Jan. 17, 1961 S. K. HUSTON ET AL 2,968,263

SKYLIGHT

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Fig. 1

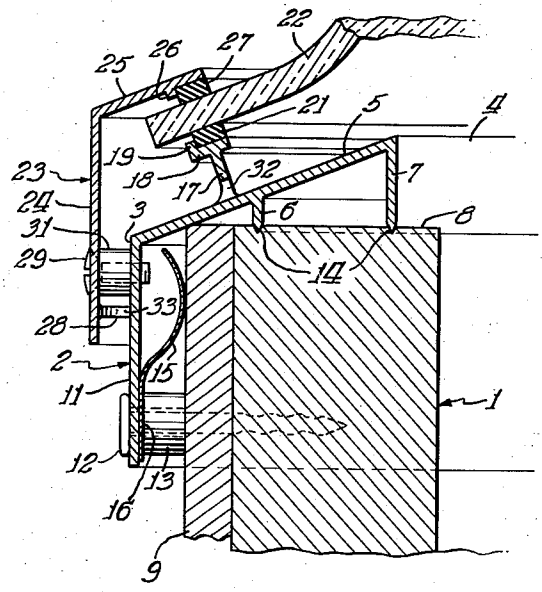
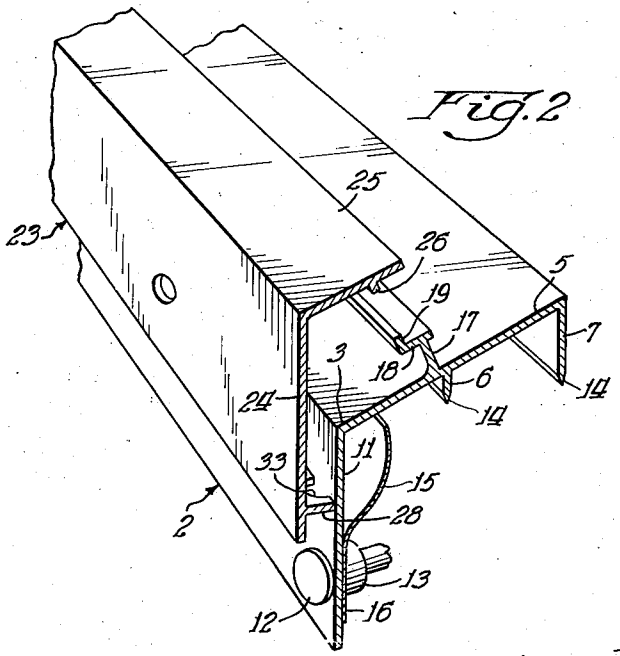



Fig. 2




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2,968,263

# SKYLIGHT

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11 Claims. (Cl. 50—116)

Our invention relates generally to skylight structures, and more particularly to a skylight structure which is adapted for use with plastic skylight domes and the like, and is an improvement over the skylight structure as disclosed and claimed in our co-pending application Serial No. 459,015, now Patent No. 2,842,073, filed September 29, 1954 for Skylight.

The invention has among its objects the production of a novel skylight construction which is exceedingly simple, having a minimum of individual parts and yet which is very efficient in use.

Another object of the invention is the production of such a skylight structure which is so designed that it may be readily fabricated in the form of metal extrusions whereby the cost thereof is relatively low.

A further object of the invention is the production of a skylight structure having the above advantages which provide adequate drainage means for condensate as well as desirable air movement, whereby proper drainage is maintained even at freezing temperatures.

A further object of the invention is the production of such a skylight structure which is provided with a novel weather or flashing strip, and which is so designed that when mounted on a skylight curb, a weather-tight connection will be provided between the skylight frame and the curb.

A further object of the invention is the production of such a skylight structure which is so designed that it may be completely installed from the skylight exterior whereby no interior operations are required.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end, our invention consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawing, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a sectional view through the portion of a curb with a skylight frame mounted thereon; and

Fig. 2 is a perspective view of the two frame members in a semi-assembled relation.

