

(No Model.)

2 Sheets—Sheet 1.

J. B. WEIS & E. BERNDT.

SKYLIGHT.

No. 412,313.

Patented Oct. 8, 1889.

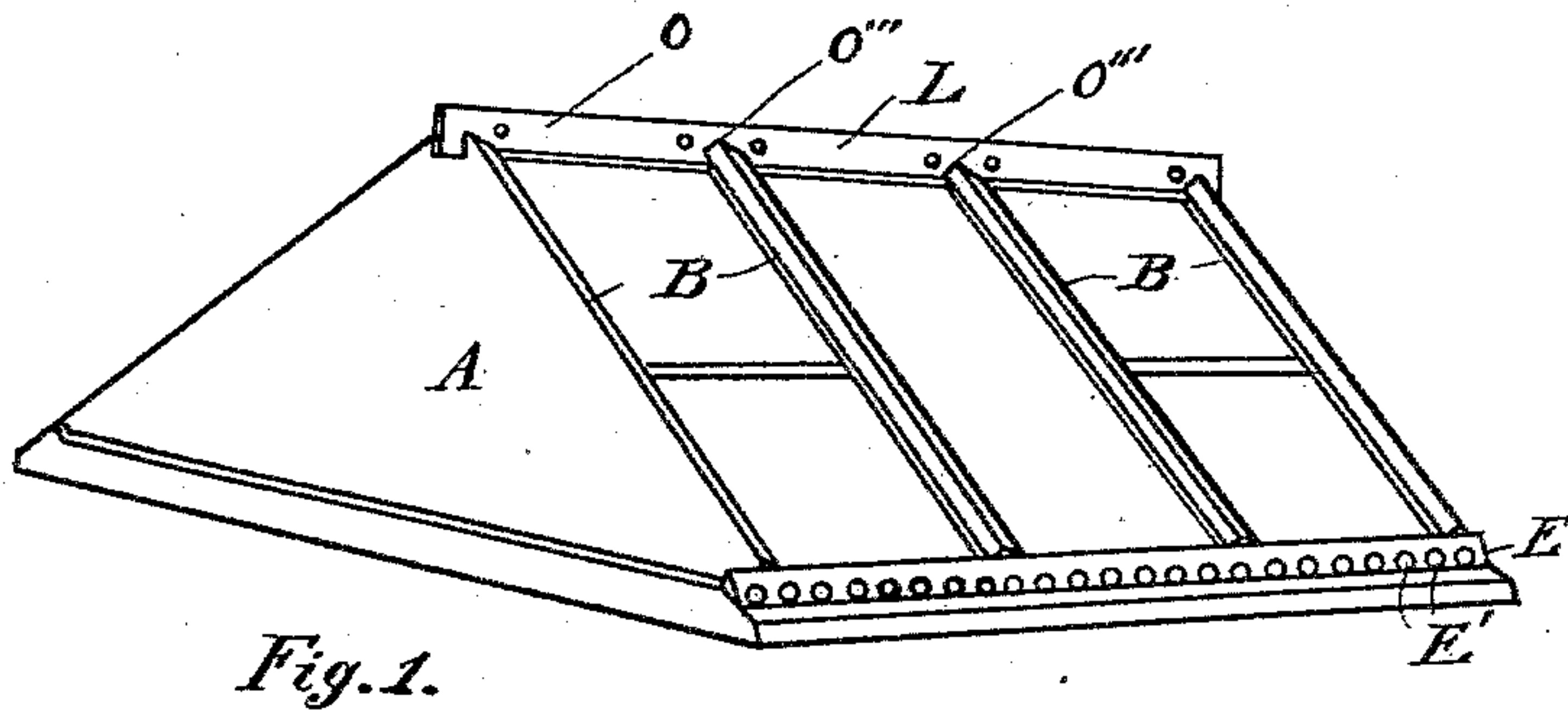


Fig. 1.

