April 30, 1957 M. WASSERMAN 2,790,400

SKYLIGHT DOME CONSTRUCTION

Filed Dec. 26, 1952 3 Sheets-Sheet 1

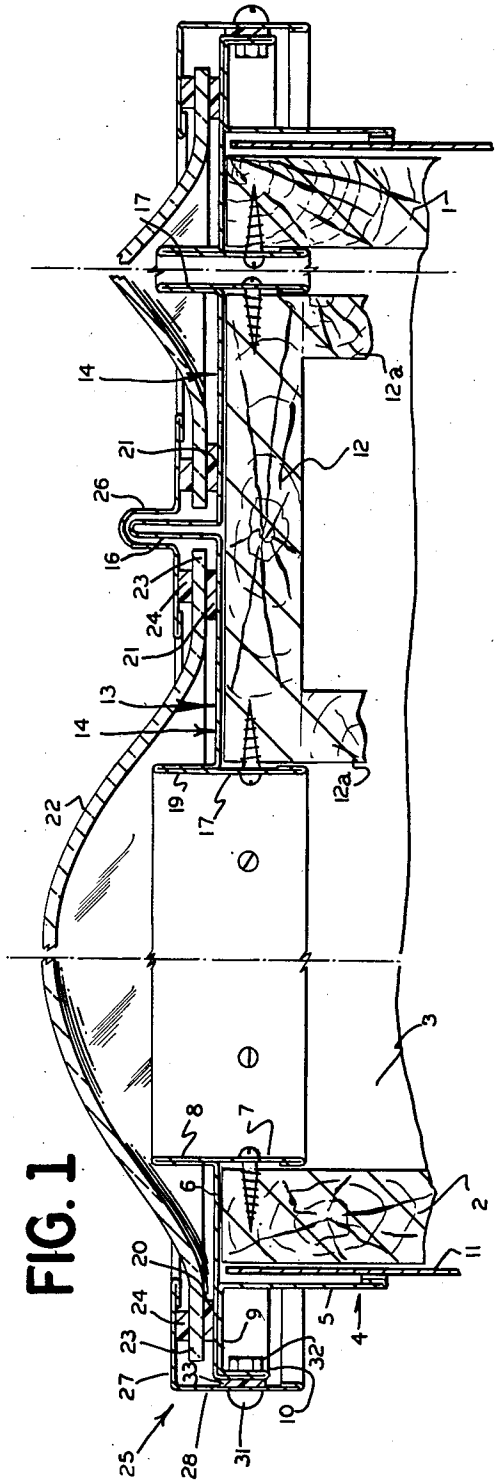


FIG. 1

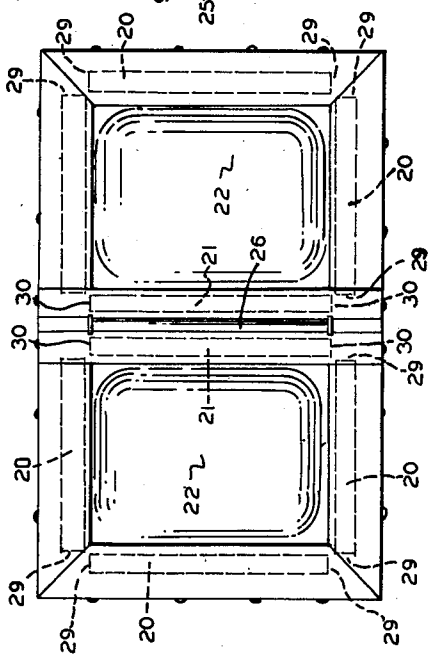


FIG. 2

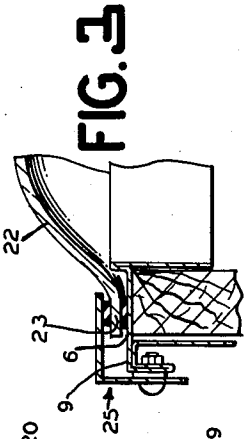


FIG. 3

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SKYLIGHT DOME CONSTRUCTION

