A. H. JETER.

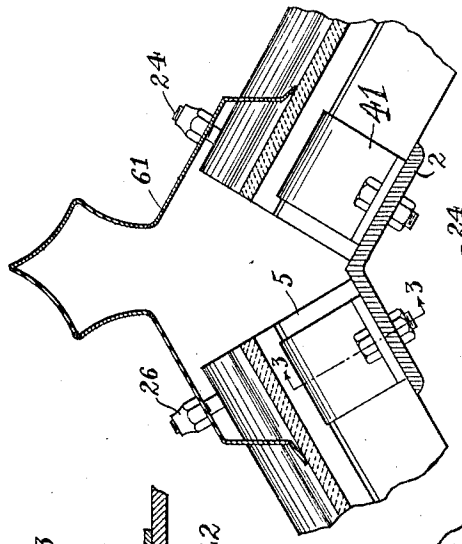
SKYLIGHT.

APPLICATION FILED MAR. 23, 1911.

1,001,646.

Patented Aug. 29, 1911.

2 SHEETS—SHEET 1.



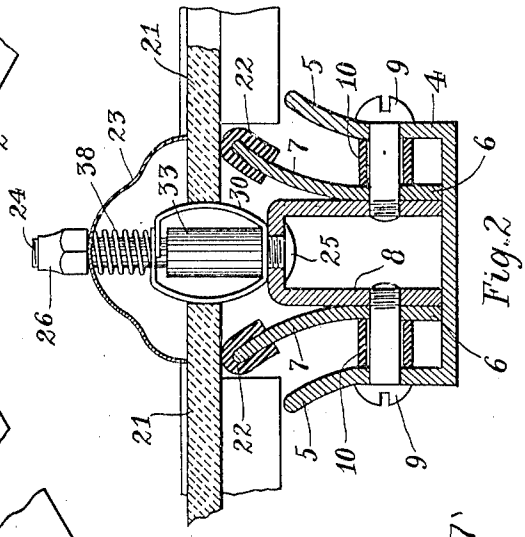


Fig. 2

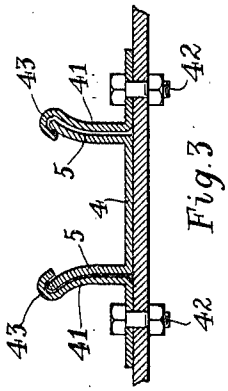


Fig. 3

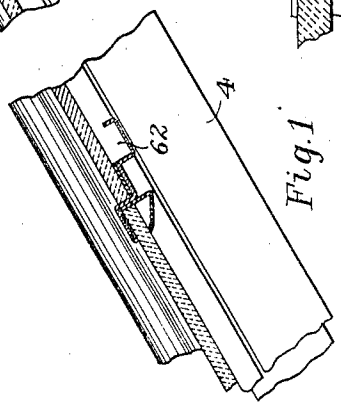


Fig. 1

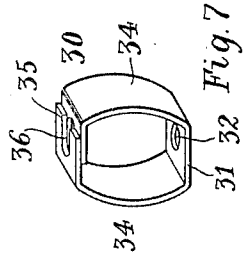
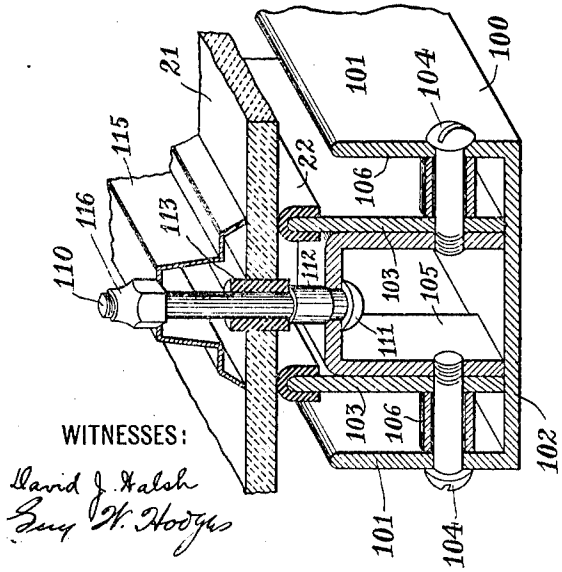


