

No. 751,746.

PATENTED FEB. 9, 1904.

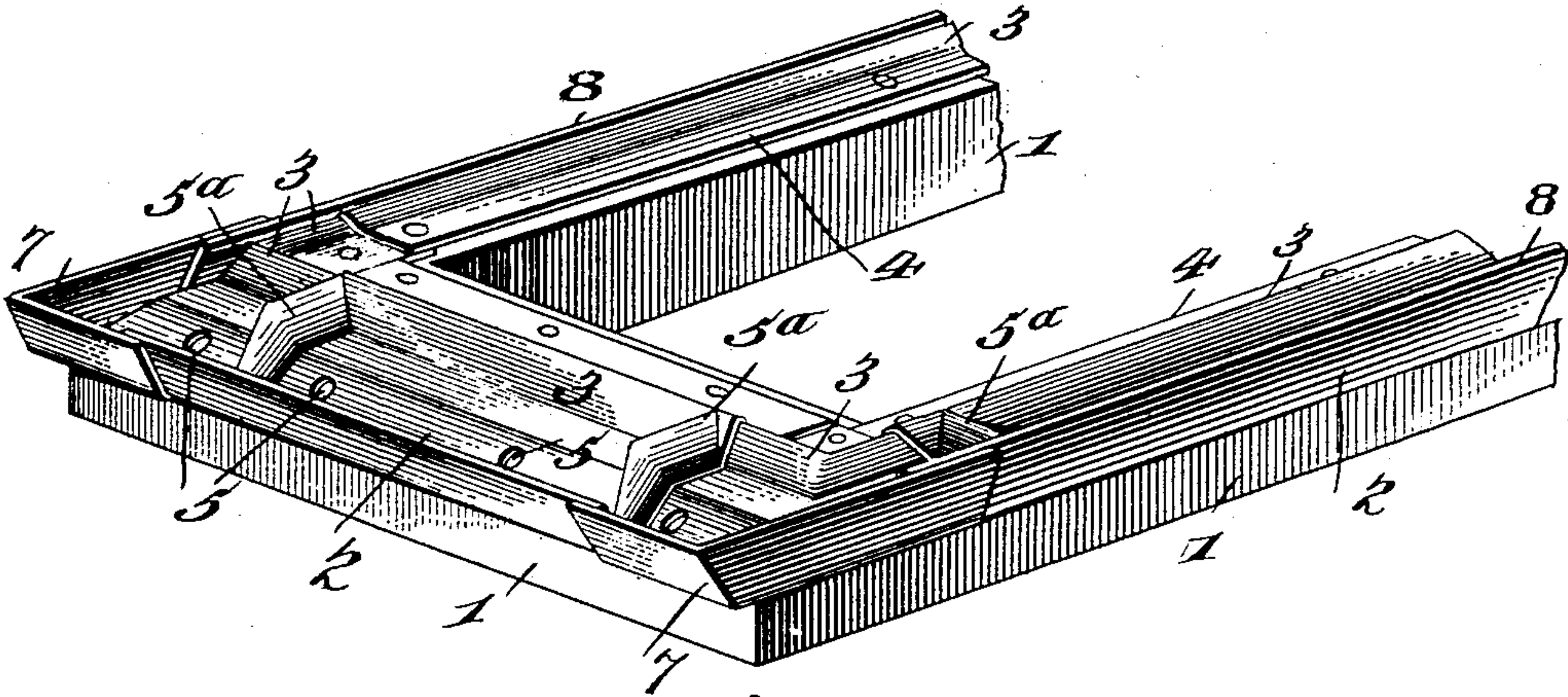
W. H. MULLINS, W. C. HARE & H. C. NELSON.  
SKYLIGHT.

APPLICATION FILED JUNE 6, 1903.