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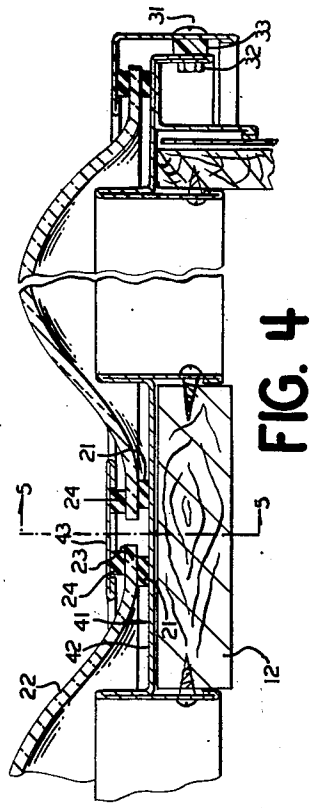


FIG. 4

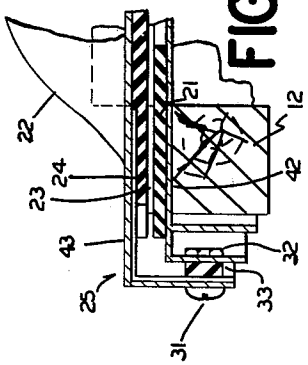


FIG. 5

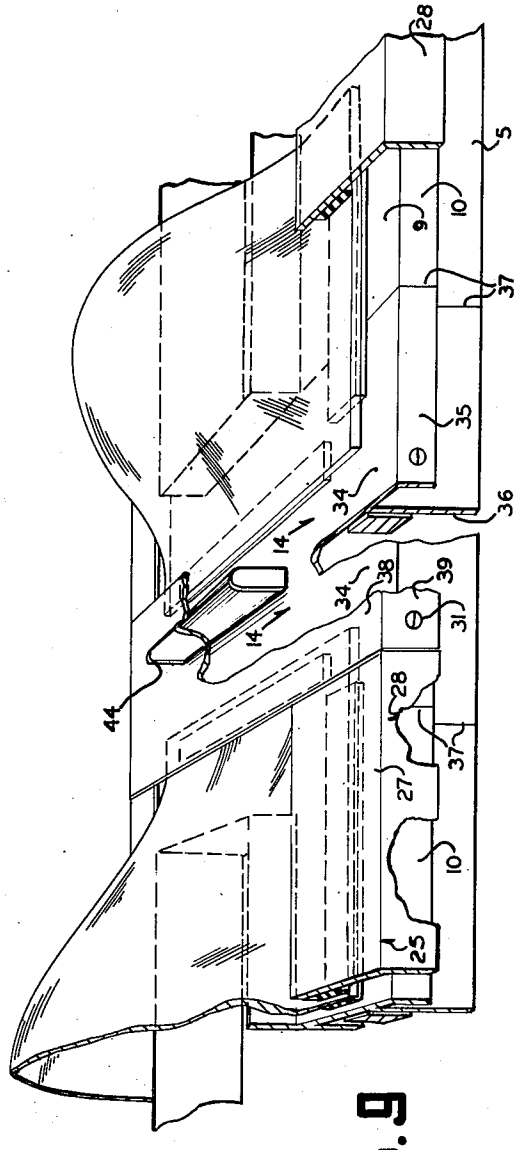


FIG. 9

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SKYLIGHT DOME CONSTRUCTION

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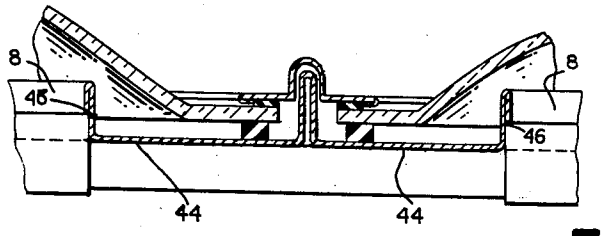