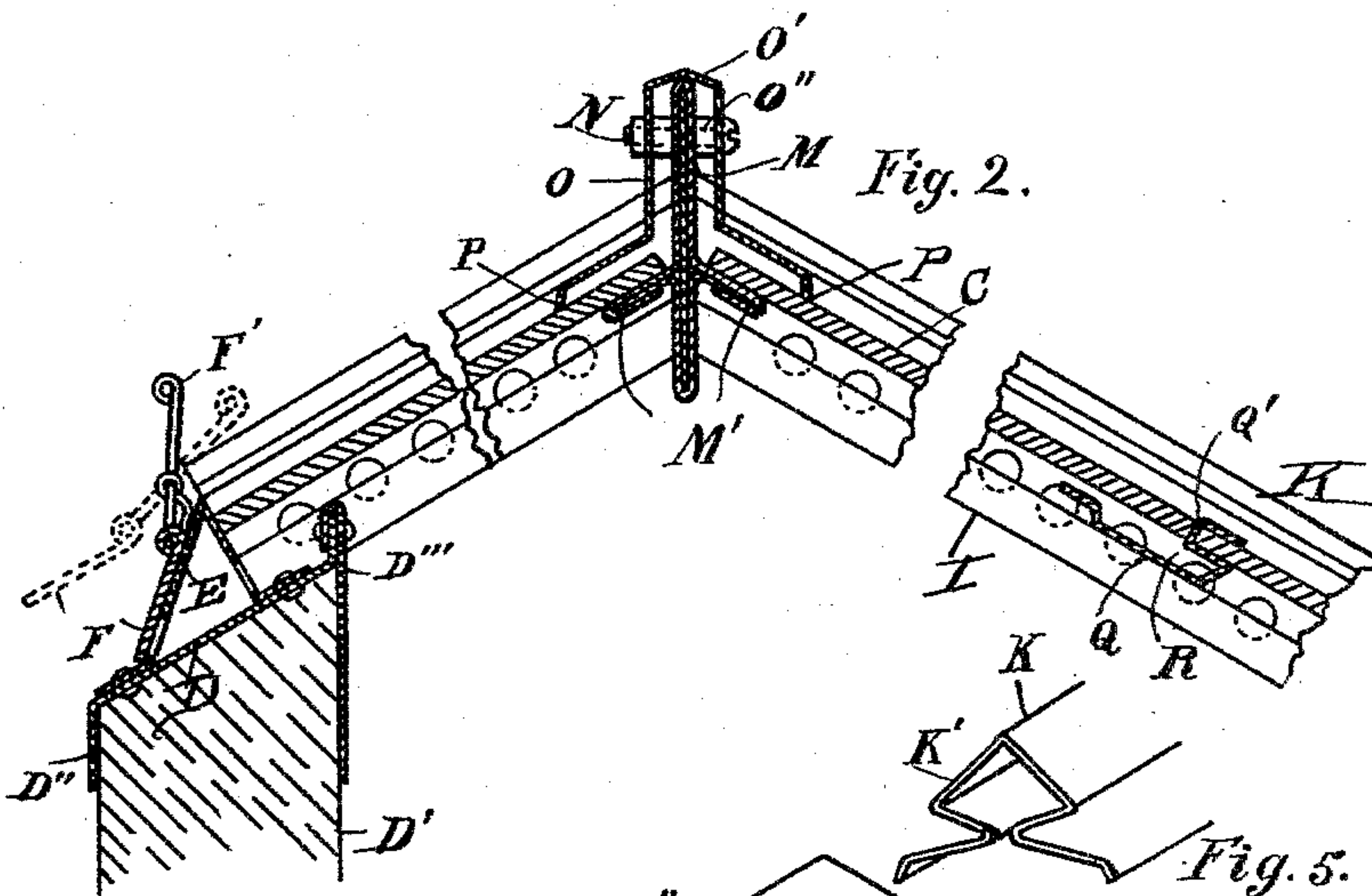


Fig. 2.

