March 4, 1969 G. F. JOHNSTON 3,430,394

FRAME DEVICE WITH A STRIP FOR REMOVING BROKEN GLASS FRAGMENTS AND SEALING MATERIAL

Filed June 9, 1967 Sheet 1 of 2

Fig. 1.

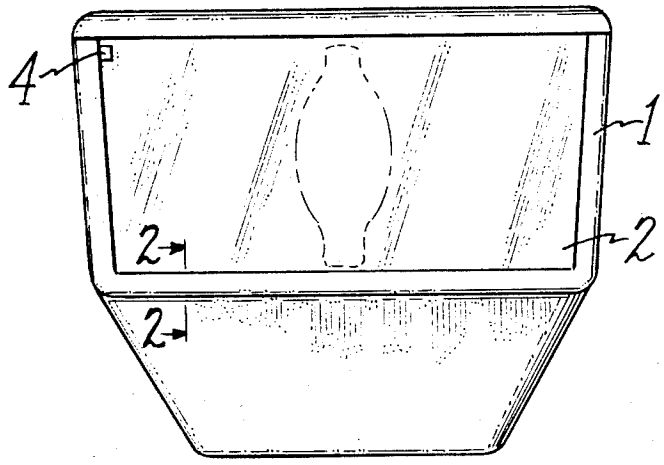
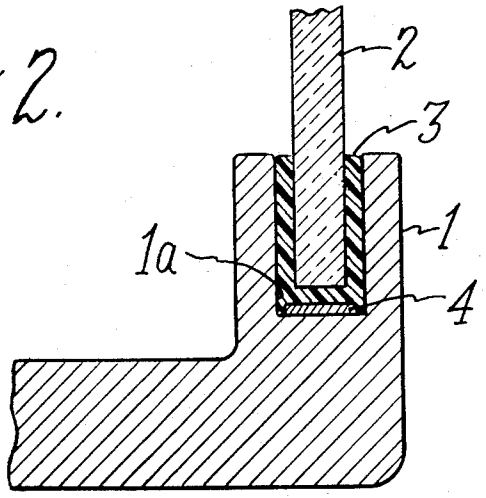


Fig. 2.



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Fig. 3.

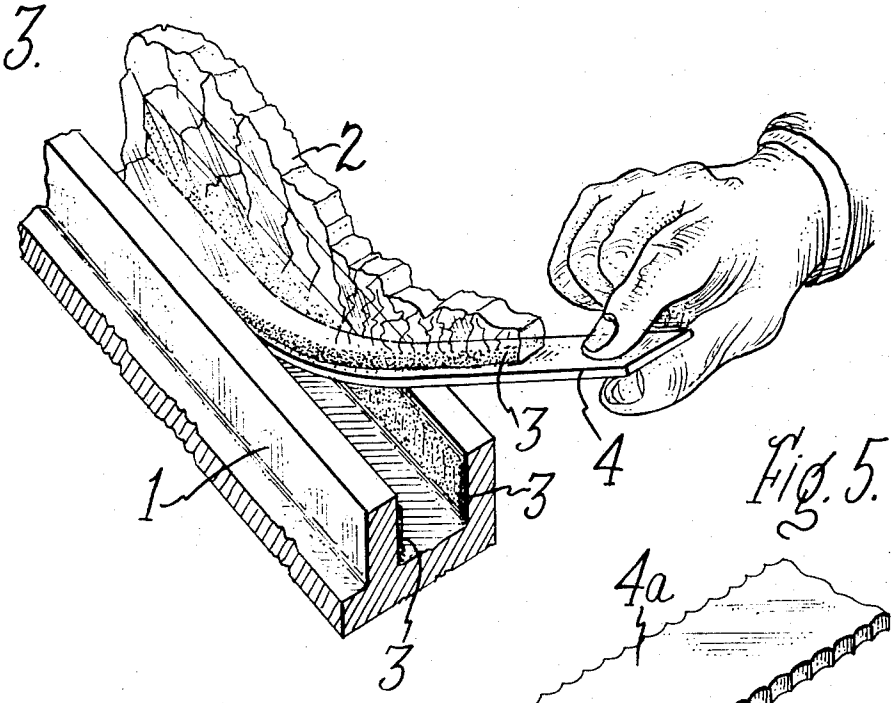


Fig. 5.

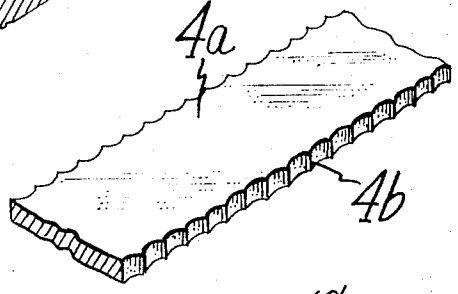


Fig. 4.