The present invention contemplates the production of a curb or base frame member which may be constructed from a plurality of lengths of extruded metal, as for example aluminum, suitably arranged with the meeting ends of the respective members rigidly secured together by welding or other suitable means to provide a rigid, unitary, annular-shaped frame member. The latter is provided with means for supporting a skylight dome which, for example, may be of a single piece of plastic, the dome being rigidly secured to the curb frame by a clamp frame also fabricated from a plurality of lengths of extruded metal suitably arranged in the same general form of the frame member and having adjoining ends rigidly secured together. Thus, the skylight may comprise three individual elements, namely, the base or curb frame, the clamp frame, and the skylight member or dome.



Referring to the drawing, the reference numeral 1 indicates generally a skylight curb which is integrally constructed with the roof or other supporting surface, and is adapted to receive a base or curb frame indicated generally by the numeral 2, the latter comprising side and end members, only one of each being illustrated in Fig. 1, the side member 3 being welded or otherwise secured to the end member 4 with the ends of the respective members being joined with a miter joint.

As illustrated in Fig. 1, the members 3 and 4 each comprise a base or top portion 5 having a pair of spaced downwardly extending walls 6 and 7, the latter being positioned adjacent the inner edge of the base portion 5 while the wall 6 is centrally positioned, both walls being adapted to engage the top face 8 of the curb 1.

In constructing such curbs, the roofing material covering the roof or other supporting surface is normally brought up along the side of the curb and secured thereto as illustrated at 9. The frame 2 is also provided with a downwardly extending peripheral flange or side wall 11 adjacent the outer edge of the base portion 5 with the wall 11 being adapted to extend downwardly substantially parallel to the outer face of the roofing material 9 but spaced therefrom.

The frame 2 may be secured to the curb 1 by any suitable means as, for example, drive nails 12 extending through the flange or wall 11 into the roofing material 9 and curb 1, a suitable spacer 13 encircling each drive screw whereby the frame is rigidly anchored to the curb. The downwardly depending walls 6 and 7 are preferably provided with more or less knife edges 14 whereby the frame when placed upon the curb may be partially depressed into the upper face of the curb, thereby providing an efficient seal between the frame and the curb irrespective of any minor irregularities which may exist in the curb surface.

Additional sealing means may be interposed between the wall 11 and the outer face of the roofing 9, such as a strip 15 preferably constructed of semi-resilient material, which is provided with a base portion 16 positioned adjacent the inner face of the wall 11 and adapted to extend between such wall and the adjacent face of the curb, the strip preferably being secured in operative position by welding to the frame or other suitable means.

Extending upwardly and slightly outwardly from the base portion 5 is a longitudinally extending rib or upright 17, the free end edge of which terminates in a longitudinally extending platform 18 having an upwardly extending flange 19 adjacent its outer edge. Carried by the upright 17 on the platform 18 is a gasket or sealing strip 21 of cork, plastic or other suitable material upon which is adapted to rest the transparent dome or skylight 22.

Cooperable with the curb member 2 is a clamp member or frame 23, the elements of which may also be formed as metal extrusions, with the respective pieces forming the sides and ends of the frame being mitered and secured together to form a rigid annular frame. As illustrated, the member 23 in cross section comprises a downwardly depending portion 24 which extends substantially parallel to the wall 11 of the member 2 and having an annular-shaped inwardly directed flange 25 at its upper longitudinal edge, the flange 25 extending substantially parallel to the plane of the base portion 5. The flange 25 is provided with a longitudinally extending rib 26 along its inner or lower face which forms a retaining ledge for an upper sealing strip or gasket 27. The side wall 24 of the clamp frame 23 is provided with an inwardly extending flange 28 adapted to bear on the outer face of the wall 11 of the curb frame. The frame mem-

ber 23 may be secured to the base member 11 by a plurality of longitudinally spaced screws 29 extending through bores in the wall 24, and threaded into the wall 11 are suitable spacer members 31 of suitable material as, for example, "neoprene" encircling each screw 29 and interposed between the walls 11 and 24.

