

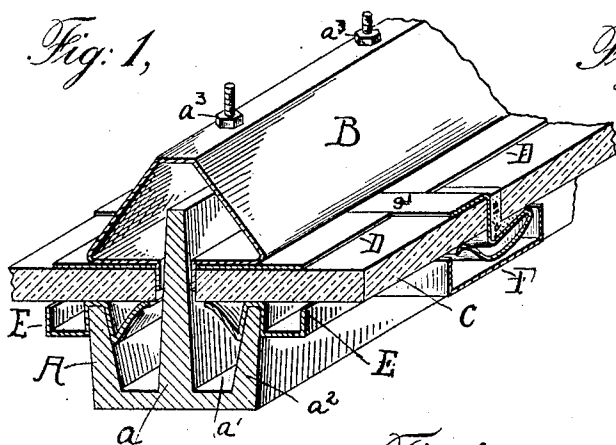
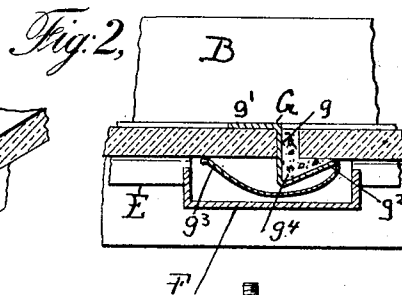
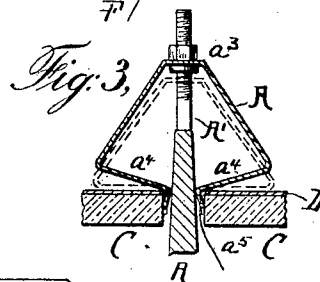
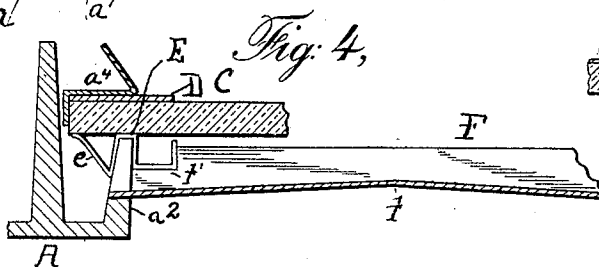
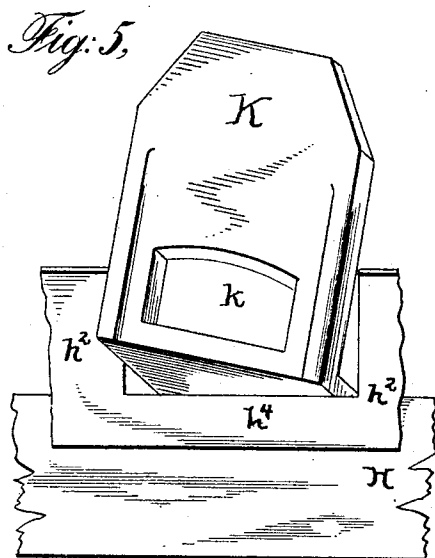
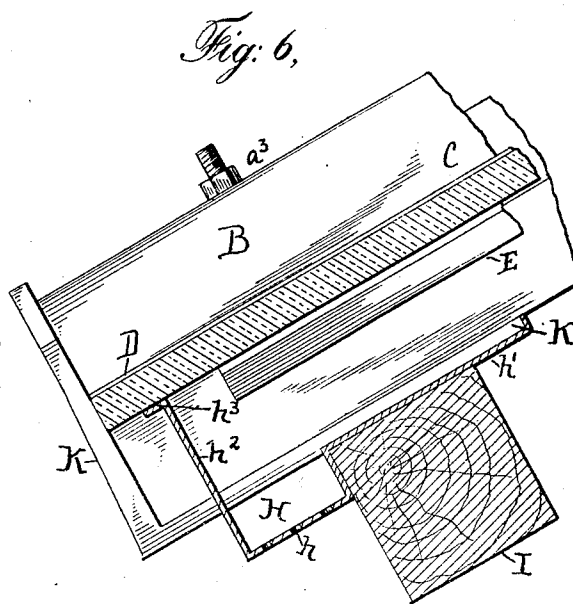
No. 805,383.

PATENTED NOV. 21, 1905.

R. N. SCHALKENBACH.

GLAZED STRUCTURE.

APPLICATION FILED MAR. 18, 1904.



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UNITED STATES PATENT OFFICE.

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GLAZED STRUCTURE.

No. 805,383.