Fig. 7



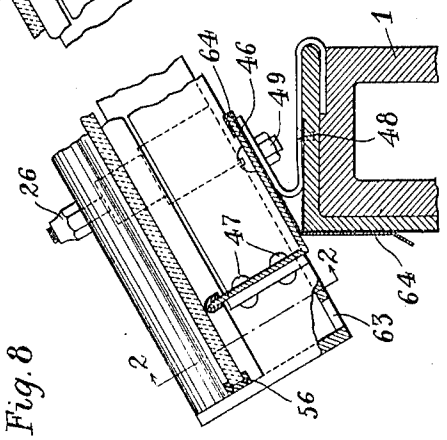


Fig. 8

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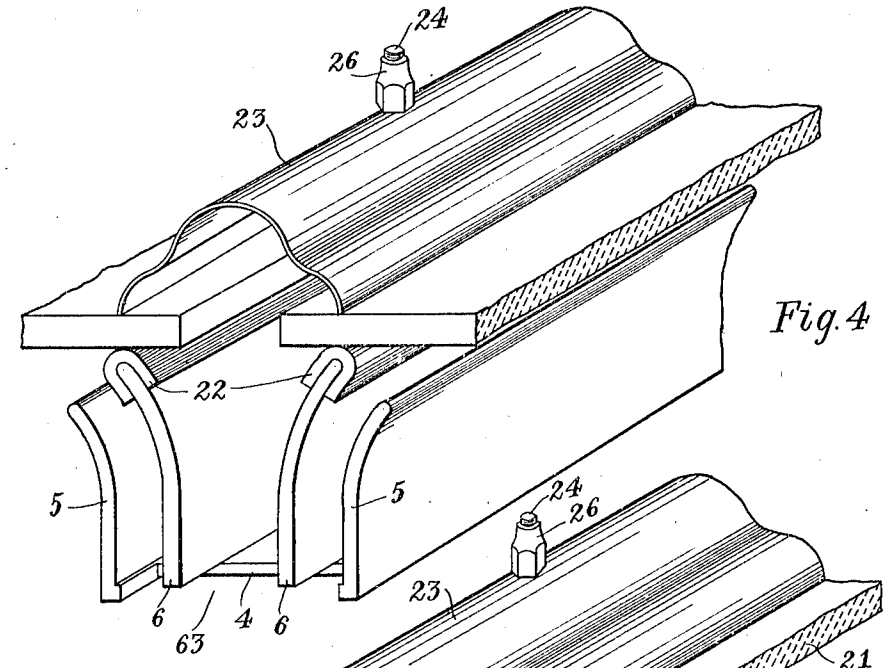