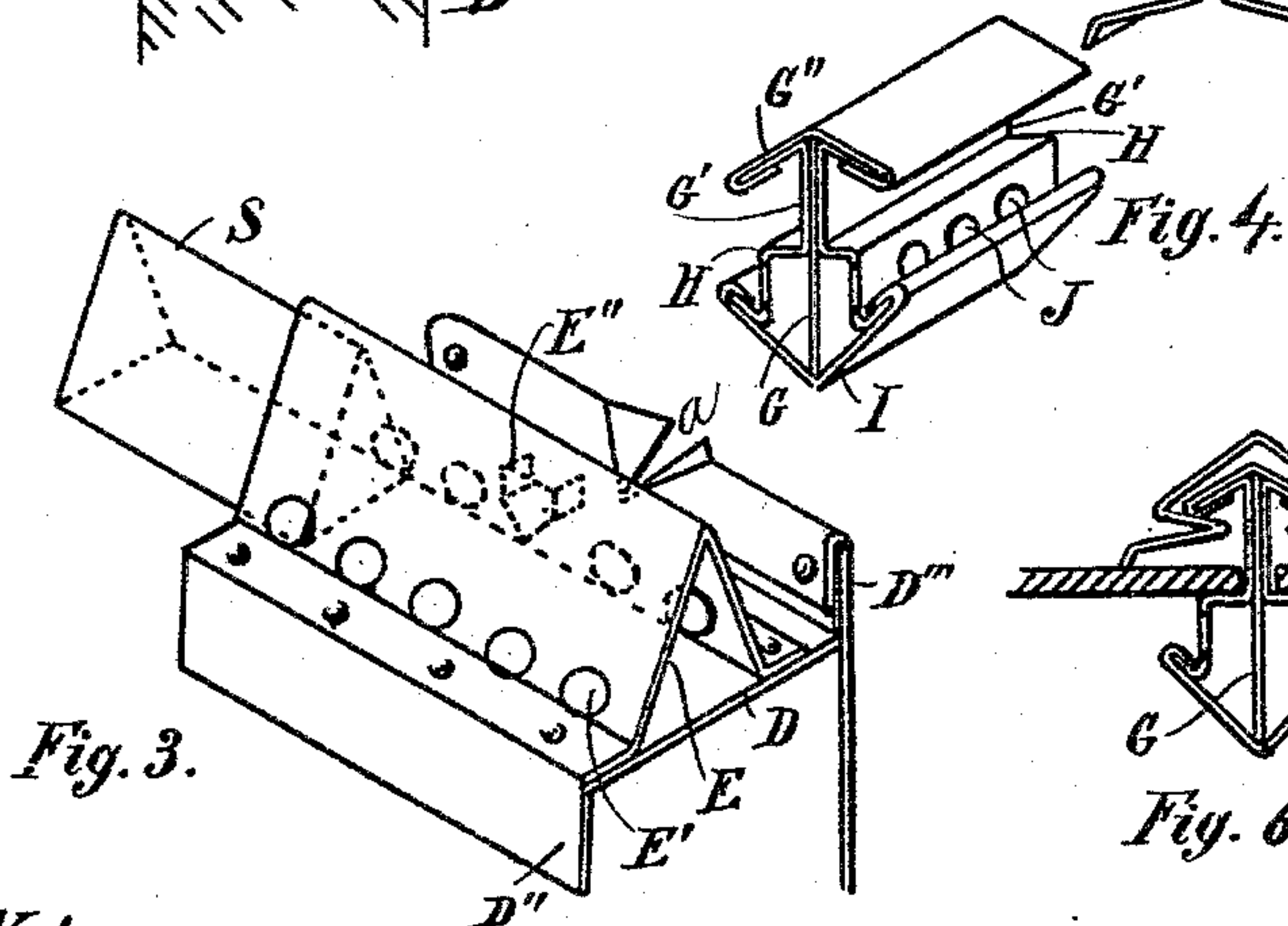


Fig. 3.