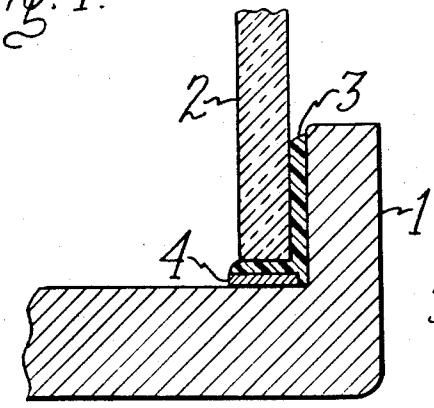
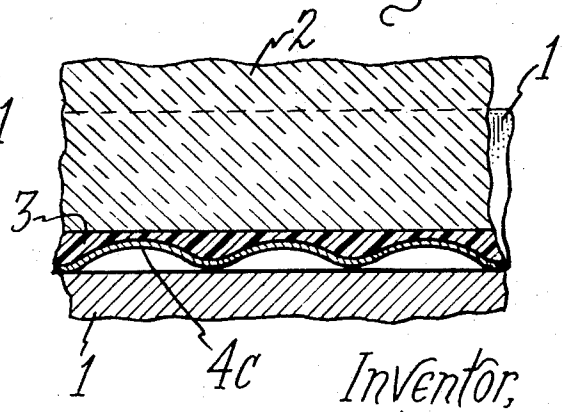


Fig. 6.



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FRAME DEVICE WITH A STRIP FOR REMOVING BROKEN GLASS FRAGMENTS AND SEALING MATERIAL

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U.S. Cl. 52—127 7 Claims
Int. Cl. E06b 7/22; E04g 23/02; E04c 2/54

ABSTRACT OF THE DISCLOSURE

A metal strip is arranged along the inner surface of a frame in which a glass pane is secured by sealing material so that removal of broken glass from the frame is achieved by tearing out the metal strip.

It is conventional in the glass framing art to mount glass panes in a surrounding frame using adhesive sealing material of various types, such as resinous mastic or the like, to secure the glass along its edges to the frame. A problem which frequently arises in connection with such structures is that in the event of breakage of the glass, it is rather difficult to remove the glass fragments still attached to the frame and to properly prepare the frame prior to installing and sealing a new glass pane therein. In many cases, it is necessary to resort to chipping out the remaining glass pieces from the frame grooves using a chisel or other tool, or to employ some other tedios or time-consuming method.

It is an object of the invention to provide an improved glass window frame which avoids the disadvantages of known structures of this type.

It is a particular object of the invention to provide a glass window frame device which facilitates removal of glass particles from the frame in the event of breakage of the glass and provides a clean frame surface for mounting and sealing a replacement glass pane.

Other objects and advantages will become apparent from the following description and the appended claims.

With the above objects in view, the present invention relates to a frame device comprising, in combination, a frame member defining a window opening and having a window mounting surface extending along the opening, a glass pane mounted in the frame member covering the opening and having a peripheral edge arranged adjacent the mounting surface, adhesive sealing material arranged between the edge of the glass pane and the frame surface for adhesively bonding the same together, and strip means arranged between the edge of the glass pane and the frame surface and being removable from the frame surface in the event of breakage of the glass pane for removing glass particles adhering to the frame surface.

The invention will be better understood from the following description taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a view in elevation of a floodlight in which the invention may be embodied;

FIGURE 2 is an enlarged cross-sectional view of a portion of the FIGURE 1 floodlight taken along the lines 2—2, showing the sealed joint between the flood light frame and the glass window;

FIGURE 3 is a perspective view of a portion of the floodlight frame showing removal of broken glass fragments therein in accordance with the invention;

FIGURE 4 is a cross-sectional view similar to FIGURE 2 of a different form of frame in which the invention may be embodied;

FIGURE 5 is a perspective view of a portion of a modified form of the tear-out strip of the invention; and

FIGURE 6 is a fragmentary side view, partly in section, of a framed glass arrangement embodying a different form of tear-out strip.

Referring now to the drawings, there is shown in FIGURE 1 a floodlight in which the invention may typically be embodied and which comprises a housing frame **1** defining a window opening covered by a transparent window pane **2**, such as glass or the like, which is subject to breakage. As seen in FIGURE 2, frame **1** has a window mounting channel or groove **1***a* in which the peripheral edge of the glass pane is seated and wherein the latter is secured in adherent sealing relation to the frame groove surfaces by suitable adhesive sealing material **3**, such as a resinous mastic, putty, elastomeric sealing compound, such as silicone rubber, or other adhesive bonding or glass setting material. Typically, such sealing material is of semi-liquid or viscous form when initially applied and then hardens or dies (cures) to a solid or semi-solid state in which it adhesively bonds the parts together. Usually, the sealing material extends around the peripheral edge of the glass pane **2** and along the adjacent margins of the opposite sides of the glass, as shown. In accordance with the invention, a flexible tear-out strip **4** is interposed between the bottom of frame channel **1***a* and the edge of glass pane **2** extending along the entire frame joint. Tear-out strip **4** is preferably a thin, strong, flexible metal strip member made, for example, of carbon steel, stainless steel, copper, or the like. It may alternatively be made of non-metallic material such as plastics, fiberglass, or other substances forming a strip of suitable strength and flexibility. The width of strip **4** is normally slightly less than the width of frame channel **1***a* and slightly greater than the thickness of glass pane **2**. In a typical embodiment, a carbon steel strip .015" thick and .25" wide may be satisfactorily employed.