In installing the skylight construction illustrated, the curb or base frame member 2 may be placed in position upon the curb 1 with the edges 14 of the walls 6 and 7 depressed into the curb to provide an effective seal along the frame. The flashing strip 15 and spacers 13 are then successively assembled in operative position and the drive nails 12 driven into the face of the curb. Following completion of the base installation, the dome 22 may be seated upon the gasket strip 21 and the clamp frame member 23 including the gasket member 27 assembled therewith may then be placed in operative position and secured to the base member 2 by the screws 29, the spacer members or washers 31 being inserted on the screws 29 prior to the positioning of the clamp frame on the curb frame. It will be apparent that when the screws 29 are tightened down, the side and end members of the clamp frame will each tend to pivot about the edge of the flange 28 at the latter's engagement with the wall 11, thus tending to lock the elements of the clamp frame inwardly whereby pressure is placed upon the dome 22 and gasket strips 21 and 27, and the spacer 31 may be provided with a slight degree of compressibility to insure satisfactory clamping action on the dome.

It will be particularly noted that the upper face of the base portion 5 of the curb frame is provided with an exceptionally steep pitch whereby any condensate accumulating thereon or flowing from the dome 22 and along the inner face of the upright 17 will flow in an outward direction; and to provide means for the discharge of such condensate, the upright portion 17 is provided with a plurality of longitudinally spaced weep holes 32 located adjacent the base 5 whereby accumulated condensate may readily flow outward to the edge of the base portion. In like manner, the wall or flange 28 of the clamp member is provided with a series of weep holes or notches 33 through which accumulated condensate may be discharged through the exterior. While the weep holes 32 and 33 are illustrated in Fig. 1 as being more or less in radial or outward alignment, the weep holes in the clamp member are preferably staggered with respect to the holes in the curb member to restrict direct flow of air through the frame, such staggering in effect providing a baffled arrangement.

It will be particularly noted that the present construction, utilizing only two main elements, the frame member 2 and clamp member 23, provides a box channel construction adjacent the periphery of the skylight. Such a construction is achieved in the embodiment of the invention illustrated by the wall 24 and flange 25, 28 of the clamp member, the upright 17 and the outer peripheral portion of the base 5.

The latter is preferably formed with a steep pitch as illustrated so that any condensate will readily flow from the skylight interior to the exterior thereof through the holes 32 and 33. These holes also permit a slight degree of air circulation and coupled with the comparatively large volume of the box channel above referred to, sufficient warm air may accumulate therein to eliminate danger of the formation of ice in the frame and possible damage to the skylight therefrom. It will be apparent that these results are in part achieved by the use of the upright 17 which raises the dome 22 to provide the desired space. Thus the present invention enables the production of such box construction with only two members, whereas such a construction would normally require an assembled construction utilizing four or five different structural elements.

It will also be noted that the present invention provides a very simple yet highly efficient structure which may be readily installed from the exterior of the building.

Having thus described our invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of our invention; hence, we do not wish to be understood as limiting ourselves to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What we claim as new and desire to secure by Letters Patent is:

1. In a skylight, the combination of a curb anchor frame adapted to be mounted on the top of a skylight curb comprising an outer side face and an inner side face, said curb anchor frame including an inclined top portion adapted to be mounted on the top face of said skylight curb an inclined downwardly and outwardly to provide a steep pitched surface for draining condensate in an outward direction, a peripheral outer flange integrally formed with the inclined top portion at the outer peripheral edge thereof and laterally spaced outwardly from the aforesaid outer side face of said skylight curb, downwardly depending and laterally disposed walls integrally formed with the top portion, one of said walls formed at the inner periphery of said top portion, the other of said walls intermediate said peripheral outer flange and said wall of the inner periphery of said top portion, said downwardly depending walls provided with knife edges whereby the knife edges when the curb anchor frame is placed upon the skylight curb provide a seal between the curb anchor frame and skylight curb, said curb anchor frame also including a peripherally shaped outwardly directed longitudinally extending upright integrally formed with said inclined top portion, a peripherally shaped platform integrally formed with said upright and having a top face extending parallel to the top face of the top portion of the curb anchor frame, an outwardly extending flange integrally formed with and adjacent the outer edge of said platform, a sealing strip mounted on said platform adjacent said flange, a complementally formed clamp member cooperable with said curb anchor frame and including members complementally formed to the peripheral outer flange, each of said members comprising a downwardly extending side wall adapted to extend parallel to the peripheral outer flange of said curb anchor frame and a laterally and inwardly extending flange integrally formed with and extending from the upper edge of said peripheral outer flange and extending parallel to the top face of the top portion of the curb anchor frame in opposition to said peripherally shaped platform, said laterally and inwardly extending flange including a peripherally shaped rib on the inner face thereof positioned opposite the outwardly extending flange carried by said peripherally shaped platform, a sealing strip positioned adjacent said rib in opposed relation to the sealing strip on said peripherally shaped platform, a dome member supported on said peripherally shaped platform with the peripheral edge portion of the dome interposed between said sealing strips, and means for spacing and securing said clamp member to said curb anchor frame including an inwardly extending flange integrally formed at the lower edge of said downwardly extending members of said annular clamp member providing a fulcrum about which the annular clamp member is pivoted for affixing the dome member in position between said sealing strips, means for discharging any condensate which may be formed including weep holes provided in said longitudinally extending upright contiguous to said upper face of said top portion at its juncture with said longitudinally extending upright and additional weep holes provided in said inwardly extending flange providing a fulcrum so that the accumulated condensate is drained from the inclined top portion exteriorly of the curb anchor frame.

2. In a skylight, the combination of a curb anchor frame adapted to be mounted on the top of a skylight curb comprising an outer side face and an inner side face, said curb anchor frame including an inclined top portion adapted to be mounted on the top face of said skylight curb and inclined downwardly and outwardly to provide a steep pitched surface for draining condensate in an outward direction, a peripheral outer flange integrally formed with the inclined top portion at the outer peripheral edge thereof and laterally spaced outwardly from the aforesaid outer side face of said skylight curb, downwardly depending and laterally disposed walls integrally formed with the top portion, one of said walls formed at the inner periphery of said top portion, the other of said walls intermediate said peripheral outer flange and said wall at the inner periphery of said top portion, said downwardly depending walls provided with knife edges whereby the knife edges when the curb anchor frame is placed upon the skylight curb provide a seal between the curb anchor frame and skylight curb, said frame having a peripherally shaped outwardly directed longitudinally extending upright, a peripherally shaped platform carried by said upright, a sealing strip mounted on said platform, a clamp member complementally formed to and co-operable with said curb anchor frame and including members complementally formed to the peripheral outer flange, each of said members comprising a side wall adapted to extend parallel to the peripheral outer flange of said curb anchor frame and including an inwardly extending flange integrally formed with and extending from the upper edge of said peripheral outer flange in opposed relation to said peripherally shaped platform, a sealing strip positioned opposite the sealing strip on said peripherally shaped platform, a dome member on said peripherally shaped platform with the peripheral edge portions of the dome member interposed between said sealing strips, and means for spacing and securing said clamp member to said curb anchor frame including an inwardly extending flange integrally formed at the lower edge of said downwardly extending side wall of said clamp member providing a fulcrum about which the clamp member is pivoted for affixing the dome member between the sealing strips operatively positioned on said opposed inwardly extending flange and said peripherally shaped platform.