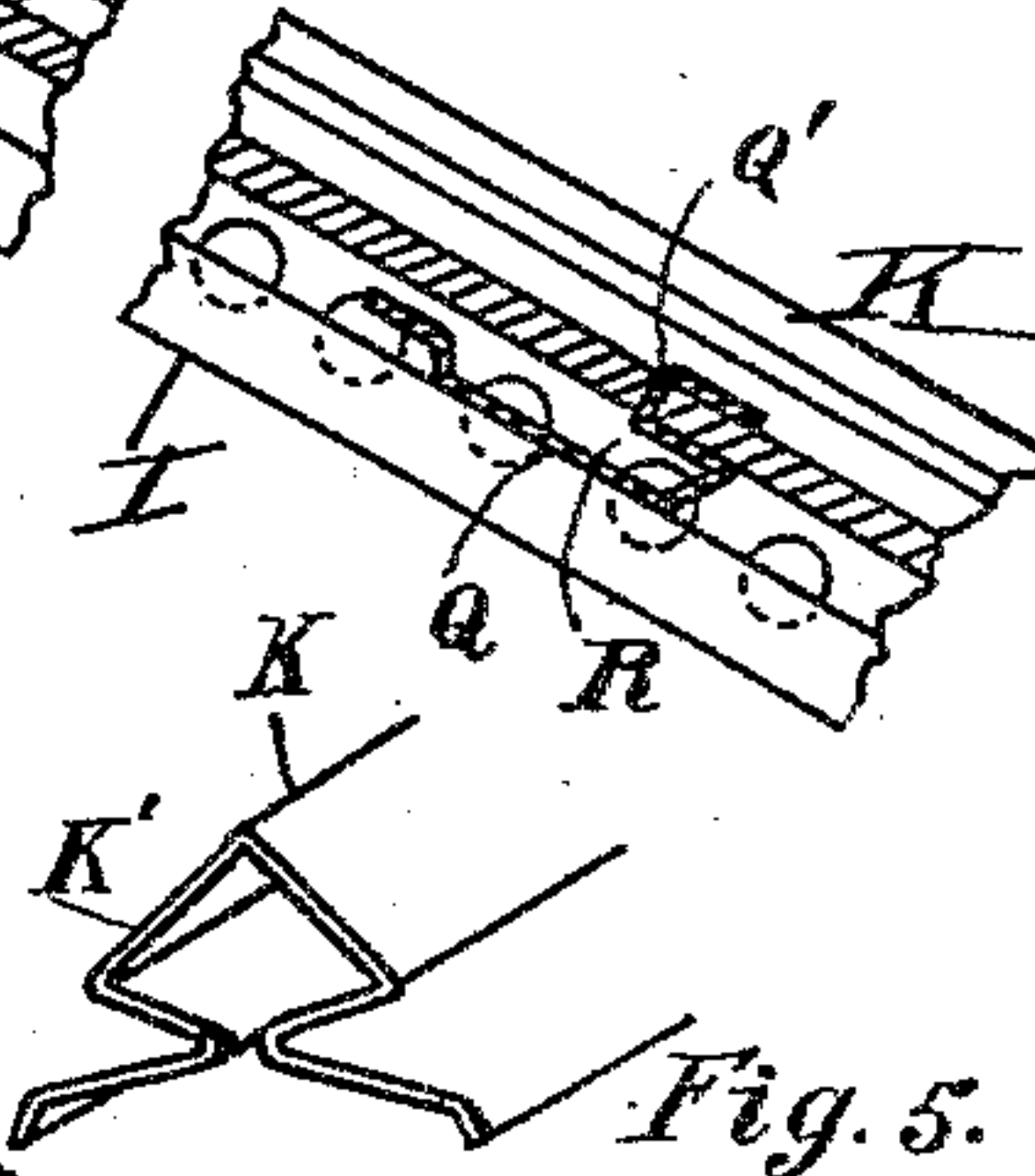


Fig. 4.

