

DEVICE AND METHOD FOR MOUNTING
A WINDOW FRAME TO AN OPENING

The present invention relates to a method and device for mounting a window frame to a window opening of a wall.

5 Generally, when a window frame is to be installed in a window opening already formed in a wall, the structural members constituting the window frame are cut to size on site, to facilitate the measuring and fitting to the window opening.

10 Alternatively, when an existing window frame is to be used, other members are selected and inserted into the clearance between the opening and the frame, and the frame then secured to the wall with expansion bolts.

With the former mode of working, however, the work
15 efficiency is generally poor because the work entailed is repetitious and troublesome, and further, the fit and appearance of the frame after the finish are not good.

In the latter mode, it is difficult to level the frame, and the securing of the frame with only expansion
20 bolts easily leads to errors in the finished work.

Therefore, the primary object of the present invention is to provide a device for mounting a window frame to an opening, which device is free from the aforementioned drawbacks and which enables an easy and reliable mounting of
25 a window frame, regardless of whether or not the structure thereof is simple and compact.

Accordingly, the present invention provides a device for mounting a window frame to a window opening of a wall, wherein said mounting device comprises a base to be secured
30 to the window frame, a first suspension member to be secured to one side of the wall, and a second suspension member to be secured to the other side of the wall, said first and

second suspension members each being mounted to the base by hook means in operation, and wherein each of said first and second suspension members is provided with a first portion for a primary securing thereof and a second portion for a secondary securing thereof to a respective side of said wall, said first and second portions being at locations on the suspension members which are remote from the region thereof connected to the base.

The invention also extends to a method of mounting a window frame to a window opening of a wall using such a device.

The invention is hereinafter described in more detail by way of example only, with reference to the accompanying drawings, in which:-

15 Fig. 1 is a perspective view of a mounting device for a window frame according to an embodiment of the invention;

Fig. 2 is a perspective view of a plate for a primary or secondary securing of a window frame;

20 Fig. 3 is a perspective view illustrating a modification of the suspension member;

Fig. 4 is an elevational view of a wall, wherein a window frame has been installed in a window opening of the wall by using a preferred embodiment of mounting device according to the invention;

25 Fig. 5 is a cross sectional view illustrating a main part of the wall after the construction, wherein circumferential parts of the wall related to the window frame as shown in Fig. 4(b) have been filled with mortar and the like;

30 Fig. 6 is a perspective view of another embodiment of a mounting device of the invention;

Fig. 7 is a perspective view of a further embodiment of a mounting device of the invention;

35 Fig. 8 is a schematic partial view of another modification of a suspension member secured to the wall by driving a yoke or fork type nail into the wall.

Note, throughout the drawings, the same reference characters are used to designate like or corresponding parts.

Figure 1 is a perspective view of a mounting device 5 for a window frame according to an embodiment of the present invention; Fig. 4 is an elevational view of a wall at a side of a construction and at a top thereof, wherein a window frame is installed to a window opening of the wall by using the mounting device according to the invention; and Fig. 5 10 is a cross sectional view of a main part of the wall after the window has been installed, wherein parts of the wall surrounding the window frame as shown in Fig. 4(B) have been filled-in with mortar and the like.

Referring first to Fig. 1, the mounting device 1 of 15 the embodiment fundamentally comprises a base 2 and a pair of suspension members 3, 3'.

The base 2 is made of a metal plate having folded parts, and is provided with holes 2a on the central portion thereof, to enable the base to be fixed to the window frame 20 11.

The following description is of only one (the right side) of the suspension members, as the suspension members 3, 3' are identical to one another.

The suspension member 3 is principally composed of a 25 flexible wire or band e.g. a steel wire, a steel stranded wire rope, a nylon rope, or a cotton rope, etc., which is formed into a loop and the ends thereof are hooked onto a pair of U-shaped parts of the base 2 as shown in Fig. 1. Then, on the portion of the loop opposite to the portions of 30 the suspension member 3 connected to the base 2, there are provided securing portions 4.