Specification of Letters Patent.

Patented Nov. 21, 1905.

Application filed March 18, 1904. Serial No. 198,869.

To all whom it may concern:

Be it known that I, ROBERT N. SCHALKENBACH, a citizen of the United States, residing in Jersey City, Hudson county, and State of New Jersey, have invented certain new and useful Improvements in Glazed Structures, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view, partly in section, showing the main features of my invention. Fig. 2 is a cross-section of one of the lateral joints. Fig. 3 is a cross-section of the main cap to show its shape before being clamped down upon the astragal. Fig. 4 is a section with one of the lateral gutters in elevation. Fig. 5 is a front elevation of the edge of the roof, the expansion-clip being raised to show the eaves-gutter more clearly. Fig. 6 is a longitudinal elevation of the cap and astragal, the eaves-gutter being shown in section.

My invention relates to systems of glazing wherein the glass is held in place without the use of cement or putty; and the object thereof is to make a construction which shall hold the panes of glass in a firm but yielding engagement, allow of expansion of the roof under inside pressure, and provide better means for carrying off the water of condensation and such water as finds its way between the joints of the structure.

In accomplishing these objects I use the construction shown in the drawings, wherein A indicates one of a number of main supporting bars or astragals, designed also to form the main gutters for the carrying off of the water. They are arranged at suitable distances apart and extend downwardly toward the bottom of the sloping roof. These astragals are L-shaped in cross-sections, having a central web a and two side gutters a' with longitudinal flanges a'' . The astragals are supported in any suitable manner.

B is a cap which is made in one piece or in sections joined together and which runs the whole length of the astragal. The cap is of approximately triangular section, with sides which are outwardly and downwardly flared from the apex and is held down upon the panes of glass C by the bolts A' and nuts a^3 , as clearly shown in Fig. 3. The inturned bearing-faces a^4 of the cap have downwardly-extending flanges a^5 , which normally fit against the edge of the panes C. In order that these flanges and the inturned bearing-faces a^4 may

be forced into conformity with and held tightly against the glass and against the packing-strip D, I make the cap originally with a greater angle between the sides and the bearing-face a^4 than it is intended to have when in position, and then bend the bearing-face a^4 into its proper position by screwing down the nuts a^3 . In Fig. 3 I have shown the original form of the cap in full lines and in dotted lines the form it takes after compression.

D is a packing-strip, of any suitable material, preferably lead, which will conform to the irregularities of the glass.

The effect of screwing down the nuts a^3 upon the cap B is to force outward the flaring sides of the cap, and thus draw the downwardly-turned flanges a^5 outward against the edges of the panes. By this means the caps on either end of a pane may at any time be adjusted so as to tighten the lateral hold on a pane held between the flanges. This construction also enables not only the cap at any time to be forced downward on the pane with greater force, but also enables the downwardly-turned flange a^5 to be tightened against the pane from the outside, an advantage not found in caps where the tightening of the astragal-bolts simply force the cap downward.

The side flange a^5 supports on its upper edge the condensation-gutter E, which fits over the said flange and has at its opposite side the upturned elastic edge e . This edge is formed by bending the material of the gutter sharply upward in an approximate V shape. The end of this V-shaped bend is slightly turned outward and forms by its springiness a yielding seat for the glass and at the same time a close-fitting joint to prevent dust from entering the condensation-gutter E.

F is a lateral gutter running from one astragal to another underneath the lateral joints between the panes of glass.

As shown clearly in Fig. 4, the gutter F is made with a bottom inclined downwardly from its middle at f toward its ends. As shown also in Fig. 4, the astragal-flange a^2 is cut away for the reception of the end of the gutter F, so that the contents of the gutter will empty into the gutter a' . The upper flange of gutter F is also cut away at f' for the reception of the condensation-gutter E. It will thus be seen that the condensation-gutters empty into the lateral gutters; these into the astragal-gutter, and by the astragal-

gutter the water is carried downwardly and out through the opening h in the expansion-clip K. (Shown in Fig. 5.)

The lateral joining of the panes of glass C
5 C, I accomplish as shown in Fig. 2.