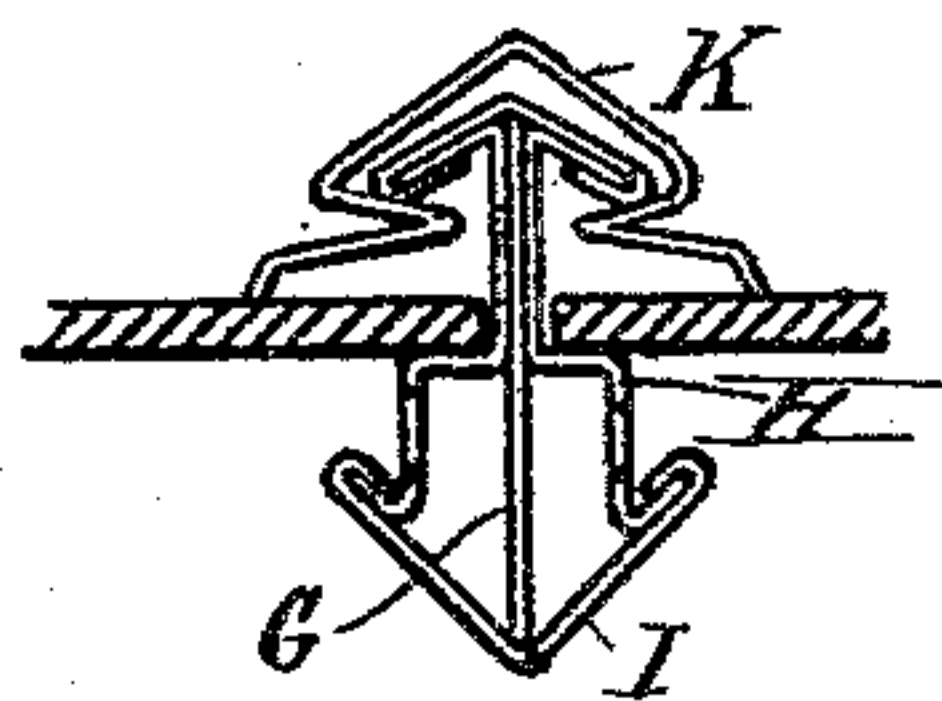


Fig. 5.

Witnesses.

L. G. Wilkin
Carroll J. Webster

Inventors.

John B. Weis
Emil Berndt
By William Webster,
Attorney.

(No Model.)

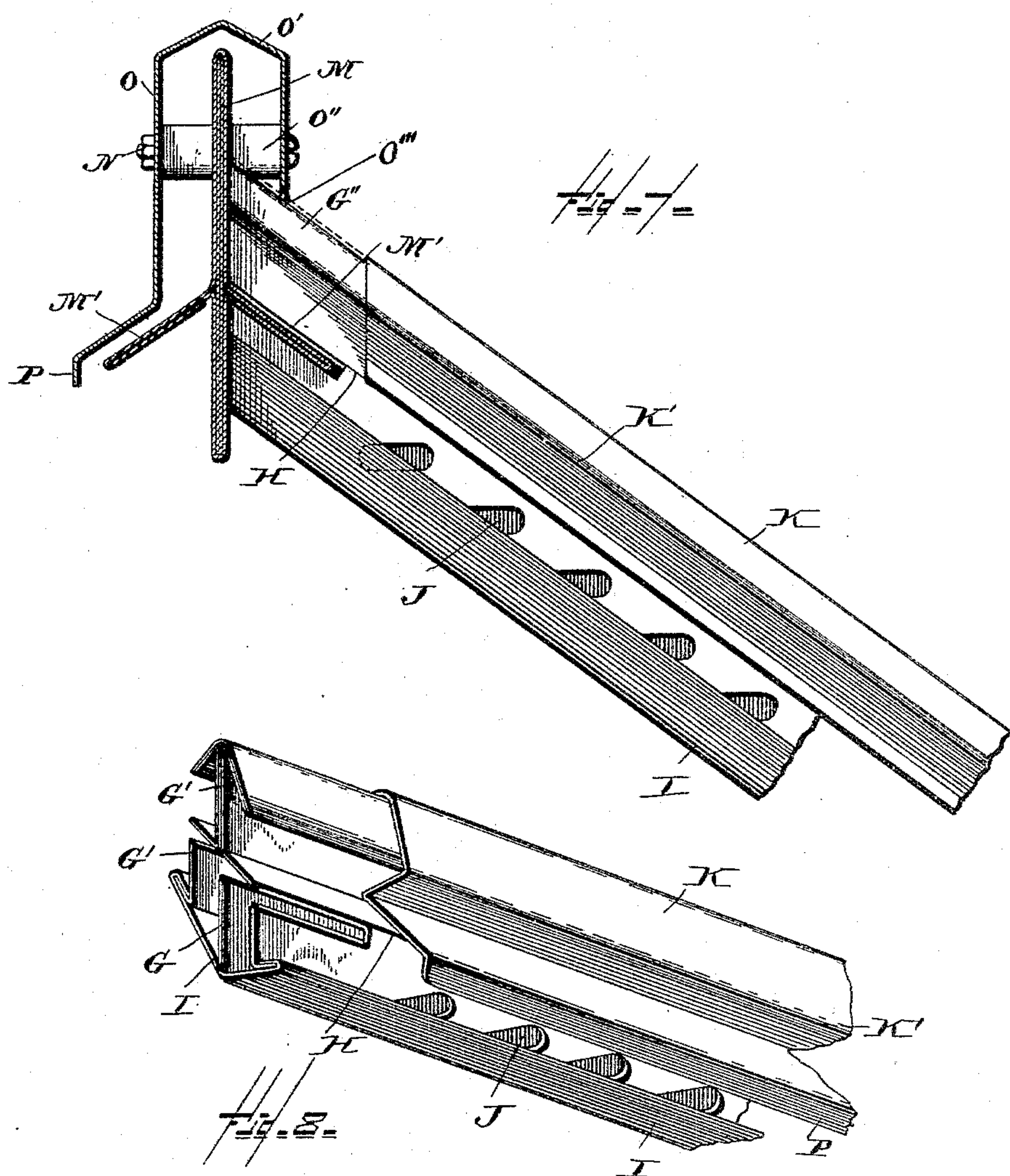
2 Sheets—Sheet 2.