Fig. 4

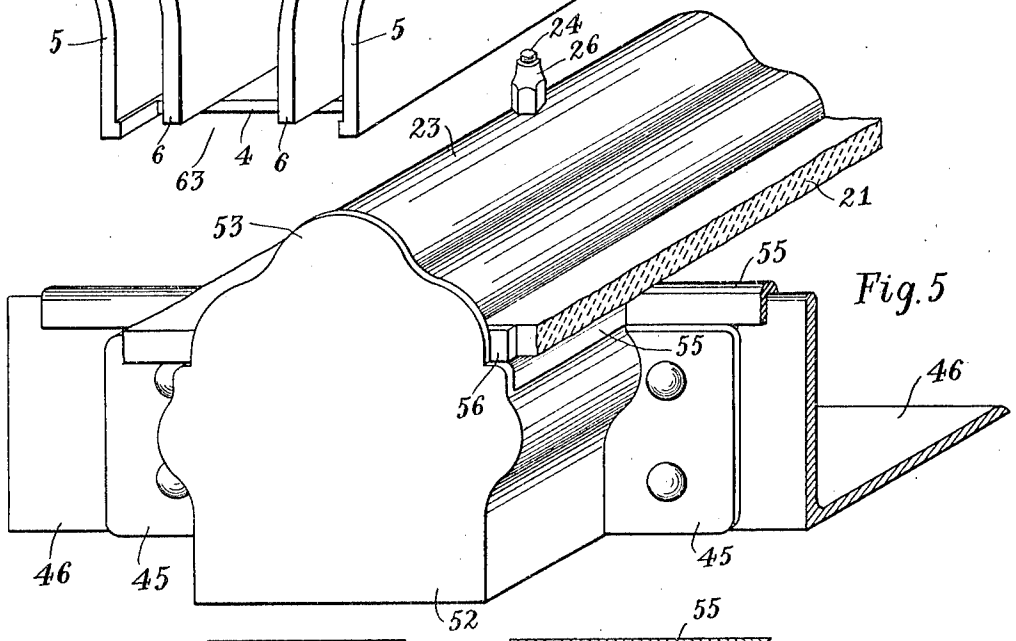

Fig. 5

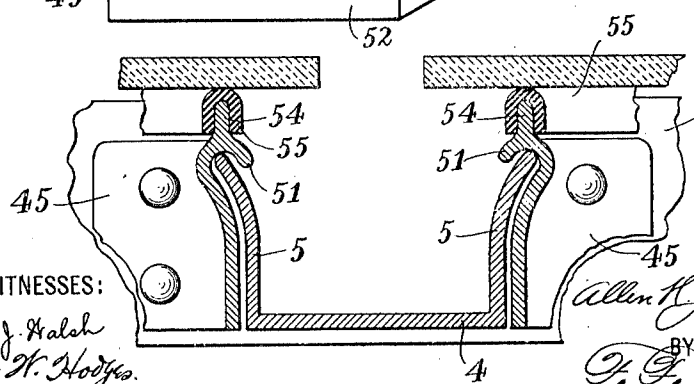

Fig. 6

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ALLEN H. JETER, OF NEW YORK, N. Y.

SKYLIGHT.

1,001,646. Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed March 23, 1911. Serial No. 616,440.

To all whom it may concern:

Be it known that I, ALLEN H. JETER, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, county of New York, State of New York, have invented new and useful Improvements in Skylights, of which the following is a specification.

My invention relates particularly to skylights for buildings.

It has for its object the production of a supporting structure for a translucent or transparent sheet material, the production of a means for collecting the moisture of condensation produced on the under surface of the sheet material and also the production of means for protecting the sheet material from shattering in case of vibration of the building and to prevent breaking in case of expansion or contraction of the supporting beams produced by heat.

The invention may be embodied in many forms of construction and in many different arrangements of parts. In the preferred form of construction glass plates are supported by astragals. Cushioning means is provided for protecting the plates. Also means is provided for allowing expansion or contraction of the astragals and supporting beams and parts of the construction. Means is also provided to allow vibration of the astragals relative to the plates and means is provided for allowing vibration of the walls of the building relative to the astragals.

To show that the invention may be generally applied and is operative, I have described hereinafter and shown in the drawings a construction involving its use.

The invention consists in features that are described and shown or that may be suggested in the following description or by the drawings and are covered by the claims.

Referring to the drawings Figure 1 illustrates a side view of one of the astragals of the sky-light. Fig. 2 illustrates a cross section of the astragal. Fig. 3 illustrates a cross section of the astragal taken at line 3—3 indicated in Fig. 1. Fig. 4 is an end view of the astragal. Fig. 5 is an end view of the device for supporting and connecting the astragal to the wall of the building. Fig. 6 is a cross section of the device shown in Fig. 5. Fig. 7 is a detail for elastically holding the glass plates. Fig. 8 is a cross section of a modification of the sky-light astragal shown in Fig. 1.