The securing portions 4 comprise two plates 5 and 6 to be secured to the wall, one of which is used for a primary

securing of the window frame and the other of which is used for a secondary securing thereof. The plates 5, 6 are provided with holes 5a and 6a, respectively, for this purpose.

5 The plates 5 and 6, as shown in Fig. 2, are bent into two parts and joined so as to form a tubular passage 7 at one end thereof, and are mounted on the suspension member 3 by threading the suspension member 3 through the tubular passage 7. Accordingly, the positions of the plates 5 and
10 6 are relatively changeable along the suspension member 3 because of the tubular passage through which the plates 5 and 6 are mounted on the suspension member 3.

Note as shown in Fig. 3, each of the suspension members 31, 31' can be formed as a closed loop, and this
15 also applies to the modifications discussed later.

The mounting device 1, as constructed above according to the invention, is shown as applied to a brick wall, which is a typical masonry construction, by way of an example. This is because, in such a masonry construction, the size of
20 the window opening tends to be substantially larger than that of the frame, due to the irregularity of the thickness of the joints between the bricks, and thus the mounting device 1 can be advantageously used to mount a frame to such an opening.

25 Obviously, the present invention is by no means limited to the illustrated embodiments, e.g. the present invention can be applied to any wall other than such a brick wall. For example, the present invention can be used to mount a window frame to an existing window opening which is
30 considerably larger than the frame, or to mount a window frame to a window opening incorrectly formed to a larger size than required.

An example of the mounting of a window frame when using the mounting device according to the invention will

now be described, with reference to Figs. 4 and 5.

First, a plurality of the devices 1 are secured to the periphery of the window frame 11 by rivets or bolts, and the window frame 11 is then manually or mechanically inserted to 5 a large opening 13 in the wall 12.

If a vertical pillar 15 (Fig. 4(A)), for example, is used as a reference, the window frame 11 is positioned such that a jamb of the frame 11 is set close to the vertical pillar 15. Alternatively, if a horizontal pillar 16 (Fig. 10 4(B)) is used as a reference, the window frame 11 is positioned such that a head of the frame 11 is set close to the horizontal pillar 16.

The primary securing plates 5 of the suspension members 3 are then secured to the wall 12 by driving 15 concrete nails 18 through the hole 5a thereof into a brick 12a or a joint 12b of the wall 12 (see Fig. 5).

Thereafter, the level adjusting and flush mounting of the frame 11 are accomplished by inserting liner plates 19 into clearances between the opening 13 and the frame 11.

20 Then, the secondary securing plates 6 of the suspension member 3 are secured to the wall 12 by driving concrete nails 18 through the hole 6a thereof into the wall 12 (see Fig. 5), whereby the window frame 11 is firmly positioned in the opening 13 due to the force exerted 25 thereon from all directions by the devices 1.

Finally, as shown in Fig. 5, concrete 21 and a back-up member 22 are filled in the blank spaces between the opening 13 of the wall 12 and the window frame 11 set therein, and accordingly, the suspension members 3 and 3' fixed to the 30 wall 12 are covered with mortars, so that they cannot be seen, and the window mounting operation is then completed.

Note, key or wedge shaped members (not shown), for

example, may be used instead of the liner plates 19, as after the mounting of the window frame 11 in the opening 13 is completed, these members serve no useful purpose, and thus may be removed for reuse.

5 As can be seen from the above description, the mounting of a window frame to an opening of a wall is made easy by using the mounting device according to the invention. Further, the use of this mounting device enables variations of relative tolerances (clearances) between the
10 frame and the opening to be ignored. Namely, even if the variations of the tolerances are large, the present device makes it much easier than before to reliably mount the frame, since such variations can be eliminated merely by modifying, e.g., changing the length of, the suspension
15 members.

The following description is of some modifications of the mounting device, made with reference to Figs. 6 and 7.

The bases of the devices depicted in Fig. 6 are similar to that depicted in Fig. 1, but the mounting or
20 securing portions mounted on the suspension members are of different shapes.

In Fig. 6(A), the suspension members 40 are composed of a flexible wire or wire rope, and elongated holes 41 for the primary securing and round holes 42 for the secondary
25 securing are formed by twisting portions of the suspension members 40.