3. In a skylight, the combination of a curb anchor frame adapted to be mounted on the top of a skylight curb comprising an outer side face and an inner side face, said curb anchor frame including an inclined top portion adapted to be positioned above the top face of said skylight curb and inclined downwardly and outwardly to provide a steep pitched surface for draining condensate in an outward direction, a peripheral outer flange integrally formed with the inclined top portion at the outer peripheral edge thereof and laterally spaced outwardly from the aforesaid outer side face of said skylight curb and also adapted to extend adjacent to the outer side face of said skylight curb, said peripheral outer flange including means therein adapted to receive fastening means engageable with said skylight curb, said curb anchor frame including a peripherally shaped outwardly directed longitudinally extending upright, a peripherally shaped platform carried by said upright having a top face extending parallel to the top face of the top portion of the curb anchor frame, a sealing strip mounted on said peripherally shaped platform, a clamp member complementally formed to and co-operable with said curb anchor frame and including members complementally formed to the peripheral outer flange, each of said members comprising a side wall adapted to extend parallel to the peripheral outer flange of said curb anchor frame and an inwardly extending flange integrally formed with and extending from the upper edge of said peripheral outer flange and extending parallel to the top face of the top portion of the curb anchor frame in opposition to said peripherally shaped platform, a sealing strip carried by said clamp member positioned adjacent the sealing strip on said peripherally shaped platform, a dome member supported on said peripherally shaped platform with the peripheral edge portions of the dome member interposed between said sealing strip, said clamp member including an inwardly extending flange extending inwardly from the inner face of the side wall thereof and adapted to engage the peripheral outer flange of said curb anchor frame, and securing means extending through said clamp member and engageable with said curb anchor frame for securing the same together, said securing means being disposed between said inwardly extending flange and the top face of said clamp member and contiguous to the lower edge of said inclined top portion for affixing the dome member between said sealing strips operatively mounted on said clamp member and said curb anchor frame.

4. In a skylight, the combination of a curb anchor frame adapted to be mounted on the top of a skylight curb comprising an outer side face and an inner side face, said curb anchor frame including an inclined top portion adapted to be superimposed on the top face of said skylight curb, a pair of spaced parallel walls extending downwardly from said inclined top portion and having relatively sharp bottom edges lying in the same horizontal plane and adapted to engage the top face of said skylight curb between said outer and inner side faces thereof, the laterally outer peripheral edges of said curb anchor frame terminating in downwardly disposed peripheral outer flanges adapted to extend parallel to the space from the adjacent outer side face of said skylight curb, a flashing strip operatively engaged with the inner face of said peripheral outer flanges, said flashing strip extending upwardly and inwardly therefrom and adapted to operatively engage the adjacent side wall of said skylight curb, said peripheral outer flanges and said flashing strip having aligned means therein adapted to receive fastening means operatively engageable with said skylight curb, said curb anchor frame including a peripherally shaped outwardly directed longitudinally extending upright, a peripherally shaped platform carried by said upright having a top face extending parallel to the top face of the top portion of the curb anchor frame, an outwardly extending flange adjacent the outer edge of said peripherally shaped platform, a sealing strip mounted on said peripherally shaped platform adjacent said flange, a clamp member complementally formed with respect to said curb anchor frame and cooperable with said curb anchor frame and also including peripheral members, each of said peripheral members comprising a side wall adapted to extend parallel to the peripheral outer flanges of said curb anchor frame and including an inwardly extending flange integrally formed with and extending from the upper edge of said peripheral outer flanges and extending parallel to the top face of the top portion of the curb anchor frame in opposition to said peripherally shaped platform, said inwardly extending flange including a rib on the inner face thereof positioned opposite the outwardly extending flange carried by said peripherally shaped platform, a sealing strip positioned adjacent said rib in opposed relation to the sealing strip on said peripherally shaped platform, a dome member supported on said peripherally shaped platform with the peripheral edge portions of the dome member interposed between said sealing strips, said clamp member including a flange extending inwardly from the inner face of the side wall and contiguous to the lower edge thereof and adapted to engage the peripheral outer flanges of said curb anchor frame, and securing means extending through said clamp member and operatively engageable with said curb anchor frame for securing the clamp member and curb anchor frame together, said securing means being disposed between said flange extending inwardly from the inner face of the side

wall and the top face of said clamp member, said last-mentioned flange and longitudinally extending upright on the curb anchor frame each having a series of openings therein for the passage of air and condensate from the skylight interior to the exterior thereof.

