

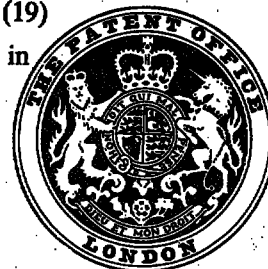
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(54) FRAME CONSTRUCTION FOR MOUNTING ON A BUILDING WALL

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumi-cho, 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 :-

The present invention relates generally to a frame construction, and more particularly to a frame and bracket combination for use as a bottom frame member assembly of a stormproof-sash box or a window unit which is installed exteriorly of a building wall.

Frame constructions such as for stormproof-sash boxes or exterior window units project outwardly from a building wall. Since their weight acts mainly on the cantilever-like bottom frame member, it has been required to provide a rugged structure for the bottom frame member. This is true especially with stormproof-sash boxes because they become much more heavy as the sashes are placed back into the boxes when not in use.

One well known proposal for a durable structure is a bracket that provides additional support. The bracket has an attachment leg extending downwardly for mounting on the building wall. This conventional type of bracket is disadvantageous in that its attachment leg is exposed to view, and a decorative panel or siding on the wall must be recessed where the attachment leg is to be installed on the wall. Cutting of the panel is tedious and time-consuming. Furthermore, rain water tends to leak in under the panel through the recess.

The present invention seeks to provide a bottom frame member having a bracket that can be mounted in place with utmost ease.

The invention further seeks to provide a bottom frame member having a bracket that is concealed from view upon installation and

is free from water leakage which would otherwise take place through an exposed bracket.

According to one aspect of the invention there is provided a frame member assembly for attachment to a building wall, comprising an elongated frame member including a horizontal base plate and a first mounting portion extending upwardly from the base plate, said first mounting portion having means for being mounted on the building wall, and a bracket fixed to the underside of said frame member, said bracket including a base and an attachment leg which have surfaces complementary in shape to and mating with said base plate and said first mounting portion respectively, and said attachment leg extending upwardly and having means for engagement with the building wall.

According to another aspect of the invention, there is provided a frame construction for mounting on a building wall, comprising a pair of top and bottom horizontal frame members, a pair of vertical side frame members, said horizontal frame members being connected endwise to said vertical frame members, said bottom frame members including a base plate, a first mounting portion extending upwardly from said base plate and having a vertical plate for being fixed to the building wall, a second mounting portion spaced downwardly from said first mounting portion and having a vertical plate for being fixed to the building wall, and at least one bracket fixed to the underside of said bottom frame member, said bracket including a base and an attachment leg which have surfaces complementary in shape to and mating with said base plate and said first mounting portion respectively, and said attachment leg extending upwardly and having means for engagement with the building wall.

The invention will now be described in

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greater detail, by way of example, with reference to the drawings, in which:-

Figure 1 is a horizontal cross-sectional view of a stormproof-sash box having a bottom frame member and a bracket combination constructed in accordance with the invention;

Figure 2 is a vertical cross-sectional view taken along line II-II of Figure 1; and

Figure 3 is an enlarged fragmentary perspective view, with parts cut away, of the bottom frame member and bracket that are disassembled.

Figures 1 and 2 show a box or receptacle 10 for stormproof sashes (not shown) that are horizontally slidable in and along a channel 11 formed integrally with a sill 12 of a window frame 13. The sill 12 has thereon a pair of rails 14, 14 on which a pair of usual sashes (not shown) are horizontally movable. The stormproof sliding sashes can pass through a slot 15 into and out of the box 10.

The box 10 is installed on a building wall 16, and comprises a pair of top and bottom horizontal frame members 17, 18, and a pair of vertical side frame members 19, 20, the horizontal frame members 17, 18 being connected endwise to the vertical frame members 19, 20. The side frame members 19, 20 have mounting fins 21, 22, respectively, that are fixed to a pair of posts 23, 24, respectively, in the building wall 16 by means of a series of screws 25, 26 spaced along the mounting fins 21, 22. The top frame member 17 has upper and lower vertical mounting plates or flanges 27, 28 fixed to the building wall 16 and the posts 23, 24 by means of series of screws 29 spaced along the flanges 27, 28. The top frame member 17 carries thereon a plate member 30 for protection and reinforcement of the top frame member 17, the plate member 30 having an attachment flange 31 held against the upper mounting plate 27 and fixed to the building wall 16 and the posts 23, 24 by means of a series of screws 32 spaced along the attachment flange 31. The top frame member 17 has on and along its distal edge a downward flange 33' for the purpose described later on.