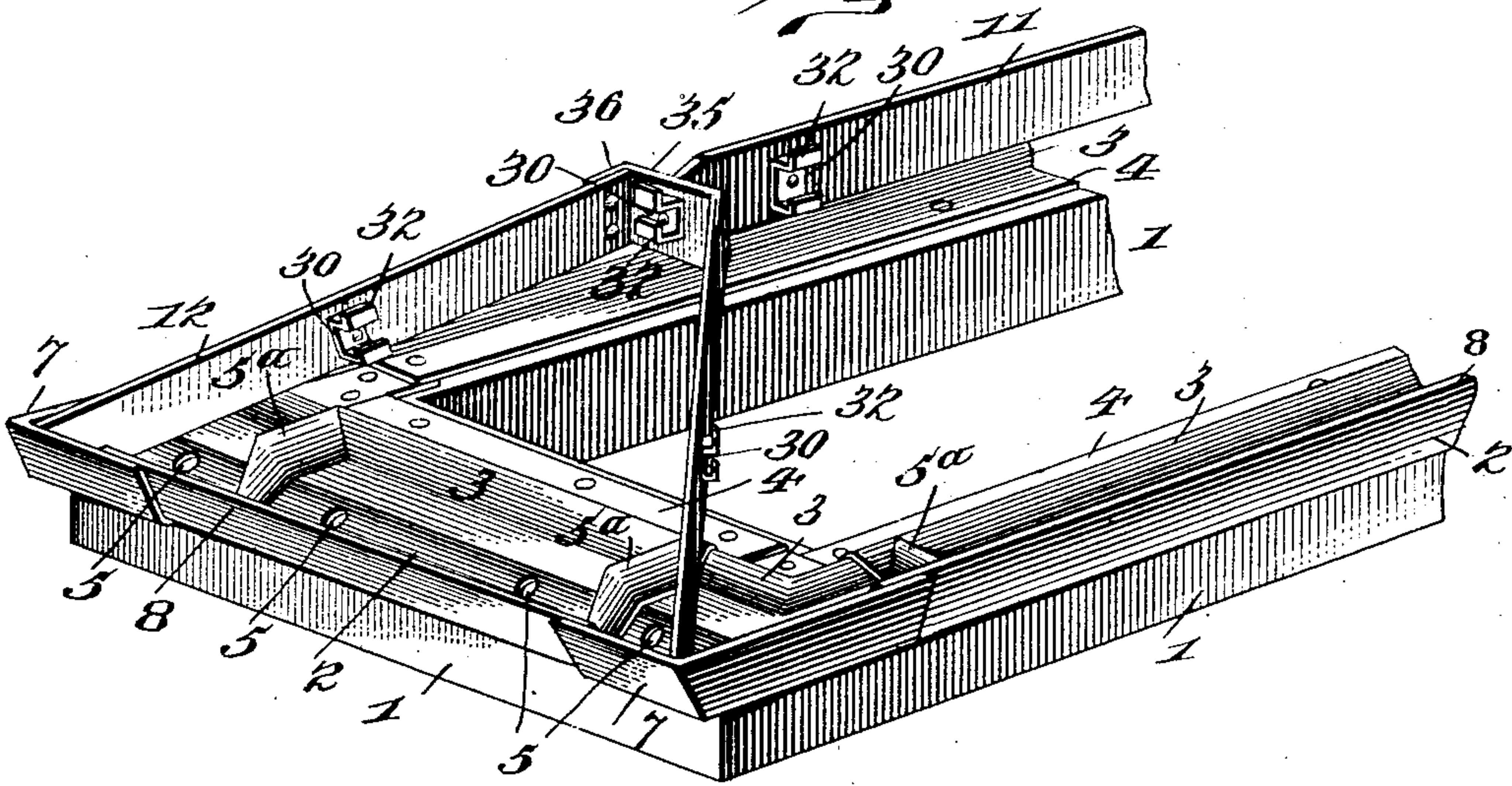
NO MODEL.