5. In a skylight structure, the combination of a curb anchor frame including an inclined top portion for draining condensate and a peripheral outer flange integrally formed with said inclined top portion, said curb anchor frame adapted to be mounted on a skylight curb, and a clamp member adapted to be secured to the curb anchor frame and including an inwardly extending peripheral flange adapted to bear on the outer face of the peripheral outer flange, said curb anchor frame and said clamp member each comprising peripheral members of extruded material having opposed portions adapted to receive the peripheral portions of a skylight dome therebetween, said curb anchor frame and said clamp member complementally formed to form a hollow channel extending around the periphery of said skylight dome, said skylight structure provided with one series of openings operatively connecting the interior of said hollow channel with the skylight interior and another series of openings provided in the aforesaid inwardly extending peripheral flange of the clamp member operatively connecting the interior of said hollow channel with the skylight exterior, said openings being arranged in staggered relationship to provide drainage of condensate from the skylight interior along said inclined top portion and for baffling the breathing of air to and from the skylight interior through said hollow channel to restrict the direct flow of air between said curb anchor frame and said clamp member.

6. As an article of manufacture, an extrusion for a curb anchor frame of a skylight construction, said extrusion comprising an inclined top portion, a peripheral outer flange integrally formed with said inclined top portion and angularly related thereto, downwardly depending and laterally disposed walls integrally formed with the inclined top portion, one of said walls formed at the peripheral edge of the inclined top portion opposite the peripheral outer flange, the other of said walls intermediate said peripheral outer flange and said wall opposite the peripheral outer flange, said downwardly depending walls provided with knife edges, and lying substantially in the same horizontal plane, a longitudinally extending upright integrally formed with said inclined top portion and at right angles thereto, a longitudinally extending platform integrally formed with said upright and having a top face extending parallel to the top face of the inclined top portion, and an outwardly extending flange integrally formed with and adjacent the outer edge of said longitudinally extending platform.

7. As an article of manufacture, an extrusion for a curb anchor frame of a skylight construction, said extrusion comprising an inclined top portion, a peripheral outer flange integrally formed with said inclined top portion and angularly related thereto, downwardly depending and laterally disposed walls integrally formed with the inclined top portion, one of said walls formed at the peripheral edge of the inclined top portion opposite the peripheral outer flange, the other of said walls intermediate said peripheral outer flange and said wall opposite the peripheral outer flange, said downwardly depending walls provided with knife edges, and lying substantially in the same horizontal plane, a longitudinally extending upright integrally formed with said inclined top portion and at right angles thereto, a longitudinally extending platform integrally formed with said upright and having a top face extending parallel to the top face of the inclined top portion and an outwardly extending flange integrally formed with an adjacent the outer edge of said longitudinally extending platform, and a series of openings provided in said upright contiguous to said juncture with the inclined top portion.

8. As an article of manufacture, a skylight construction including a curb anchor frame and a clamp member, said curb anchor frame and clamp member formed as extrusions, said cross-sections of the curb anchor frame and clamp member being angular in shape and complementally formed for operatively connecting together to support a dome member between said curb anchor frame and said clamp member, said curb anchor frame comprising an integrally formed upright for operatively supporting the dome member, said curb anchor frame also including a top portion integrally formed with a depending flange portion, said clamp member including a downwardly and longitudinally extending member and an inwardly extending flange adapted to abut the depending flange portion of the curb anchor frame, said top portion inclined outwardly and downwardly and adapted for draining condensate from within the skylight construction to the exterior thereof, and securing means positioned above said inwardly extending flange and operatively engaging said depending flange portion and said dowwardly and longitudinally extending member for affixing the clamp member to the curb anchor frame and for affixing the dome member to the curb anchor frame.