FIG. 6

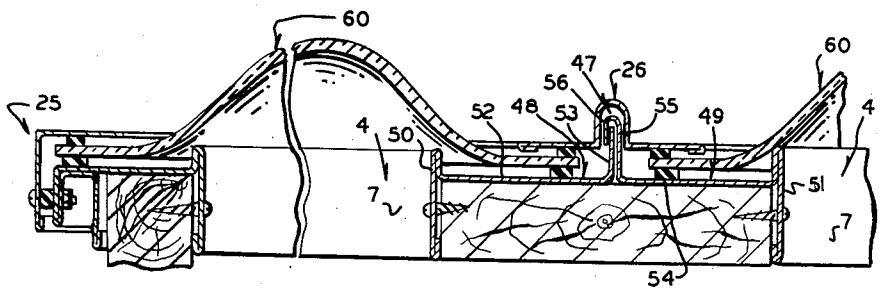


FIG. 7

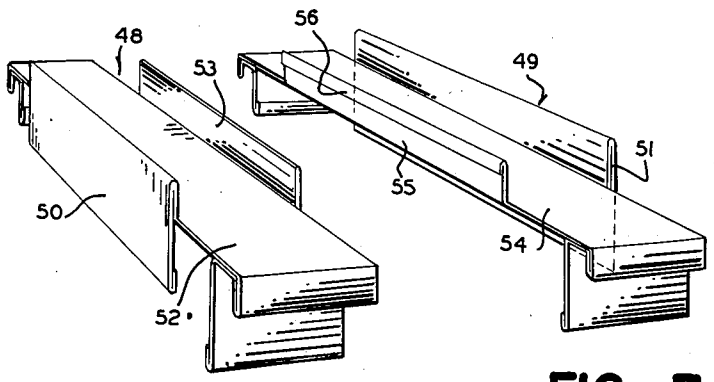


FIG. 8

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United States Patent Office 2,790,400 Patented Apr. 30, 1957

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SKYLIGHT DOME CONSTRUCTION

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Application December 26, 1952, Serial No. 328,045

3 Claims. (Cl. 108—16)

The present invention relates to a skylight construction and more particularly to a skylight construction in which a plurality of skylight domes are combined into a single skylight unit.

The use of plastic domes for skylights as disclosed in my prior United States Letters Patent No. 2,610,593 has been limited to small and medium size skylight openings since these plastic domes cannot be made and handled efficiently in the larger sizes. In the present invention a plurality of these domes are fixed adjacent to one another forming larger and stronger skylight units than could be possible by using a single dome for each unit. The present invention also provides a means for prefabricating the individual skylight domes with interfitting units so that individual dome units may be assembled into a single multiple dome unit at the site of the installation with a minimum of welding or soldering.

The present invention also provides a construction of a multiple dome skylight unit which requires no additional support of crossbeam curbing members in the skylight opening.

The present invention also permits shipping of a multiple dome unit in a plurality of smaller assembled sections which are easy to handle and unlikely to break.

A further advantage of the present invention is that skylight units of varying sizes may be assembled from the individual domes which are of equal unit size.

The present invention also provides an inexpensive skylight construction which may be applied to skylight openings of any dimension without need of subsequent waterproofing. This invention is also strong and durable and may be easily installed and applied to openings of any size in old or new buildings.

These and other advantages of the construction of the present invention will be more clearly understood when considered in conjunction with the following drawings illustrating the invention in which:

Figure 1 shows a fragmentary cross-sectional elevation of one form of the invention having two domes forming a single unit.

Figure 2 is a plan view of the form of the invention as shown in Figure 1.

Figure 3 shows a fragmentary sectional elevation of a modification.

Figure 4 shows a fragmentary cross-sectional elevation of a modification of the invention.

Figure 5 is a fragmentary cross-section taken on lines 5—5 of Figure 4.

Figures 6 and 7 are fragmentary sectional elevations of modifications of the invention.

Figure 8 is a perspective view of the interfitting curb frames illustrated in Figure 7.

Figure 9 is a fragmentary perspective view of the form of the invention of Figure 1.