5 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



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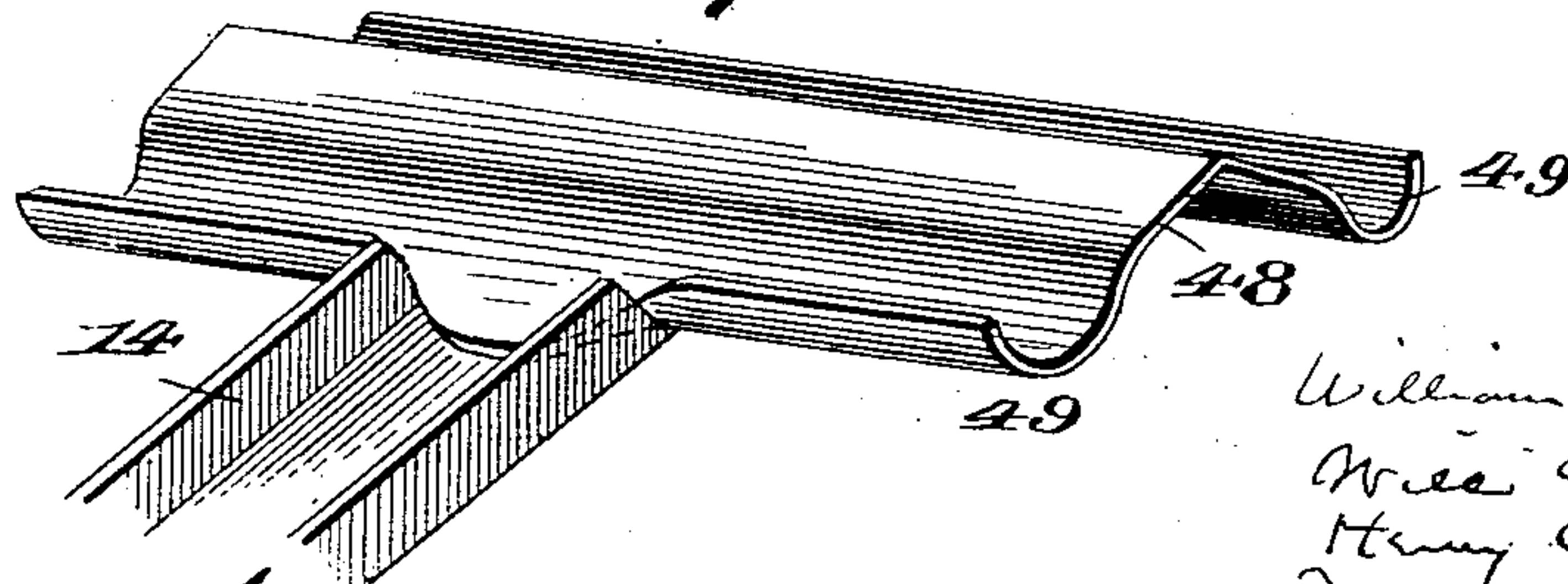