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SKYLIGHT.

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Witnesses

Albert Spiden,
Wm. Hunter Myers.

Inventors

J. B. Weis,
E. Berndt.

By *their Attorney*

Wm. Webster.

UNITED STATES PATENT OFFICE.

JOHN B. WEIS AND EMIL BERNDT, OF TOLEDO, OHIO.

SKYLIGHT.

SPECIFICATION forming part of Letters Patent No. 412,313, dated October 8, 1889.

Application filed January 7, 1889. Serial No. 295,407. (No model.)

To all whom it may concern:

Be it known that we, JOHN B. WEIS and EMIL BERNDT, citizens of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Skylights; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

Our invention relates to skylights, and has for its object to provide means for securing the glass in place without the use of any adhesive substance whatever.

A further object is to provide a metal fastening for the meeting ends of the plates of glass, whereby the several plates of glass shall be secured in place without lapping, the fastenings being formed with gutters, by which to lead any liquid that may flow therein to the inclined gutters of the rafters.

A further object is to provide a rest, against which the lower section of glass of the skylight shall abut, to effectually prevent the accumulation of water with its tendency to congeal in low temperature, thereby displacing the glass.

A further object is to provide a rafter having gutters arranged beneath the rest for the glass for the purpose of leading any moisture that may be led or collect therein to the curb or any desired place of discharge.

A further object is to construct the rafters with means for ventilating the building and supplying to the glass of the skylight a current of air to prevent an accumulation of moisture upon the glass with its tendency to obstruct the rays of light or to freeze thereon.

A further object is to construct the rest against which the rafters abut in a manner to serve as a flue for the admission of pure air to the apartment or exit of foul air from the same.

A further object is to provide means for regulating the admission of air to the ventilating-flues.

The invention consists in the parts and

combination of parts hereinafter specified, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a skylight constructed in accordance with our invention. Fig. 2 is a front view in section showing one side of the roof supported upon the curb, the opposite showing the means employed for joining two plates of glass. Fig. 3 is a detail view of the ventilating-flue, against which the ends of the rafters abut, showing also in dotted lines a plug for shutting off the circulation of air through the flue. Fig. 4 is a detail view of a section of rafter, and Fig. 5 is a like view of a cap to cover the top portion of rafter and impinge upon the glass. Fig. 6 is an end view of a rafter, showing the glass secured in place. Fig. 7 is a sectional view of the ridge and the rafter sliding therein, and Fig. 8 is a perspective view of the rafter.

A designates the skylight, formed of rafters B, which sustain the lights of glass C, as will be more fully described.

In forming a roof in accordance with our invention we construct a metal covering D to rest upon curb D', said covering being preferably formed with a depending portion D'', to convey the water over the curb or wall, and an upwardly-turned angled portion D''', provided with V-shaped recesses *a*, corresponding in contour with the shape of the gutter portion of the rafters to allow the same to rest therein and be held from lateral displacement.

E designates a flue secured to covering D, said flue being of an inverted-V shape and provided with a series of perforations E' at the base upon each side thereof for the purpose of allowing the water as it is received from the roof of the skylight to pass through the same in its course to the eaves.

Upon the upper sides of flues E, coincident with the V-shaped recesses in plate D''', are secured V-shaped receptacles E'', (shown in dotted lines, Fig. 3,) into which rest the ends of the rafters.

F designates dampers, (shown in full lines in Fig. 2 as closed and in dotted lines as opened,) the purpose of which is to regulate the passage of air through the flues by partially or entirely closing the perforations E'

thereof, and by angled end portions, (not shown, but which will be readily understood,) to partially or entirely close the ends of the flues.

