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VENTIBLE SKYLIGHT CONSTRUCTION

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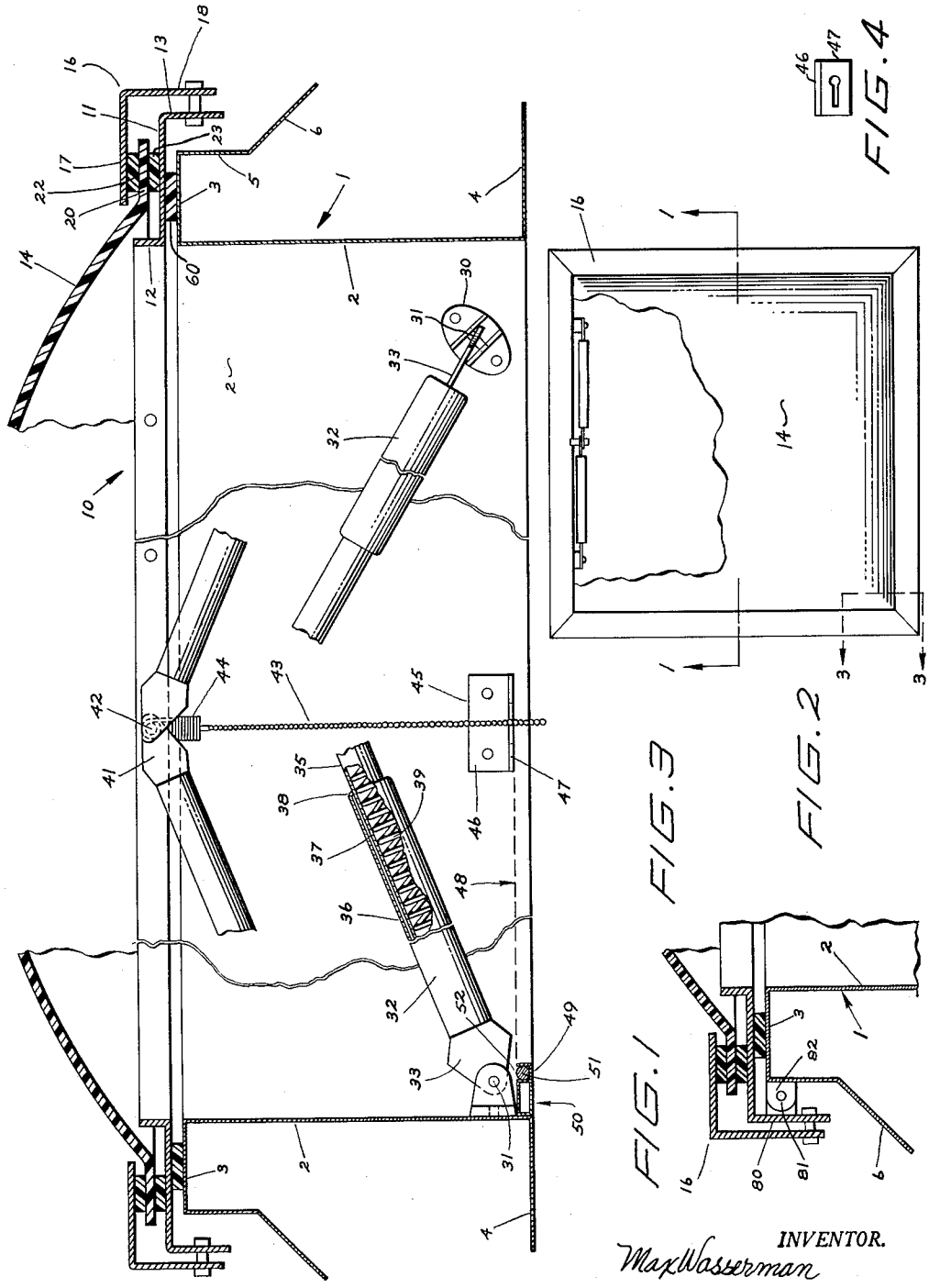


FIG. 4

FIG. 2

FIG. 3

FIG. 1

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VENTIBLE SKYLIGHT CONSTRUCTION

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The present invention relates to a skylight construction adapted to be pivoted open for ventilating purposes and, in particular, relates to a means for opening and closing a skylight cover.