As shown in Figures 2 and 3, the bottom frame member 18 includes a base plate 33, a first mounting portion 34 extending upwardly from the base plate 33, and a second mounting portion 35 spaced downwardly from the first mounting portion 34. The first mounting portion 34 has a first vertical plate 36 on its free edge and a second vertical plate 37 on its opposite edge, the first plate 36 extending substantially perpendicularly to and located upwardly of the base plate 33. The first vertical plate 36 is secured to the building wall 16 and the posts 23, 24 by means of a series of screws 38 spaced at intervals along the plate 36. The first mount-

ing portion 34 is also provided with an intermediate vertical plate 39 extending substantially perpendicularly to the base plate 33, the intermediate plate 39 being positioned between the base plate 33 and the vertical plate 36. The intermediate vertical plate 39 extends parallel to the building wall 16 and acts as an attachment web secured to the wall 16 and posts 23, 24. The first mounting portion 34 has two slanted plates 40, 41, the plate 40 being provided between the first and intermediate vertical plates 36, 39, and the plate 41 between the intermediate and second vertical plates 39, 37. Thus, the first mounting portion 34 is double-stepped as better shown in Figure 3.

The second mounting portion 35 is substantially a channel having a horizontal plate 42 and a pair of vertical flanges 43, 44 extending downwardly from the opposite edges of the horizontal plate 42. The vertical flange 43 serves as an attachment plate fixed to the building wall 16 and the posts 23, 24 by means of screws 45 passing through and located at spaced intervals along the flange 43. The horizontal plate 42 lies substantially flush with the base plate 33. The base plate 33 and second mounting portion 35 are interconnected by a horizontal web 46 lying substantially flush with the base plate 33 and horizontal plate 42.

The bottom frame member 18 further includes an upward and a downward flange 47, 48 respectively extending on and along a distal edge of the base plate 33 which is remote from the first and second mounting portions 34, 35. The downward flange 48 has on its distal edge a retainer flange 49 directed toward the second mounted portion 35.

The downward flange 33' of the top frame member 17 and the upward flange 47 of the bottom frame member 18 are directed toward each other and serve as a retainer for maintaining stored sashes against falling off the box 10.

On top of the base plate 33, there are mounted guides 50 and 51 (Figure 1) positioned at its ends, respectively. The top frame member 17 also carries similar guides positioned correspondingly to the guides 50, 51. These guides cooperate to allow the sashes to be orderly arranged in the box 10 as they are put in one after another.

To provide rugged support for the bottom frame member 18, a bracket or supporting block 53 is fixed to the underside of the bottom frame member 18. The bracket 53 is of a substantially L-shaped cross-section having a base 54 and an attachment leg 55 which have surfaces complementary in shape to and mating with the base plate 33 and the first mounting portion 34, respectively, of the bottom frame member 18. The

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attachment leg 55 includes a foot 56 extending substantially perpendicularly to the base 54. The foot 56 has a pair of heels 57, 57 directed away from the base 54 for engagement with the post 24. The attachment leg 55 is shaped at 58 in its lower portion to receive the channel 35 when the bracket 53 and the bottom frame member 18 are put together.

The bottom frame member 18 is an aluminium extrusion. At least one end of the horizontal web 46 has a cutout 59 for receiving therein a neck 60 of the bracket 53 which connects between the base 54 and attachment leg 55.

The bracket 53 is an aluminium extrusion. A pair of tapped holes 61,61 are formed in the base 54 and a through hole 62 in the foot 56, the through hole 62 being located between the heels 57,57.

For assembling the box 10, the bracket 53 is first mounted on the bottom frame member 18. More specifically, the bracket 53 is combined with an end of the bottom frame member 18 by inserting the neck 60 into the cutout 59 and the free end of the base 54 between the base plate 33 and the retainer flange 49. With the bracket 53 held in place, it is affixed to the bottom frame member 53 by means of a pair of screws 63,63 passing through the base plate 33 threadedly into the tapped holes 61,61. It is usual practice to provide two brackets 53 of the same or varying width at the ends of the bottom frame member 18, as shown in Figure 1. Next, the top and bottom frame members 17, 18, and the side frame members 19, 20 are put together to complete the box 10, which is then installed on the building wall 16 including the posts 23,24 by means of the screws. A relatively long screw 64 is employed to secure the intermediate vertical plate 39 and the foot 56 to the post 24. The screw 64 passes through the intermediate vertical plate 39 and the through hole 62 threadedly into the post 24, and as it is tightened, enables the attachment leg 55 to be secured positively and reliably to the post 24.