In this embodiment wherein two plastic domes are used in the unit, the frame opening is formed by the sectioned curbing beams 1 and 2, and the nonsectioned

curbing beam 3, between the ends of these curbing beams 1 and 2 with another curbing beam not shown, opposite the nonsectioned curbing beam 3 joining the other ends of the curbing means. The crossbeam curbing 12 which may or may not have side supports 12a extends centrally across the skylight opening. Each of these curbing beams 1, 2 and 3 are covered over the top and sides both inside and out by metal curbing frames 4 made of galvanized sheet metal, other metal elements, or other materials sufficiently durable to withstand weather and strong enough to act as a support for the skylight covering element. The curbing frames 4 have a cross-section which provides a wall 5 on the outside of the curbing, a covering web 6 on the top edge or sill of the curbing, and an inner wall element 7 on the inside of the wooden curbing which extends downward into the skylight opening and upward providing the upwardly extending flange 8. In addition the curbing frame 4 has an outwardly extending flange 9 which may be continuous and in the same plane or in a downwardly sloping direction, as the covering web 6. The outer edge of the flange 9 is turned downward forming the flange element 10 which is substantially parallel to the outer wall 5 of the curbing frame 4. A base flashing 11 within the outer wall 5 may be provided and may extend upwardly to the covering web 6.

As mentioned the skylight opening is divided into two separate openings by the crossbeam curbing member 12 which forms a common sill for adjacent openings. The curbing frames 4 as described are positioned on all top edges or sills of the skylight opening except the common sill formed by the crossbeam curbing 12. A cross curbing frame 13 covers this sill on the top and sides. This cross curbing frame is comprised of a covering web 14 which on its longitudinally extending center line has a perpendicularly extending fold forming a flange member 16. On either side edge of this cross curbing frame 13 are wall elements 17 which extend both downward into the skylight opening to the same distance as does the inner wall 7 of the curbing frames 4 and upward forming the upwardly extending flange member 19 having a height equal to that of the upwardly extending flange 8 of the curbing frame 4. The end edges of the covering web 6 of the adjacent curbing frames 4 mitered and fitted together at a 45° angle on the face of the corners of the sill on which they rest and these edges are soldered or otherwise rigidly and permanently fixed together substantially along their length including the juncture of the wall element 7 of each curbing frame 4 so that no water will get beneath them.

The side ends of the covering web 14 form outwardly extending flanges 34 (Figure 9) which are in the same plane and have the same length as the flange 9. The ends of the covering web 14 are also provided with a downwardly extending flange member 35 and a wall member 36 which are in the same plane and continuous with the downwardly extending flange 10 and the outer wall 5 respectively of the adjacent curbing frames 4. The side ends of the covering web 14 forming the flange elements 34, 35 and 36 are soldered or otherwise suitably and rigidly fixed along the side edges at 37 to the ends of the curbing frames 4 in a similar fashion to the soldering of the ends of the adjacent curbing frames at the corners.

A gasket 20 covers the external flange member 9 of each curbing frame 4. A pair of gaskets 21 extend longitudinally of the cross curbing frame 13, one on either side of the upwardly extending flange 16 on a level with the gasket 20. The ends 29 and 30 of the adjacent gaskets 20 and 21 are at right angles to one another as illustrated in Figure 2 with a small opening between them to permit water condensation collecting on the

covering web to flow out from the skylight unit at the corners. A plastic dome **22** is fitted over each of the separate openings formed by the crossbeam curbing **12**, each having a horizontal flange **23** resting securely on three sides on the gaskets **20** and on the fourth side on the gasket **21**. The flange **23** and the gasket **20** may rest on the covering web **6** as shown in Figure 3 or on the outwardly extending flange **9** as shown in Figure 1. Another set of gaskets **24** covers each side of the flange **23** and similar to gaskets **20** and **21** have an opening at their adjacent ends to permit water collected behind them to flow off the skylight unit. The plastic dome is held securely down over the opening on the sides by curb retaining frames or apron members **25** which have an inverted L-shaped cross-section and which extend longitudinally of the flanges **23**. On the fourth side, the dome is securely held down by the cross curb retaining frame **26** which is shaped to fit over the flange **16**.

