of the preceding claims wherein each of a first pair of opposed frame elements include integral mounting means arranged and adapted for mounting the fly screen frame on the fixed frame of the window or door.

7. A fly screen according to any one of Claims 1 to 5 wherein the frame elements are of similar cross-section and the screen frame further comprises four elongate adaptor members, each adaptor member being located on a respective one of the frame elements and each of a first pair of opposed adaptor members including mounting

(13)

means arranged and adapted for mounting the fly screen frame on the fixed frame of the window or door.

8. A fly screen according to Claim 6 or Claim 7 wherein the mounting means comprises a pair of flanges defining an open channel.

9. A fly screen frame according to any one of Claims 1 to 5 including mounting means comprising a pair of elongate members of similar cross-section, each member having a respective recess constructed and adapted to receive a respective one of a pair of opposed frame elements and each member being adapted for mounting on the fixed frame of the window or door.

10. A fly screen according to claim 9 wherein each recess is defined by a respective face flange and an inner flange shallower than the face flange and extending parallel to the face flange.

11. A fly screen according to Claim 10 including an elongate insert in the recess of one of said members.

12. A fly screen according to any one of Claims 6, 7 or 9 wherein each of a second pair of opposed frame elements or adaptor members include outwardly directed sealing means.

13. A fly screen according to Claim 12 wherein the sealing means comprises a pile of resilient deformable material secured to one side of an elongate strip.

14. A fly screen according to Claim 13 wherein the pile strip and each of said second pair of frame elements or adaptor members have complementary interengaging formations.

15. A fly screen according to Claim 13 wherein the complementary formations comprise a respective groove in each of said second pair of frame elements or adaptor members in which the elongate strip is received.

16. A fly screen according to Claim 7 wherein each frame element and the associated adaptor member have complementary interengaging formations.

17. A fly screen according to Claim 16 wherein the complementary interengaging formations comprise a T-shaped groove on one of said frame element and the associated adaptor member and a T-shaped flange on the other of said element and the associated adaptor member.

18. A fly screen substantially as herein described with reference to Figures 1 to 4 of the accompanying drawings.

19. A fly screen substantially as herein described and as modified with reference to Figure 5 of the accompanying drawings.

20. A fly screen substantially as herein described and as modified with reference to Figure 6 of the accompanying drawings.

21. A kit of parts for assembly of a fly screen comprising four elongate elements adapted to be joined together by four corner cleats to form a screen frame, means on the elongate elements for mounting the screen frame, when assembled, on a fixed frame, a rebate extending lengthwise of each of said elongate elements on one face thereof, and each corner cleat having an obtuse angled rebate formed therein and adapted to extend contiguously with each said rebate in adjacent frame elements so as to extend between and join the adjacent rebates of adjacent frame elements when assembled to form in said one face of the screen frame a continuous groove extending around the screen frame, an elongate wedging member comprising a strip of flexible and resilient deformable material for cutting to the length of said continuous groove, and fly-netting for placing over said one face of the screen frame with the marginal edge of the fly-netting to be retained in the continuous groove by the wedging member which is for extending into the continuous groove to clamp the marginal edge of the fly-netting to the screen frame.

AUDREY E. KNOWLES
Chartered Patent Agent
624 Pershore Road,
Selly Park,
Birmingham B29 7HG



* C L M S *