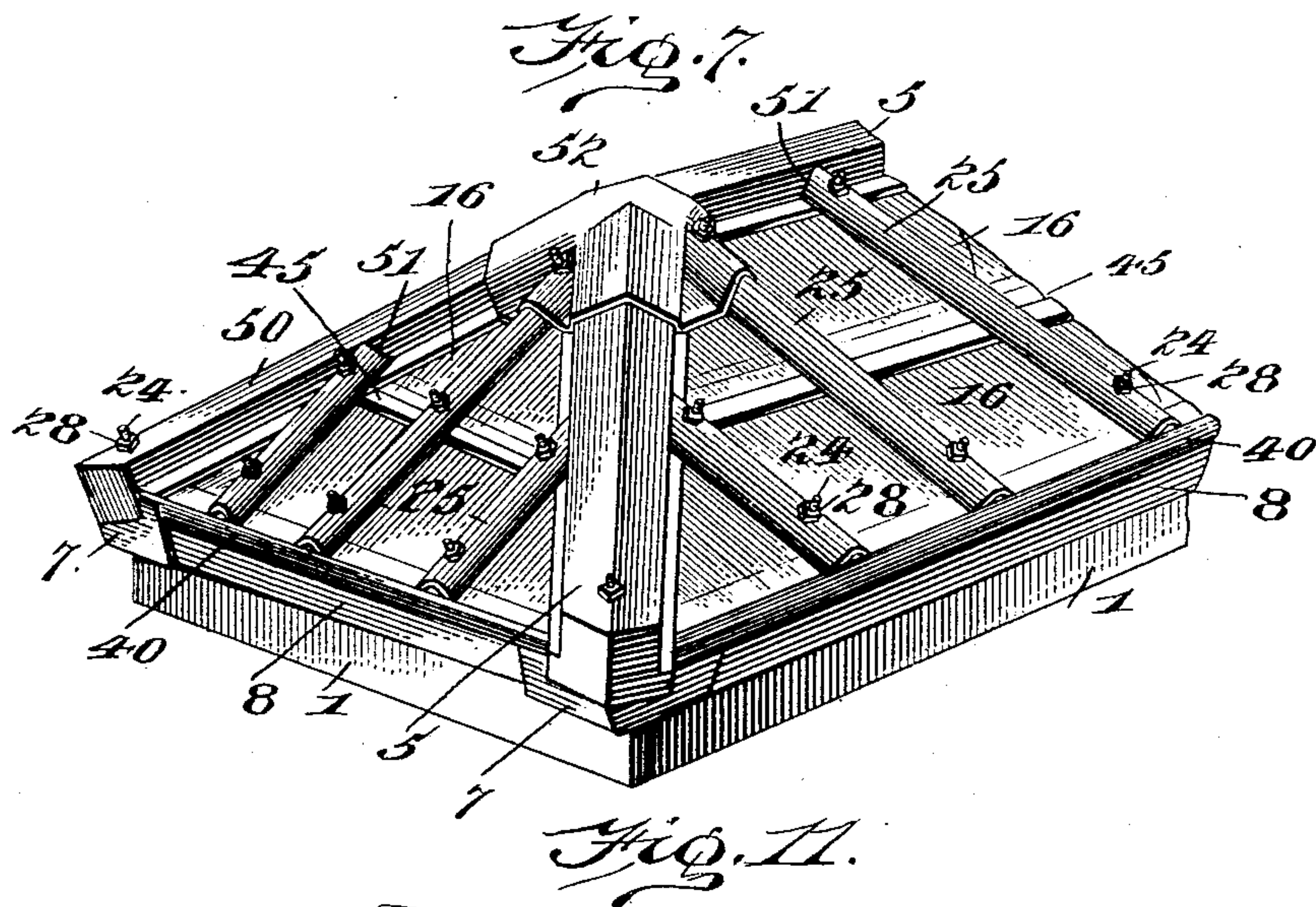
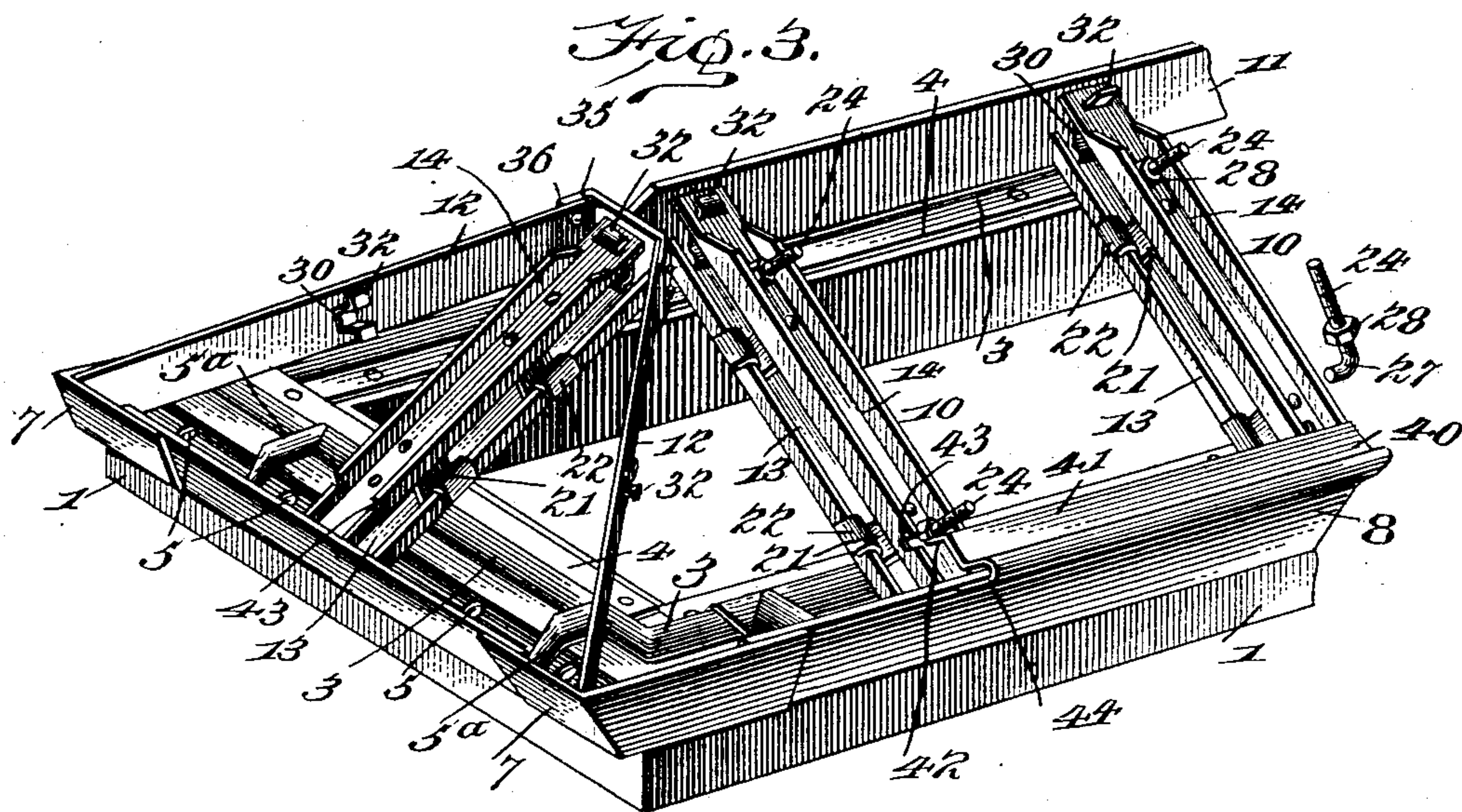
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5 SHEETS—SHEET 2.