The horizontal leg **27** of the L-shaped cross-section of the curb retaining frames **25** covers the gasket **24**, the vertical leg **28** extends downward outside of the downwardly extending flange **10**. This leg **28** is bolted or otherwise secured to the flange **10** preferably as shown by a series of bolts **31** and clinch nuts **32**, each bolt passing through a spacing washer **33** placed between the leg **28** and the flange **10**.

The ends of the adjacent curb retaining frames **25** are mitered, fitted together and soldered or otherwise secured to one another above the corners of the skylight unit. The ends of the cross curb retaining frame **26** form an outwardly extending flange member **38** (Figure 9) with a downwardly turned end **39**, which are adjacent and form a continuous surface with legs **27** and **28** respectively of the adjacent curb retaining frames **25**, the respective ends of which are soldered or otherwise secured in sealed butting or overlapping joints to the cross curb retaining frame **26**. This cross curb retaining frame is similarly held to the cross curbing frame preferably by bolts **31**, nuts and space washers. Moisture is prevented from entering the unit at the ends of the flanged member **16** by sealing, with lead or other suitable material, either the end of the flange **16** itself, or that part of the end of the cross curb retaining frame which covers the flange **16**. As an alternative either of these elements may be closed by pinching the ends or by putting a cap **44** over the end as is illustrated in Figure 9.

As a modification the curb retaining frames **25** may extend entirely the length of the skylight, extending either over or under the cross curb retaining frame **26**, rather than terminating at either side of the cross curb retaining frame to which it is soldered.

It will be noted that the edges of the flange **23** are spaced from the downward leg **28** of the clamp to provide for expansion and contraction of the various members on three sides, and the fourth side is spaced from the vertical flange **16** for the same reason. It will also be noted that the folded flange **16** provides for expansion and contraction in the center part of the unit.

Although the above specification illustrates an embodiment of the invention having two domes the same principle as described above may be employed to construct a skylight unit having any number of domes arranged either in a single column or in a plurality of adjacent columns. If in the embodiment as described above more than two domes are used in the same unit, crossbeam curbing members should be provided between each adjacent dome.

A modification of this invention is illustrated in Figures 4 and 5 wherein the cross curbing frame **41** has no centrally located vertical flange. In this modification a covering web **42** extends across the crossbeam curbing member **12** in face to face relationship. The pair of gasket members **21** longitudinally extending across the covering web **42** are similarly provided to support the flanged edge **23** of the dome **22**. The pair of gaskets **24** above the flanged edge **23** space and seal the cross curb retaining frame **43** which is held horizontally at either end by means of bolts **31**, clinch nuts **32** and space washers **33**, in a manner similar to the means for holding the cross curb retaining frame **26** as previously described.

Figure 6 illustrates a modification which may be used for a skylight opening in which no crossbeam curbing member across the skylight opening is provided. In this modification the cross curbing frame **44** has upwardly extending ends **45** and **46** which are rigidly fixed by welding or other suitable means at both of their side edges to the upwardly extending flanges **8** of the adjacent curbing frames **4**. This construction is strong enough to support any number of domes in a single row forming a skylight unit, however, if more than one row of domes adjacent to one another are to be used to form a skylight unit, it is preferable to provide crossbeam curbing members between rows of these domes. In the modification as illustrated in Figures 7 and 8 a construction is provided which permits dome units **60** each comprising a dome and a combination of curbing frames **4** and cross curbing frames **47** the latter of which form parts of adjacent dome units with retaining frames to be individually packed and shipped to the site of the installation, where a plurality of them may be easily interfitted to form a single skylight unit. This permits easier freight handling with less chance of breakage through handling. In this construction the cross curbing frame **47** is fabricated in two sections **48** and **49**. Each section has an inner wall element **50** and **51** respectively, having their respective side edges soldered to the side edges of the inner wall members **7** of the adjacent curbing frames **4**, each forming a fourth wall of different dome units. Section **48** of the cross curbing frame is provided with a covering web section **52** extending horizontally outwardly from the inner wall **50** and having an upwardly flanged strip **53** extending longitudinally along the center part of its outer edge. Section **49** of the cross curbing frame forming the fourth side of another dome unit is also provided a covering web section **54** extending horizontally outwardly from the inner wall **51** the same distance as the covering web **52**. An upwardly flanged strip **55** with a hooked upper edge **56**, formed to interlock with the upwardly extending flange **53** of the section **48** extends longitudinally along the center part of the outer edge of the covering web section **54**.