5 The rafters B are formed of metal, and preferably consist of a central bar G, to which are secured plates G'—one upon each side thereof—said plates being formed with a portion
10 parallel with and preferably secured to the central bar G, the upper portion of the plates being bent at acute angles to the central bar and clasped by an inverted-V-shaped cap G'' by closing the edges of the cap to embrace the edges of the plates. At approximately
15 the center of the width of the bar G plates G' are bent at right angles to form a shoulder or rest H, and are then bent at a right angle and extended downwardly for a short distance, at which point the edges are turned
20 upwardly at an acute angle, and are clasped by the inturned edges of a V-shaped gutter I, the lower edge of bar G resting within the bend of the V-shaped gutter.

J designates perforations formed in the vertical side of the lower portions of the plates G', and are designed not only to allow any moisture that may tend to collect to be led to the gutters I, and to act as ventilators to allow of the escape of the foul air and to admit a fresh supply, but to force the circulation of the rarefied air against the glass to prevent a lodgment of condensation thereupon, with its tendency to obstruct the light, and especially to prevent the same from being congealed upon the glass in winter.

At the upper end of the rafter as now formed are made longitudinal slots in the central bar and the two parallel side bars, all of said slots lying in the same horizontal
40 plane, the purpose of which will appear farther on.

K designates a spring-plate formed with an inverted-V-shaped cope K', corresponding to the contour of cap G'' of the rafters, the plate
45 being bent at acute angles to extend to nearly the center of the V-shaped cope, and the sides are then extended outwardly in contrary directions to a width somewhat greater than the greatest width of cope K, with the
50 outer edges turned downwardly to impinge upon the upper surface of the glass, as will more fully appear.

L designates the ridge, formed of a central portion M and longitudinal ledges M' at an obtuse angle thereto. The central portion M preferably extends somewhat above the angle of the roof, and is perforated along its length for the reception of bolts N.

O designates the ridge-plate, formed with
60 a top portion O', slightly inclined from the center in opposite directions and extending outwardly from the central portion M, a short distance from which point the sides are bent downwardly in parallel relation with the central portion, and are then bent at an obtuse
65 angle and inclined downwardly a short distance, at which point the edges P are turned

at an obtuse angle, for a purpose hereinafter stated. At suitable intervals the lower portion of the ridge-plate O is provided with apertures or recesses O'', adapted to receive the rafters B, as clearly shown in Figs. 1 and 7.

Q, Fig. 2, designates a metal fastening employed in securing the opposite ends of lights of glass in place when more than one light is required to complete the length of the rafters, and consists, essentially, of an angular hook-shaped portion Q', adapted to fit tightly over the upper edge of the lower light of glass, and is then bent downwardly at an obtuse angle, and then upwardly in parallel relation with the upper light of glass, the free end being turned upwardly to form a gutter R. Each fastening is of a length to fit between two rafters, the ends of the fastening resting upon the upper edges of gutters I, by which means any moisture that may pass to the gutters R of the fastenings Q may be led to the gutters I of the rafters.

S designates a plug adapted to be passed into the ends of the ventilating-flues E when convenient of access to close the draft of air therein when desired, it being understood that when plug S is employed dampers F may be dispensed with, the latter provision being made for constructions where the flues are inaccessible.

In assembling the parts to form a complete skylight covering D is secured upon curb or wall D', the ventilating-flue E having been previously secured to the plate. The rafters are then placed within the V-shaped recesses in the angled portion D''' of the covering, the lower ends thereof resting in the V-shaped recesses E'', formed upon the upper side of the ventilating-flues E, and abutting against the upper side of the same, the upper ends of the rafters resting against the central portion M of the ridge, and the longitudinal ledges M' engage the slots formed in the upper end of the rafters, and thus make a secure joint between the rafters and ridge. The lights of glass are now placed between the rafters, with the edges thereof resting upon shoulders H. If more than one light of glass is needed to complete the length of the rafters, the lower light is placed in position, and fastening Q is secured thereto, with the angular portion Q' embracing the upper edge of the glass, and the gutter portion R extending the entire width of the glass, the ends thereof resting upon the shoulders of gutter I of the rafters. The next light of glass is placed upon shoulders H of the rafters, with the lower edge resting against the angular portion of the fastening Q, thereby avoiding the necessity of overlapping one light of glass upon the other. By this arrangement the joint formed between the glass and fastening is of a character to cause the water to flow over the metal of the fastening; but should any water find its way between the same it will flow into gutter R and from thence into gutters I of the rafters and be