Advantageously, a free end of strip **4** is arranged to protrude outwardly from the frame channel joint, as seen in FIGURE 1, so as to be accessible for pulling out the embedded strip in accordance with the invention. In the event glass pane **2** should become broken and it is desired to remove the glass remaining in the frame, it is only necessary to grasp the free end of strip **4** and pull it out of the frame groove as shown in FIGURE 3, whereby the glass fragments remaining attached to the sealing material **3** in the frame are readily stripped out and removed from the entire frame. The frame is thus automatically cleaned and prepared for receiving a replacement glass window with a minimum of time and effort and little or no risk of injury to the installer from the remaining glass particles during the removal thereof.

When being pulled out of the frame channel, strip **4** shears through the sealing material with its longitudinal edges so as to free the glass particles from the frame, and it thus facilitates the removal of the remaining glass material. To further enhance such shearing action, the side edges **4***b* of strip **4** may be serrated as shown in FIGURE 5.

If desired, the tear-out strip may have a corrugated or undulate form along its length, as shown by strip **4***c* in FIGURE 6, so as to serve additionally as a resilient spacer means holding glass pane **2** in properly centered position relative to the frame.

Although as shown in FIGURE 2 glass pane **2** is mounted in a channel-shaped rim of frame **1**, the frame may simply be formed of angular sides as shown in FIGURE 4, and glass pane **2** is adhesively secured to the rearward face of the frame by sealing material **3** and spaced at its peripheral edge from the frame by tear-out strip **4** which lines the frame in that region, substantially

as in the previously described embodiment. Frames with other forms of window mounting grooves or recesses obviously could be used in similar manner, if desired.

In a usual procedure employed in practicing the invention, glass pane **2** is assembled in frame **1** by first lining the bottom of the frame groove or recess with flexible tear-out strip **4** which is arranged with a free end thereof projecting out of the frame, applying sealing material **3** in the frame groove over strip **4** while the sealing material is in semi-liquid or viscous (uncured) condition, installing the glass pane in the frame with its edges embedded in the sealing material, and then allowing the sealing material to dry (cure) to firmly adhesively secure the glass to the frame.

It will be evident that the invention has application to a wide variety of framed structures in addition to the floodlight illustrated, as for example windows of buildings, vehicles, instruments, and numerous other articles and structures.

While the present invention has been described with reference to particular embodiments thereof, it will be understood that numerous modifications may be made by those skilled in the art without actually departing from the scope of the invention. Therefore, the appended claims are intended to cover all such equivalent variations as come within the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A frame device comprising, in combination, a frame member defining a window opening and having a window mounting surface extending along said opening, a breakable pane mounted in said frame member covering said opening and having a peripheral edge arranged adjacent said mounting surface, adhesive sealing material arranged between the periphery of said breakable pane and said frame surface for adhesively bonding the same together, strip means arranged between the peripheral edge of said breakable pane and said frame surface, and means for pulling out said strip means from said frame surface in the event of breakage of said pane for removing particles of the pane adhering to the frame surface.

2. A device as defined in claim **1**, said frame member being formed with a channel-shaped recess in which the peripheral edge of said pane is received, said adhesive material arranged in said recess, said strip means comprising a thin flexible strip member arranged lining the bottom of said frame recess.

3. A device as defined in claim **2**, said strip member being slightly narrower than said recess and slightly wider than the thickness of said pane.

4. A device as defined in claim **2**, said means comprising a free end portion of said strip member protruding outwardly from said frame recess.

5. A device as defined in claim **2**, wherein said strip member has serrated side edges.

6. A device as defined in claim **2**, wherein said strip member is undulate in form.

7. The method of mounting a breakable pane in a frame having a pane-mounting recess and removing the pane in the event of breakage, which comprises lining the bottom of said recess with a flexible strip member, applying adhesive sealing material to said recess, mounting said breakable pane in said frame with its peripheral edge embedded in said adhesive sealing material and in the event of breakage of said pane, tearing out said strip member for removing fragments of said pane adhesively attached to said frame recess.

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U.S. Cl. X.R.

49—466, 482; 52—173, 400, 627, 741