G is a joint-clip formed of a strip of metal the length of the joint, having a right-angular bend g' , which fits the edge of the lowermost pane C. The vertical web g is deeper than
10 the thickness of the glass and is at its bottom bent upward at an angle to form a seat g^2 for one pane. The metal is then bent downwardly back on itself to a line beyond the vertical web g and then upwardly underneath
15 the other pane of glass, where it is slightly rounded to form a seat g^3 .

g^4 represents putty, cement, asbestos, or other suitable packing material, which fills the space between the clip, the edge of the glass,
20 and the angular bend below. A joint-clip made as shown will not leave the glass when pressure is applied to the panes. Pressure on either panes forces the opposite seat more strongly against the other. It also provides
25 a spring-seat for the panes. This result has never before been accomplished, as far as I know, in any joint heretofore described.

I do not provide any lateral gutter F for the lowermost condensation-gutters E; but,
30 as shown in Fig. 6, the water therefrom empties into the eaves-trough H, which is pierced at its bottom, as at h , to allow the water to flow off.

The eaves-trough has a rearward extension
35 h' , which fits between the eaves-nailing piece I and the expansion-clip K. The forward side of the trough is bent upward at h^2 to the plane of the glass C and then bent outward to form a seat h^3 for the glass. Where the trough
40 meets the projecting end of an astragal and its expansion-clip K, its face h^2 is cut out, as shown in Fig. 5, to let the clip and astragal project through the same. Thus, as will be seen in Figs. 5 and 6, the eaves-trough is continuous under the astragal at the front, as at
45 h^4 , Fig. 5, and at the rear extension h' .

The advantages of my glazing system are obvious.

The cap B has a broad seating on the glass
50 and the method of putting it in place allows it to conform to irregularities in the glass or lead strip D. The free edge of the intumed portion of the cap has also a yielding and elastic bearing on the glass, allowing for any
55 vertical vibration of the glass along its length, the downwardly-turned edge a^3 also preventing shifting of the glass laterally.

The under seat of the pane, by reason of the upturned edge e of the condensation-gutter, is
60 also yielding and not only presses constantly against the under surface of the pane, but also rises with the rise of the edge of the pane under vibration. This same principle of giving an elastic or yielding seat to the glass is
65 carried out in the lateral joints where pres-

sure on one pane is taken by the spring-clip G, which is always in contact with the glass.

By using the oppositely-inclined side gutter F the water is prevented from accumulating in the same, as it will do when the bottom of
70 the gutter is horizontal.

By making the eaves-trough in one piece and carrying it under the expansion-clip K and astragal it is held more securely in position and prevented from shifting.
75

While I have shown what I believe to be the preferable form of my invention, I do not mean to limit myself to the exact details or to the exact arrangement shown herein, as there may be many modifications without de-
80 parting from the spirit of my invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with an astragal and
85 panes of glass supported thereby, of a resilient cap, approximately triangular in cross-section, and having downwardly-projecting, outwardly-spreading sides, each of which is returned at its lower edge, at an angle toward
90 the central, longitudinal plane of the cap, to form a bearing-face for engaging the pane or panes thereunder, along the upper marginal surface thereof, said bearing-face terminating in a member having a grasp on said pane or
95 panes, at or along the adjacent edge or edges thereof; and means for exerting a seating and spreading pressure on said cap whereby each side thereof will exert a downward pressure and an outward thrust on the engaged pane
100 of glass, substantially as herein specified.

2. The combination with an astragal and panes of glass supported thereby, of a resilient cap, approximately triangular in cross-section, and having downwardly-bent, out-
105 wardly-spreading, flat sides extending diagonally downward at an angle from the apex of the cap, the lower edge of each of said sides bearing against the margin of the pane or panes thereunder; and means for exerting a
110 seating and spreading pressure on said cap and whereby the sides thereof are spread outwardly whereby each side thereof will exert a downward pressure and an outward thrust on the engaged pane of glass, substantially
115 as herein specified.

3. The combination with an astragal and panes of glass supported thereby, of a resilient cap, approximately triangular in cross-section, and having downwardly-bent, out-
120 wardly-spreading, flat sides, extending diagonally downward at an angle from the apex of the cap; an inwardly-bent, flat bearing-faces for bearing against the margin of the pane or panes thereunder, one of said bearing-
125 faces being conjoined with each of said sides, and each terminating in a downwardly-turned lip having a grasp on or along said pane or panes at the adjacent marginal edge thereof; and a bolt connecting the astragal and the cap,
130

said bolt being provided with a nut for forcing said cap downward to a seating engagement with said pane or panes, and thereby spreading said sides whereby the intumed lips will tend to force the panes of glass outward from the astragal, substantially as herein specified.

4. A cap for covering the abutting edges of adjoining panes of glass in a glazing system, each side thereof having an intumed, downwardly-inclined bearing-face, adapted to compress inwardly when the cap is forced downward into position, substantially as described.