carried to the eaves. When the glass has been placed in position, spring-plates K are slid upon the inverted-V-shaped top portion G'' of the rafters, with the lower portions of the spring-plate bearing upon the glass with sufficient force to hold the same firmly upon shoulders H of the rafters without the use of putty or any adhesive substance whatever. The ridge-plate O is now placed over the central portion of the ridge L, with the downwardly-bent portions P resting upon the glass, the apertures O''' passing over the upper ends of the rafters B, and, if desired, washers O'' (composed of metal, rubber, or any elastic substance) are interposed between the ridge and ridge-plate. Bolts N are passed through the plate, ridge, and washers, and any desired pressure of the plate upon the glass may be given by tightening the nut upon the bolt. By reason of the glass abutting against the upper side of the flue, as contradistinguished from the usual construction, wherein the glass rests upon the curb, all liability of water accumulating and freezing between the glass and curb, and therefore tending to raise the glass, is avoided.

The arrangement of the ventilating-flues and the perforated gutters within the rafters serves a twofold purpose. First, this arrangement serves as a means of ventilating the building, allowing the foul air an exit and an entrance of fresh air, and, second, the tendency of the rarefied air within the building to rise causes the same to find an even draft to the same along the entire length of the rafter, thereby causing the warm air to strike the glass along the entire surface, and as a consequence the moisture that tends to accumulate upon the glass is quickly dried, thereby preventing the glass from becoming dimmed or the water from forming into ice upon the same.

Whenever the draft through flues E is too great, it can be regulated either by inserting plug S, when convenient to do so, or, if the skylight is in a position where this would be inconvenient, by arranging the damper F as shown, which consists of a hinged plate adapted to be raised from resting upon and closing the perforations, or lowered to close the same, which may be done by means of a cord (not shown) attached to a lever F', secured to the plate.

It will be seen that the entire frame-work of the skylight may be constructed at the factory and afterward placed in position without the aid of skilled labor.

What we claim is—

1. In a skylight, the combination, with a

ridge formed of a central portion and longitudinal ledges at an obtuse angle thereto, of a ridge-plate inclosing the same and having its sides bent outwardly and downwardly to correspond with the longitudinal ledges, said ridge-plate being secured to the ridge by suitable bolts and spacing-blocks, and having its sides apertured and the rafters slotted at their upper ends, adapted to engage the longitudinal ledges and enter the apertures formed in the sides of the ridge-plate, substantially as shown and described.

2. In a skylight, the combination, with a wall-covering plate, of a perforated flue secured to the same, dampers pivoted to the side of the flue to open or close the perforations, and metallic rafters resting upon the covering and flue, substantially as shown and described.

3. In a skylight, a wall-covering plate provided with an upwardly-turned angle portion, a perforated flue secured to the covering-plate, recesses formed in the angled plate, and coincident rests secured to the flue, in combination with rafters adapted to rest within the recesses and rests and abut against the flue, as and for the purpose set forth.

4. In a skylight, a rafter formed of the central piece G, the plates G' G', secured to each side of the same, the central portions of said plates being bent to form the shoulders H and provided with perforations, the upper portions being bent at acute angles to the central piece, the cap-piece G'' upon the upper ends, and gutter I, secured to the lower ends of the plates, all arranged and adapted to operate substantially as shown and described.

5. In a skylight, a rafter formed of a central piece, plates secured to each side of the same, the central portion of said plates being bent to form shoulders and provided with perforations, the upper portions being bent at acute angles to the central piece, the gutter secured to the lower ends of the plates, and the spring cap-plate formed with the inverted-V-shaped cope bent to clasp the upper portions of the plate, the lower ends of said cap-plate being bent outwardly and then downwardly to bear upon the glass held upon the shoulders of the plates, substantially as shown and described.

In testimony that we claim the foregoing as our own we hereby affix our signatures in presence of two witnesses.

JOHN B. WEIS.
EMIL BERNDT.

Witnesses:

WILLIAM WEBSTER,
G. F. C. KLOEPPINGER.