1, in Fig. 1, is a supporting wall or structure. It may be the curb of the roof of the building.

2 is the ridge beam adapted to support the upper ends of the astragals. This, however, may be greatly varied according to the character of the structure in connection with which the invention is used.

The astragal has a trough 4 having a flat bottom. The trough may, therefore, be placed upon any other supporting member forming a part of the building. The side walls 5 of the trough may be made flaring for the purpose of gathering moisture from the plates and particularly for receiving the moisture from cross troughs located at the lower end edges of the plates. Flat strips of metal 6 are located in the trough 4 and extend the length of the trough. The strips 6 are provided with flaring edges 7 along their upper edges. The strips are held in place by means of inverted U-shaped members or brackets 8 located at intermediate points along and between the strips. The U-shaped members or brackets are secured to the side walls of the trough 4 by means of the screws 9. Separating sleeves 10 are located between the strips 6 and the side walls 5 of the trough. The screws tightly bind the legs of the U-shaped member against the flats 6 and the sleeves 10 thus securely holding the strips 6 in place. The flats support the glass plates 21. The edges of the glass plates 21 extend inward and along the edges of the flats 6. Cushion device 22 preferably composed of sheet lead strips overlap the edges of the flats and are located between the flats and the glass plates. The cushion devices prevent contact between the glass plates and the flats which are formed of rolled steel and consequently prevent breaking of the glass plates by reason of any sudden movement or jar of the beam or of the building. A cap 23 is located above the edges of the plates 21 and cover up the opening of the space formed between the plates and above the beam. The cap being of elastic material, it compresses the upper surfaces of the plates and holds them elastically against the lead cushions 22, thereby preventing any free play or vibration of the plates, and, consequently, breaking of the plates. The edges

of the cap 23 are located directly opposite to the cushion strips and press directly toward them, thereby tightly, yet elastically clamping them. The cap 23 is secured in position by means of stud bolts 24 which are secured to the top of the U-shaped members 8. The bolts are screwed into the U-shaped member and then riveted as shown at 25. A nut 26 passes over the bolt 24 and is screwed against the center or ridge of the cap 23, thereby compressing the cap against the plate and securing it in position.

A spring or other cushioning means is located at intermediate points between the plates to prevent any extended lateral or transverse movement of the plates or of the astragal or building with respect to the plates, thereby preventing breaking of the plates. I have found an exceedingly efficient spring to consist of a double bow spring which elastically presses outward against the edges of the plates. This is best shown in Fig. 7. The center portion 31 of the strip is secured to the astragal. It is provided with an opening 32 through which the lower end of the bolt 24 passes before it is secured to the U-shaped member 8. The bolt 24 may be provided with an enlarged portion or with a soft-metal ferrule 33, whereby the spring 30 is held in position. The bows 34 of the spring extend upward around the ferrule 33 and a part of the bolt 24 and between the plates 21. The ends of the spring 30 are turned inward and parallel to the flat portion 31. The ends are forked, the slots 36 being cut into the ends. The bolt 24 extends through the slots thus formed. The ends 35 may freely move up and down as the legs of the spring are compressed and straightened. The bolt guides the spring and holds it in operative position. The ferrules 33 may be made of lead or copper, in the preferred form of structure. They, however, may be made of any suitable material.

The vertical movement of the ends of the spring 30 is also elastically controlled by the spring 38 which is located between the cap 23 and the ends of the spring 30. The spring 38 also operates to elastically hold the cap against the nut 26 as well as to elastically compress the spring 30 and hold it in position. It also holds the spring 30 in constant contact against the edges of the glass plates 21. The spring 38 is a spiral spring. It surrounds the bolt 24 which keeps it in position.