When two dome units are interlocked, their curb retaining frames **25** and the cross curb retaining frames **26** are joined together as described in connection with Figure 1.

When the hooked edge **56** and the flange **53** are interlocked, they may then be soldered together so that once in place they will form a rigid unitary element.

A skylight unit having more than two dome units arrayed in adjacent rows may be readily constructed by substituting sections **48** and **49** of the cross curbing frame **47**, one each for the adjacent curb frames in adjacent dome units.

Having now described my invention I claim:

1. In a skylight construction having enclosing curbing and cross beam curbing members dividing said skylight opening into a plurality of smaller skylight openings and dome members covering each of said openings, means forming a supporting curbing frame and securing means for said dome members comprising a curbing frame having covering webs extending over said curbing and cross beam curbing members with depending flanges extending therefrom at the sides of said curbing members and upwardly-extending gutter-forming flanges at the edges of said curbing frames bordering said smaller skylight opening, said curbing frame having outwardly-extending flanges terminating in a second set of depending flanges from said enclosing curbing members for supporting the periphery of said dome members, an upwardly-extending fold formed in the covering web positioned over the cross

beam curbing member and between adjacent dome members, and said securing means comprising an apron member having an angle cross section with one leg extending over said outwardly-extending flanges and positioned on the periphery of said domes and means securing the other leg of said angle cross section of said apron member to said second set of depending flanges a cross beam retaining frame covering said upwardly-extending fold and extending outwardly therefrom over the adjacent edges of the dome members and terminating in a third set of depending flanges aligned with said second set with said cross beam retaining frame secured to said curbing frame.

2. In a skylight construction having enclosing curbing and cross beam curbing members dividing said skylight opening into a plurality of smaller skylight openings and dome members covering each of said openings, means forming a supporting curbing frame and securing means for said dome members comprising a curbing frame having covering webs extending over said curbing and cross beam curbing members with depending flanges extending therefrom at the sides of said curbing members and upwardly-extending gutter-forming flanges at the edges of said curbing frames bordering said smaller skylight opening, said covering webs having portions for supporting said dome members terminating in a second set of depending flanges, a flange extending upwardly from and longitudinally of the covering web positioned over the cross beam curbing members intermediate said dome members, and said securing means comprising an apron member having an angle cross section with one leg thereof positioned on the periphery of said dome members and the other secured to said second set of depending flanges a retaining frame forming a common cover for adjacent edges of said dome members and complementary to said upwardly-extending flange and means for securing said apron member, and retaining frame, to said curbing frame.

3. In a skylight construction having enclosing curbing and cross beam curbing members dividing said skylight

opening into a plurality of smaller skylight openings and dome members covering each of said openings, means forming a supporting curbing frame and securing means for said dome members comprising a curbing frame having covering webs extending over said curbing and cross beam curbing members with depending flanges extending therefrom at the sides of said curbing members and an upwardly-extending gutter forming flanges at the edges of said curbing frames bordering said smaller skylight opening, said curbing frame having portions for supporting said dome members terminating in a second set of depending flanges, said covering web positioned over the cross beam curbing member having a flange projecting upwardly from between adjacent edges of said dome members, and said securing means comprising an apron member having an angle cross section with one leg thereof positioned over the periphery of said dome members and the other secured to said second set of depending flanges, and a cross beam retaining frame covering said upwardly-extending flange and extending outwardly therefrom in the same plane as said portions of the apron member with said cross beam retaining frame terminating in a downwardly-turned flange section with said flange section secured to said curbing frame.

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