9. As an article of manufacture, a skylight construction including a curb anchor frame and a clamp member, said curb anchor frame and clamp member formed as extrusions, said cross-sections of the curb anchor frame and clamp member being angular in shape and complementally formed for operatively connecting together to support a dome member between said curb anchor frame and said clamp member, said curb anchor frame comprising an integrally formed upright for operatively supporting the dome member and a top portion integrally formed with a depending flange portion, said top portion adapted for draining condensate from within the skylight construction to the exterior thereof, securing means for affixing the clamp member to the curb anchor frame and for affixing the dome member to the curb anchor frame, and said clamp member including an inwardly extending flange integrally formed with a downwardly and longitudinally extending member and for operatively engaging the depending flange portion of the curb anchor frame providing a fulcrum about which the clamp member pivots in operatively affixing the dome member between the clamp bracket and the curb anchor frame.

10. In a skylight structure, the combination of a curb anchor frame including an inclined top portion for draining condensate and a peripheral outer flange integrally formed with said inclined top portion, said curb anchor frame adapted to be mounted on a skylight curb, and a clamp member adapted to be secured to the curb anchor frame, said curb anchor frame and said clamp member each comprising peripheral members of extruded material having opposed portions adapted to receive the peripheral portions of a skylight dome therebetween, said curb anchor frame and said clamp member complementally formed to form a hollow channel extending around the periphery of said skylight dome, said skylight structure provided with one series of openings operatively connecting the interior of said hollow channel with the skylight interior and another series of openings operatively connecting the interior of said hollow channel with the skylight exterior, said peripheral member of said clamp member comprising an inwardly directed flange integrally formed therewith and operatively engageable with a peripheral outer flange of the peripheral member of said curb anchor frame, the aforesaid another series of openings formed in said inwardly directed flange, and said openings being arranged in staggered relationship to provide drainage of condensate from the skylight interior along said inclined top portion and for baffling the breathing of air to and from the skylight interior through said hollow channel to restrict the direct flow of air between said curb anchor frame and said clamp member.

11. In a skylight structure, the combination of a curb

anchor frame including an inclined top portion for draining condensate and a peripheral outer flange integrally formed with said inclined top portion, said curb anchor frame adapted to be mounted on a skylight curb, and a clamp member adapted to be secured to the curb anchor frame, said curb anchor frame and said clamp member each comprising peripheral members of extruded material including opposed portions adapted to receive the peripheral portions of a skylight dome therebetween, said opposed portions of the curb anchor frame including a peripherally shaped upright integrally formed with and extending from the inclined top portion of said curb anchor frame, upon which the skylight dome is supported and said peripheral member of the clamp member including an integral inwardly directed flange operatively engageable with said peripheral outer flange of said curb anchor frame, said curb anchor frame and said clamp member complementally formed to form a hollow channel extending around the periphery of said skylight dome, said skylight structure provided with one series of openings operatively connecting the interior of said hollow channel with the skylight interior and another series of openings operatively connecting the interior of said hollow channel with the skylight exterior, said openings being arranged in staggered relationship to provide drainage of condensate from the skylight interior along said inclined top portion and for baffling



the breathing of air to and from the skylight interior through said hollow channel to restrict the direct flow of air between said curb anchor frame and said clamp member, said first-mentioned series of openings provided in said upright contiguous to the juncture therewith to the inclined top portion, said second-mentioned series of openings provided in said inwardly directed flange, and said series of openings being in staggered relationship for restricting the flow of air between said curb anchor frame and said clamp member.


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