The astragal may be attached to the structure in any way desired. I have shown one form of structure embodying my invention in which it is secured by a housing or socket and angle irons. At the upper end of the astragal, a hooked engaging member 41 is located upon the ridge 2. It is secured to the ridge by means of bolts 42. The member 41 is provided with a head 43 which is adapted to extend over and engage the upper edge of the trough 4. The trough is thus allowed to vibrate or to expand or contract, it being longitudinally movable in the engaging hook 43. The lower end of the astragal fits into a housing 45 which is secured to the angle iron 46 by means of the rivets or bolts 47 or by any other suitable means. The angle iron 46 is secured by bolt 49 to an engaging member 48 which is also attached to the curb 1. The housing 45 is provided with an inwardly turned edge 51 which is adapted to extend over the edges of the side walls of the trough 4. The trough 4 rests upon an L-iron 46 and its lower end abuts the end plate 52 of the housing. The upper portion 53 of the housing closes the end of the cap 23. The glass plates 21 extend over the housing 45. The heads 51 are provided with ridges 54. Lead cushioning strips 55 extend along the ridges and along the L 46 and between the said parts and the glass plates 21. This prevents the breaking of the glass plates where they are supported by the upper edges of the housing and the L. A lead cushioning device 56 is located between the wall 53 of the housing and the end edges of the plates 21. The plates rest against the lead cushioning strip 56.

A ridge cap 61 extends over and covers the ridge 2, thus covering the space formed between the ends of the beams at the ridge. The ridge cap is secured by the bolts 24 in the same manner that the caps are secured. Cross troughs 62 are provided for collecting moisture of condensation which runs down the inner surface of the plates. The cross troughs 62 lead to the main or beam trough 4. They extend over the flaring walls 5 and particularly into that portion of the trough between the strips 6 and the walls 5. All moisture condensed in the space formed between the cap and the edges of the plates are collected in the trough 4 and particularly that portion located between the strips 6. The moisture thus collected is conducted through the trough 4 to the lower end and is delivered through the opening 63 formed between the end of the beam and the housing 45. The opening 63 is formed by cutting away the lower end of the bottom of the trough, thereby leaving an opening which permits the moisture to pass away from the building. An apron 54 is located over the curb 1 and secured in position by means of the bolt 49, the L 46 and the angle iron 48, thus preventing any moisture from spattering into or returning in any way to the interior of the building.

In Fig 8 I have shown a modification of my invention which may be easily constructed and yet which contains many of the features which are shown in the form of the invention just described. The ar-

rangement shown in Fig. 8 may be more easily and cheaply constructed from stock material not requiring any special machinery. A trough 100 having the side walls 101 and the flat bottom 102 has its interior partitioned by partitions 103 which are secured in position by means of the inverted U-shaped members 105. Screws 104 and separating sleeves 105 located around the screws and between the partitions 103 formed of flat strips of metal and the walls 101, hold the flats in place. Bolts 110 are riveted to the members 105 as shown at 111. Each bolt may be provided with a shoulder 112 against which the head 111 is tightly secured. A lead ferrule 113 is located above the enlarged portion 112 and between the edges of the plates 21. The same cushioning strips 22 are located between the partitions 103 and the glass plates 21. The edges of the glass plates 21 are pressed against the lead cushions 22 by means of the cap 115. The cap 115 is compressed by means of the nut 116 which screws onto the bolt 110 at the top. The plates are thus held in position by means of the cap and are elastically compressed against the cushions 22 thereby preventing any free play of the plates. Any lateral play or vibration of the beam relative to the plates is cushioned by the soft metal ferrule 113. In other respects the supporting structure and the securing construction are substantially the same as in the device illustrated in the other figures of the drawing.

What I claim as new and desire to secure by Letters Patent is as follows—

1. In a sky-light the combination of a channel iron, flats running the length of the channel iron and supported on their edges on the bottom of the said channel iron, brackets for spacing the said flats from each other and members for spacing the said flats from the walls of the said channel iron, glass plates supported on the upper edges of the said flats and cushion devices located between the glass plates and the upper edges of the said flats.