Upon installation of the box 10, the wall 16 is finished with a decorative panel or siding 65 comprising a wooden backing 66, a wire lath 67, and mortar 68, for instance. It is desirable to form the siding 65 to a thickness which is substantially equal to the width of the horizontal plate 42 of the second mounting portion 35. If necessary, a filler 69 is inserted between the flange 44 of the second mounting portion 35 and the mortar 68 to prevent the risk of water leakage along the exterior surface of the mortar 68.

With the structure of the invention, the attachment leg 55 of the bracket 53 extends upwardly and is invisible with the result that

the siding 65 beneath the bottom frame member 18 needs no cutout or recess that would otherwise be required for receiving a downwardly extending bracket leg. Thus, an area of the siding 65 just below the bottom frame member 18 can be finished neatly and slightly for a better weather resistance.

The bracket 53 has the attachment leg 55 that is interposed between the first and the second mounting portions 34,35 to provide a reinforced construction which prevents the bottom frame member 18 from being deformed under a heavy load.

Although the bottom frame member and bracket combination has been shown and described as applied to a stormproof-sash box, it can be utilized as support for any cantilever-like frame construction such as for exterior window units.

WHAT WE CLAIM IS:

1. A frame member assembly for attachment to a building wall, comprising an elongated frame member including a horizontal base plate and a first mounting portion extending upwardly from the base plate, said first mounting portion having means for being mounted on the building wall, and a bracket fixed to the underside of said frame member, said bracket including a base and an attachment leg which have surfaces complementary in shape to and mating with said base plate and said first mounting portion respectively, and said attachment leg extending upwardly and having means for engagement with the building wall.

2. A frame member assembly according to claim 1, wherein said means of the first mounting portion comprises a vertical plate extending substantially perpendicularly to and located upwardly of said base plate.

3. A frame member assembly according to claim 2, wherein said first mounting portion includes an intermediate vertical plate that extends substantially perpendicularly to said base plate, said intermediate vertical plate being positioned between said base plate and said vertical plate.

4. A frame member assembly according to any preceding claim wherein said frame member further includes a second mounting portion spaced downwardly from said first mounting portion, the second mounting portion having means for being mounted on the building wall, and said attachment leg being adopted to receive the second mounting portion.

5. A frame member assembly according to claim 4, wherein said second mounting portion has a horizontal plate lying substantially flush with said base plate.

6. A frame member assembly according to claim 5, wherein said base plate and said second mounting portion are interconnected by a horizontal web lying substantially flush

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5 attachment leg 55 includes a foot 56 extending substantially perpendicularly to the base 54. The foot 56 has a pair of heels 57, 57 directed away from the base 54 for engagement with the post 24. The attachment leg 55 is shaped at 58 in its lower portion to receive the channel 35 when the bracket 53 and the bottom frame member 18 are put together.

10 The bottom frame member 18 is an aluminium extrusion. At least one end of the horizontal web 46 has a cutout 59 for receiving therein a neck 60 of the bracket 53 which connects between the base 54 and attachment leg 55.

15 The bracket 53 is an aluminium extrusion. A pair of tapped holes 61,61 are formed in the base 54 and a through hole 62 in the foot 56, the through hole 62 being located between the heels 57,57.

20 For assembling the box 10, the bracket 53 is first mounted on the bottom frame member 18. More specifically, the bracket 53 is combined with an end of the bottom frame member 18 by inserting the neck 60 into the cutout 59 and the free end of the base 54 between the base plate 33 and the retainer flange 49. With the bracket 53 held in place, it is affixed to the bottom frame member 53 by means of a pair of screws 63,63 passing through the base plate 33 threadedly into the tapped holes 61,61. It is usual practice to provide two brackets 53 of the same or varying width at the ends of the bottom frame member 18, as shown in Figure 1. Next, the top and bottom frame members 17, 18, and the side frame members 19, 20 are put together to complete the box 10, which is then installed on the building wall 16 including the posts 23,24 by means of the screws. A relatively long screw 64 is employed to secure the intermediate vertical plate 39 and the foot 56 to the post 24. The screw 64 passes through the intermediate vertical plate 39 and the through hole 62 threadedly into the post 24, and as it is tightened, enables the attachment leg 55 to be secured positively and reliably to the post 24.