In ventilating skylights which pivotally open, the covers are ordinarily hinged on one side with a spring mechanism for opening the cover, and a separate closing mechanism to close the cover against the tension of the spring. Ordinarily the closing mechanism and spring engage the cover at different points and consequently provide continuous stresses at all times at these different points on the cover. Thus, for example, if the skylight cover is hinged at the back and spring means are connected at the side continuously pressing the cover upwardly against the restraint of the hinge and a lock at the forward edge, there is constant upward pressure at the sides and downward pressure at the forward end rear edges of the cover when it is in a closed position. It has been found that over a period of months and years such stresses bow to the sides of such a construction upwardly, thus distorting the cover and causing leakage at its sides. In addition, the spring actuated mechanisms at the sides may malfunction when the devise is finally operated.

These and other disadvantages in the prior constructions are overcome in the present invention where there is provided a unitary skylight construction adapted to be opened by raising the skylight cover for ventilation purposes and in which all actuating means engage the skylight construction at an edge opposite the hinge. Thus the spring actuating mechanism connected to the cover and closing mechanism are at the same point and thereby dynamically balance the forces applied to the cover in a manner which eliminates deforming stresses.

More specifically, a pair of helical springs contained in a telescopic member are symmetrically arranged and pivotally connected at their bases to the lower portion of the wall of the skylight construction opposite the wall to which the cover is hinged. The upper ends of the spring constructions are pivotally connected together on the skylight cover. A closing mechanism preferably in the form of a pull rod is also connected to the pivotally interengaged point of the spring construction.

The construction as well as other objects and advantages of the present invention will be more clearly understood when considered in conjunction with the accompanying drawings in which:

FIG. 1 is a cross-sectional elevational view of the skylight construction taken along the line 1—1 of FIG. 2, but with certain elements in different positions for purposes of illustrating a modification,

FIG. 2 is a plan view with a portion of the dome removed,

FIG. 3 is a detail cross-section taken along the line 3—3 of FIG. 2, and,

FIG. 4 is a top view of a keyhole lock member of this invention.

Referring to the drawings in which are illustrative of the present invention, there is illustrated a curb 1 adapted to be secured over a skylight opening. This curb is formed of four upstanding, enclosing walls, each having an identical cross section as illustrated in FIG. 1. This cross section provides a wall 2, outwardly extending upper and lower flanges 3 and 4 respectively, with upper flange 3 continuous with the upper edge of wall 2 and lower

flange 4 continuous with the lower edge of wall 2. The outer edge of flange 3 is continuous with a downwardly depending flange 5 which terminates at its lower edge in an outwardly flared lip 6. This curb 1 is adapted to be secured over skylight opening by means of nails or other securing means passing through the flange 4. Positioned above the upper flange 3 is a dome supporting frame 10. As is conventional in the art, this frame 10 provides a horizontal flange 11 having an upwardly extending lip 12 at its inner edge, and a downwardly extending lip 13 at its outer edge, with lip 12 forming a drain gutter and lip 13, in part, forming a drain passage.

The skylight cover may be in the form of a dome 14 having an outwardly extending flange 20. This cover 14 is secured to the frame 10 by means of a four-sided continuous retaining frame 16. Each side of this retaining frame 16 has an inwardly extending apron 17 and at the outer edge of apron 17 a downwardly extending apron 18, with apron 17 securing between it and flange 11, the outwardly extending flange 20 of the dome. Intermediate the dome flange 20 and the apron 17, and flange 20 and flange 11 are positioned, if desired, intermittent gaskets 22 and 23 in a known manner. A conventional gasket 60 is provided between flange 11 and flange 3. Dome frame 10 is pivotally mounted above and secured by suitable hinge means to curb 1. Such an arrangement is illustrated in detail in FIG. 3. A pair of hinge members are provided at opposite sides of one wall 2, opposite the actuating member. Each of the pair may be constructed as illustrated in FIG. 3 wherein two plates 80 and 82 are pivotally interengaged by a pin 81. Plate 80 is rigidly secured to the dome supporting frame 10. Plate 82 is secured and projects outwardly from the flange 5. The dome supporting frame 10 is adapted to pivot about the pins 81, to and from a closed position on the walls 2.