2. In a sky-light the combination of a channel iron, a pair of flats supported on the bottom of the said channel iron, brackets for spacing the said flats from each other, bolts and spacing sleeves for spacing the said flats from the walls of the said channel iron, the said bolts and sleeves adapted to secure the said brackets and the said flats in position, glass plates supported by the said flats, a cap for covering the said channel iron and the edges of the said plates and secured to the said brackets, and cross troughs adapted to feed into the said channel iron and between the said flats and the walls of the channel iron.

3. In a sky-light the combination of a channel iron having flaring side walls, a pair of flats having flaring upper edges supported on the edges opposite the said flaring edges and on the bottom of the said channel iron, brackets for spacing the said flats from each other, spacing members for separating the said flaring flats from the said flaring walls of the said channel iron, cross troughs adapted to feed into the said channel iron and between the said flaring flats and the said flaring walls of the said channel iron, glass plates supported on the said flaring edges of the said flats, a cushioning means located between the said glass plates and the edges of the flats and a cap for covering the said channel iron and the edges of the said glass plates.

4. In a sky-light the combination of an astragal, glass plates supported by the said astragal, a cap for covering the said astragal and the edges of the said plates, bolts extending upward between the said glass plates for securing the said cap to the said astragal, bow springs fixed at one end located between the said plates and the said bolts, a spiral spring adapted to press against the free ends of the said bow springs and regulate the movement and the pressure of the said bow springs and hold them in position.

5. In a sky-light the combination of an astragal, glass plates supported on the said astragal, a cap for covering the said astragal and the edges of the said glass plates, bolts for securing the said cap to the said astragal, a spring secured at its center and at one end of each bolt and having forked ends adapted to straddle the said bolt, metallic springs located between the said ends of the first named springs and the said cap.

6. In a sky-light the combination of a channel iron, having flaring side walls, a pair of flats located in and supported on their edges and on the bottom of the said channel iron and having flaring upper edges, brackets located along the said channel iron and at intermediate points thereof for spacing the said flats from each other, sleeves located between the said flats and the side walls of the said channel iron for spacing the said flats from the said walls of the channel iron, bolts for securing the said brackets, the flats and the sleeves in position, glass plates supported on the flaring edges of the said flats, a cap for covering the said channel iron and the edges of the said glass plates, bolts for securing the said cap to the said brackets, soft metal ferrules located on the said second named bolts and between the said glass plates.

7. In a sky-light the combination of a plurality of channel irons, an L-iron for supporting one end of each channel iron, a housing extending around the said end of the channel iron and secured to the said L-iron and adapted to receive and support

the end of the said channel iron, the side walls of the said housing extending inwardly and over the side walls of the said channel iron to permit movement of the said channel iron with respect to the said housing.

8. In a sky-light the combination of a channel iron having flaring sides, a cap, a housing extending along the sides and around the end of the said channel iron, the said housing having an end plate adapted to close the end of the said channel iron and the end of the said cap, the side walls of the said housing extending inwardly and over the side walls of the said channel iron.

9. In a sky-light the combination of a channel iron, a cap, a housing extending along the sides and around the end of the said channel iron, the said housing having an end plate adapted to close the end of the said channel iron and the end of the said cap, the side walls of the said housing extending over the side walls of the said channel iron and into the said channel iron, ribs located on top of the said inwardly extending parts of the said side walls of the said housing, glass plates supported by the said ribs.

10. In a sky-light the combination of an astragal, glass plates supported by the said astragal, a cap for covering the said astragal and the edges of the said glass plates, bolts for securing the said cap to the said astragal and located between the edges of the said glass plates, soft metal limiting cushions located on the said bolts and between the plates, and metal springs located between the said limiting cushions and the said glass plates.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALLEN H. JETER.

Witnesses:
F. F. CRAMPTON,
R. C. MEAD.