In Fig. 6(B), two round holes 45, 46 are formed, respectively, in the suspension members 44, by forming knots therein.

30 In Fig. 6(C), each suspension member 47 is provided with only one plate 48 having an elongated hole 49 for the primary securing and a round hole 50 for the secondary securing formed therein.

In Fig. 6(D), each securing portion 53 mounted on the suspension members 52 is composed of a ring 54 and a turnbuckle 55.

The bases 57 and the suspension members 58 of the 5 devices depicted in Fig. 7(A), (B) are also different from those depicted in Fig. 1. Namely, as shown in Fig. 7, the wires or wire ropes which form the suspension members 58 are led through a U-shaped portion of the base 57, securing portions 59 and 60 are provided at both ends thereof 10 respectively, such that the length of one side of the suspension member when fixed to the wall can be easily made different to that of the other side thereof.

The securing portions 59 depicted in Fig. 7(A) are similar to those disclosed in Fig. 6(c), and the securing 15 portions 60 depicted in Fig. 7(B) are similar to those disclosed in Fig. 6(A).

It is to be understood that the present invention is by no means limited to the specific embodiments as illustrated and described herein, and that various 20 modifications thereof may be made which come within the scope of the present invention as defined in the appended claims.

For example, it is not necessary to provide the holes 5a, 6a on the plates 5, 6 of Fig. 1 in advance, but instead, 25 the plates 5, 6 can be secured to the wall 12 by driving concrete nails directly therethrough and into the wall 12.

Furthermore, instead of using the plates 5 and 6, the suspension members 3 (device 1) can be secured directly to the wall by using special nails, e.g., yoke or fork type 30 nails 91, as disclosed in Japanese Examined Utility Model Publication (KOUKOKU) No. 2-40326, and driving the nails 91 into the wall while the suspension members 3 are positioned therebetween, as shown in Fig. 8.



CLAIMS

1. A device for mounting a window frame to a window opening of a wall, wherein said mounting device comprises a base to be secured to the window frame, a first suspension member to be secured to one side of the wall, and a second suspension member to be secured to the other side of the wall, said first and second suspension members each being mounted to the base by hook means in operation, and wherein each of said first and second suspension members is provided with a first portion for a primary securing thereof and a second portion for a secondary securing thereof to a respective side of said wall, said first and second portions being at locations on the suspension members which are remote from the region thereof connected to the base.

2. A device according to claim 1, wherein said first portion for the primary securing and said second portion for the secondary securing are made of a plate member, respectively.

3. A device according to claim 1 or claim 2, wherein said first portion for the primary securing, and said second portion for the secondary securing are provided with at least one through hole, respectively.

4. A device according to any one preceding claim, wherein said first suspension member and said second suspension member are basically composed of at least one flexible wire, rope, or band member respectively.

5. A device according to claim 4, wherein said hook means comprises a portion of said flexible wire, rope, or band member, which engages one or more U-shaped portions of said base.

6. A method of mounting a window frame to a window opening of a wall, comprising the steps of securing a plurality of the devices according to any preceding claim to



peripheral portions of the window frame, securing the first portions for a primary securing of the first suspension members of each device to one side of the wall respectively, and securing the first portions for a primary securing of the second suspension members of each device to the other side of the wall, respectively, such that a spatial positioning of the window frame within the window opening is roughly accomplished, and securing the second portions for a secondary securing of the first suspension members of each device to one side of the wall respectively, and securing the second portions for a secondary securing of the second suspension members of each device to the other side of the wall respectively, such that a spatial positioning of the window frame within the window opening is finally and accurately completed.

7. A device for mounting a window frame to a wall opening substantially as hereinbefore described with reference to, and as illustrated in, Figure 1, Figure 3, Figure 6A, 6B, 6C, 6D, or Figure 7A, 7B of the accompanying drawings.

8. A method of mounting a window frame to a window opening substantially as herein described with reference to Figures 4A, 4B and 5 of the accompanying drawings.