A pair of tubular telescopic members 32 are positioned within the walls 2. Each telescopic member 32 is pivotally secured at its lower end to the walls 2. In the arrangement illustrated the lower ends of the members 32 are provided with an integrally formed plate 33, extending longitudinally from the lower end. This plate 33 is pivotally supported on a pin 31 fixed at its opposite ends in bracket 30. This bracket 30 is provided with a pair of side members in which the pin 31 is supported and a base which is secured to a lower portion of the side walls. If desired, the brackets may be secured to opposite side walls or alternately brackets may be secured to the same wall in a position opposite the hinges. In FIG. 1 the brackets are secured to adjacent walls for illustration only. Preferably the brackets are secured as illustrated in FIG. 2. The telescopic members 32 should be loosely pivotally supported on these brackets 30 to permit some lateral movement which is necessary when the dome pivots upwardly. The telescopic members 32 comprise an upper section 35 and a lower section 36 each of which is tubular in form with the upper section 35 adapted to slide longitudinally at one end within the lower section 36. Interposed between the colinear portions of the upper and lower sections 35 and 36 respectively, is a sleeve 37 which is suitably secured to the lower section. This sleeve extends partially along the lower section 36. The upper section 35 is formed with a lower flared end adapted to engage the lower ends of the sleeve 37 so as to lock the upper section and lower section 35 and 36 respectively together. A helical spring 39 is positioned within these sections 35 and 36 and provides an expansion force of sufficient magnitude to cause the dome to open when the contracting force of the spring 39 is released. The spring 39 may bear at its ends at opposite ends of the sections 35 and 36. The tubular telescopic members 32 are pivotally interengaged at their

upper end to a pin 42 which is rigidly secured to dome supporting frame and preferably to the lip 12. The upper ends of these tubular members 32 may be flattened as illustrated at 41 to provide flange areas through which the pin 42 may project. The end of the pin 42 may be flared to permanently secure the upper ends of these rods 32 in a pivotal fashion to the lip 12.

Also engaging the pin 42 is a helical spring 44 having its upper end secured to this pin 42 and its lower end secured to a pull cord 43. The pull cord 43 is preferably formed as a chain which passes through a keyhole lock member 45. This lock member 45 is formed with flanges 46 and 47 preferably at right angles to one another. The flange 46 is secured to the wall 2 and the flange 47 projecting upwardly therefrom. A keyhole slot is provided in the flange 47 through which the cord 43 passes, so that the cord may be selectively engaged at any point along its length with this keyhole lock. An operator, by pulling the cord 43 against the tension of the spring 39 may close the dome and lock it in its closed position.

A frame 50 having a channel 51 securing a screen 49 may be press fitted into the skylight well.

Having described my invention, I now claim:

1. A skylight construction comprising a curb formed of vertical walls secured together around a skylight opening and including a rear wall and an opposite front wall and a cover fitting over the top edges of said curb,

said cover having a rear side hinged to the rear wall of the curb and both an opening means and a closing means attached to the central portion of its opposite front side,

the opening means comprising a pair of compressed helical expansion springs extending outwardly and downwardly from said central portion to brackets on said curb and the closing means comprising a releasably anchored tension member adjacent said springs,

whereby when the cover is closed the tension member carries the full force of the springs and prevents distortion of the cover.

2. A skylight construction comprising a curb formed of vertical walls secured together around a skylight opening and including a rear wall and an opposite front wall and a cover fitting over the top edges of said curb,

said cover having a rear side hinged to the rear wall of the curb and an opposite front side carrying a combined opening and closing means at the central portion thereof,

said means comprising a pair of symmetrically arranged compressed expansion springs pivotally interengaging one another and pivotally engaging said cover at the point of pivotal interengagement and having their outer ends attached to brackets on said curb adjacent the opposite lower front corners thereof and a releasably anchored tension member attached to said cover at said point and balancing the thrust of said springs when the cover is closed.

3. A skylight construction comprising a curb formed of vertical walls secured together around a skylight opening and including a rear wall and an opposite front wall and a cover fitting over the top edges of said curb,

said cover having a rear side hinged to the rear wall of the curb and an opposite front side having a pin centrally mounted therein and having attached thereto both an opening means and a closing means for said cover,

the opening means comprising a pair of telescopic tubular members,

each having a compressed expansion spring contained therein,

attached at their lower ends to brackets on said curb adjacent the opposite lower front corners thereof and at their upper ends to said pin,

and the closing means comprising a chain having one end connected to said pin and adapted to engage a releasable locking means carried by said front wall of the curb.

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