5. A cap for covering the abutting edges of panes of glass in a glazing system, the said cap having two sides, and two intumed, downwardly-inclined bearing-faces, each terminating in a lip, arranged at an angle thereto, for engagement with the adjacent pane of glass, said bearing-faces, respectively, being compressible inwardly under seating pressure applied to the cap, substantially as described.

6. For a glazing system, in combination with panes of glass, a clip formed from an integrant piece of sheet metal, said clip having a vertical web for insertion between the adjacent edges of the panes of glass, of a depth greater than the thickness of said glass, and being then bent upwardly at an angle to form a seat for one of the panes of glass, and then bent back on itself and upwardly past the vertical web aforementioned, to form a seat for the adjoining pane of glass, substantially as described.

7. For a glazing system, in combination with panes of glass, a clip formed from an integrant piece of sheet metal, the said clip having a horizontal portion g' , a vertical web g deeper than the panes, an upward bend forming a seat g'' , and a returned bend underneath the vertical web and projecting upward to form a seat g''' , substantially as described.

8. For a glazing system, in combination with panes of glass, a clip having a vertical web and a resilient base upwardly inclined on each side from the bottom of the web to form seats for the said panes, substantially as described.

9. In a glazing system, the combination with panes of glass and a lateral gutter beneath said panes, of a joining-clip having a vertical web projecting below the panes of glass, an upwardly and outwardly inclined extension leading from the lower edge of the web and projecting to and supporting one of the panes of glass by an edge bearing, and an upwardly-inclined extension projecting to and supporting the other pane of glass; and packing material filling the space between the web, the pane, and one of the upwardly-inclined extensions, substantially as described.

10. In a glazing system, the combination with an astragal having upwardly-turned side flanges, panes of glass supported thereby, and a cap having intumed bearing-faces for bear-

ing against the upper margins of the panes and covering the longitudinal joints between the same, of a lateral joint-clip having a central web deeper than the thickness of the glass to be supported and two upwardly-projecting, resilient extensions which bear at an angle against the lateral margins of the panes of glass, substantially as described.

11. In a glazing system, the combination with an astragal, of an eaves-trough having an upwardly-projecting front portion supporting the outer margin of the glass, and a rearward extension, the latter being continuous under the astragal, and the front portion of the trough, aforementioned, being cut away to receive the end of the astragal, substantially as described.

12. In a glazing system, the combination with an astragal having oppositely-turned side flanges, panes of glass supported on said side flanges, and a cap covering the astragal and the adjacent edge portions of the supported glass, of an eaves-trough having an upwardly-projecting front portion supporting the outer margin of the glass, and a rear extension, the latter being continuous longitudinally beneath the bottom of the astragal, the said front portion of the trough being cut away to receive the projecting end of the astragal, substantially as described.

13. The combination with an astragal and panes of glass supported thereby, of a resilient sheet-metal cap adapted to fit over the astragal and to cover the joints between the astragal and the panes of glass said cap being formed with normally upward and outward inclined bearing-faces and with a downward-extending lip or flange at the inner edge of each bearing-face, said lips being adapted to engage the edges of the panes of glass, and means for forcing the bearing-faces downward and outward, whereby when they engage the upper surface of the panes of glass a downward and outward pressure will be exerted on said panes of glass.

14. The combination with an astragal and panes of glass supported thereby, of a resilient sheet-metal cap adapted to fit over the astragal and to cover the joints between the astragal and the panes of glass, said cap being formed with normally upward and outward inclined bearing-faces and with a downward-extending lip or flange at the inner edge of each bearing-face, said lips being adapted to engage the edges of the panes of glass, means for forcing the bearing-faces downward and outward whereby, when they engage the upper surface of the panes of glass, a downward and outward pressure will be exerted on said panes of glass, and a yielding seat for the panes of glass carried by the astragal at a point below the bearing-faces of the cap.

15. The combination with an astragal and panes of glass supported thereby, of a resilient cap, approximately triangular in cross-section

tion, and having downwardly-projecting outwardly-spreading sides, each of which is returned at its lower edge, at an angle toward the central, longitudinal plane of the cap, to
5 form a bearing-face for engaging the pane or panes thereunder, along the upper marginal surface thereof, said bearing-face terminating in a member having a grasp on said pane or panes, at or along the adjacent edge or edges

thereof, means for exerting a seating pressure 10 on said cap, and a yielding seat for the panes of glass carried by the astragal at a point below the bearing-face of the cap.

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