50 Upon installation of the box 10, the wall 16 is finished with a decorative panel or siding 65 comprising a wooden backing 66, a wire lath 67, and mortar 68, for instance. It is desirable to form the siding 65 to a thickness which is substantially equal to the width of the horizontal plate 42 of the second mounting portion 35. If necessary, a filler 69 is inserted between the flange 44 of the second mounting portion 35 and the mortar 68 to prevent the risk of water leakage along the exterior surface of the mortar 68.

65 With the structure of the invention, the attachment leg 55 of the bracket 53 extends upwardly and is invisible with the result that

the siding 65 beneath the bottom frame member 18 needs no cutout or recess that would otherwise be required for receiving a downwardly extending bracket leg. Thus, an area of the siding 65 just below the bottom frame member 18 can be finished neatly and slightly for a better weather resistance.

The bracket 53 has the attachment leg 55 that is interposed between the first and the second mounting portions 34,35 to provide a reinforced construction which prevents the bottom frame member 18 from being deformed under a heavy load.

Although the bottom frame member and bracket combination has been shown and described as applied to a stormproof-sash box, it can be utilized as support for any cantilever-like frame construction such as for exterior window units.

WHAT WE CLAIM IS:

1. A frame member assembly for attachment to a building wall, comprising an elongated frame member including a horizontal base plate and a first mounting portion extending upwardly from the base plate, said first mounting portion having means for being mounted on the building wall, and a bracket fixed to the underside of said frame member, said bracket including a base and an attachment leg which have surfaces complementary in shape to and mating with said base plate and said first mounting portion respectively, and said attachment leg extending upwardly and having means for engagement with the building wall.

2. A frame member assembly according to claim 1, wherein said means of the first mounting portion comprises a vertical plate extending substantially perpendicularly to and located upwardly of said base plate.

3. A frame member assembly according to claim 2, wherein said first mounting portion includes an intermediate vertical plate that extends substantially perpendicularly to said base plate, said intermediate vertical plate being positioned between said base plate and said vertical plate.

4. A frame member assembly according to any preceding claim wherein said frame member further includes a second mounting portion spaced downwardly from said first mounting portion, the second mounting portion having means for being mounted on the building wall, and said attachment leg being adopted to receive the second mounting portion.

5. A frame member assembly according to claim 4, wherein said second mounting portion has a horizontal plate lying substantially flush with said base plate.

6. A frame member assembly according to claim 5, wherein said base plate and said second mounting portion are interconnected by a horizontal web lying substantially flush

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with said base plate and said horizontal plate.

7. A frame member assembly according to claim 5 or 6 wherein said means of the second mounting portion comprises a vertical flange extending substantially perpendicularly to said horizontal plate.

8. A frame member assembly according to any preceding claim wherein the frame member further includes a downward flange extending along an edge of said base plate which is remote from the first mounting portion, the downward flange having on its distal edge a retainer flange, and said base of the bracket having its distal end inserted between said base plate and retainer flange.

9. A frame member assembly according to any preceding claim, wherein said bracket is made of an aluminium extrusion.

10. A frame member assembly according to any preceding claim, wherein said bracket and said frame member are interconnected by means of screws.

11. A frame construction for mounting on a building wall, comprising a pair of top and bottom horizontal frame members, a pair of vertical side frame members, said horizontal frame members being connected endwise to said vertical frame members, said bottom frame members including a base plate, a first mounting portion extending upwardly from said base plate and having a vertical plate for being fixed to the building wall, a second mounting portion spaced downwardly from said first mounting portion and having a vertical plate for being fixed to the building wall, and at least one bracket fixed to the underside of said bottom frame member, said bracket including a base and an attachment leg which have surfaces complementary in shape to and mating with said base plate and said first mounting portion respectively, and said attachment leg extending upwardly and having means for engagement with the building wall.

12. A frame member assembly substantially as herein described with reference to and as illustrated in the accompanying drawings.

13. A frame construction substantially as herein described with reference to and as illustrated in the accompanying drawings.

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