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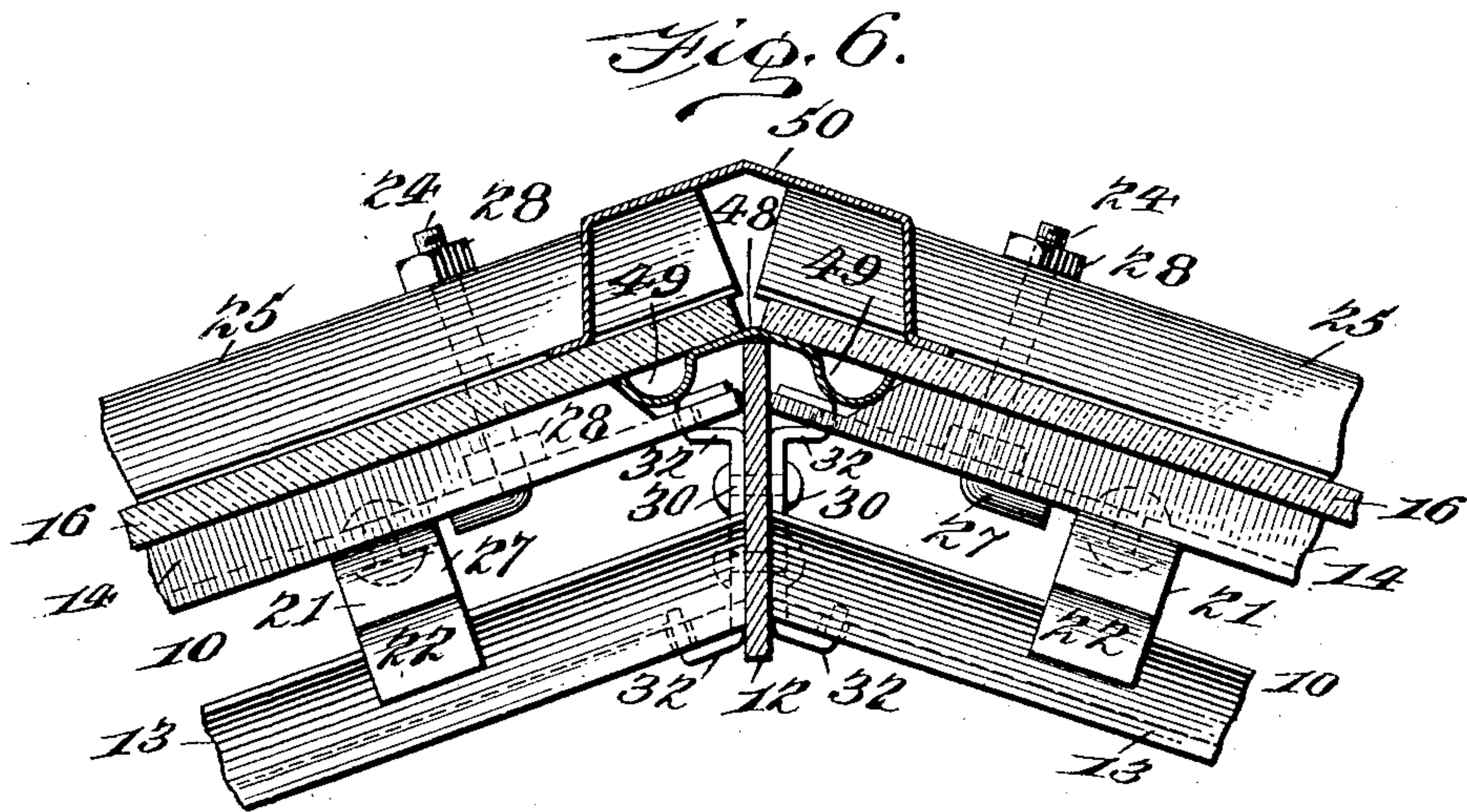
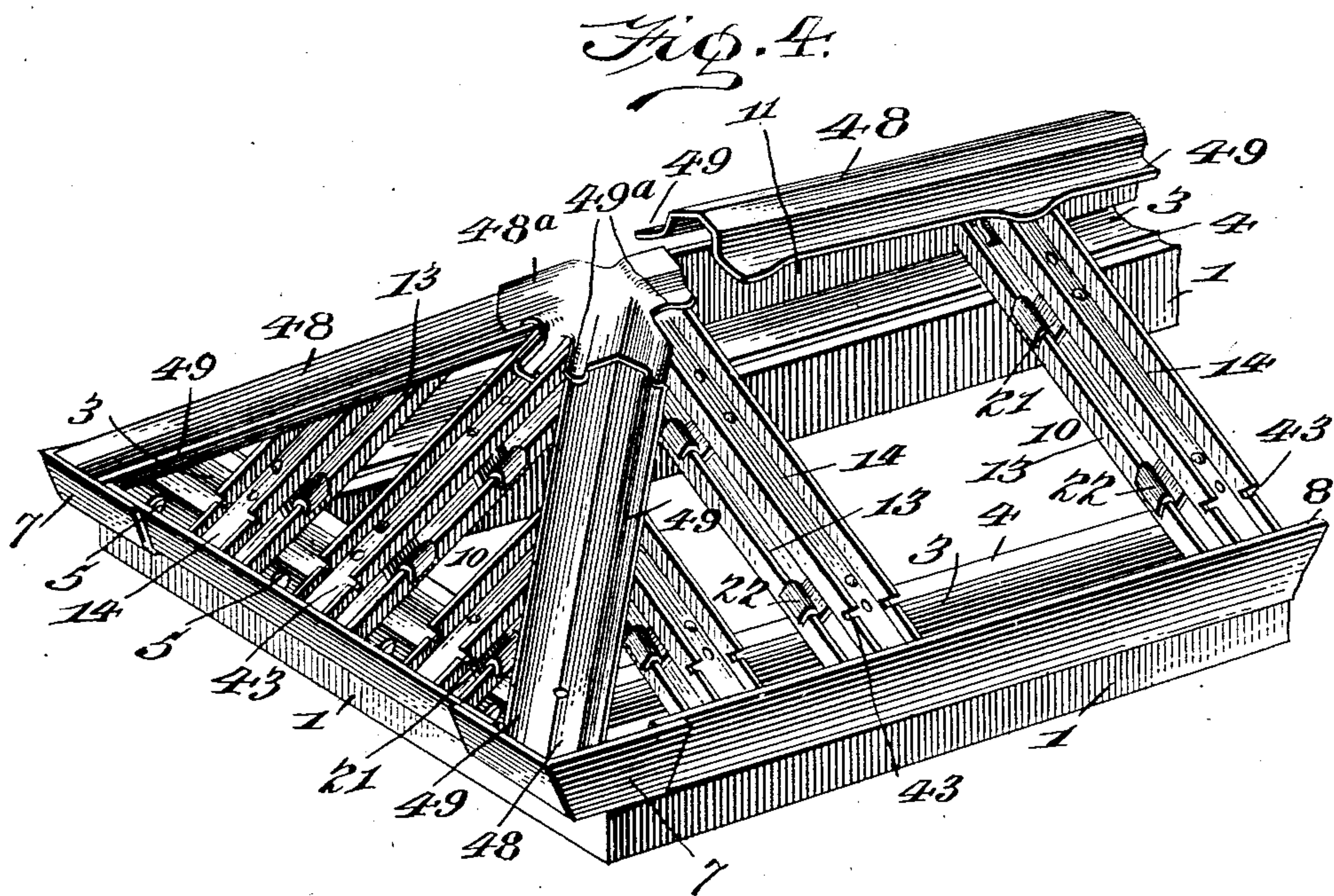
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5 SHEETS—SHEET 3.



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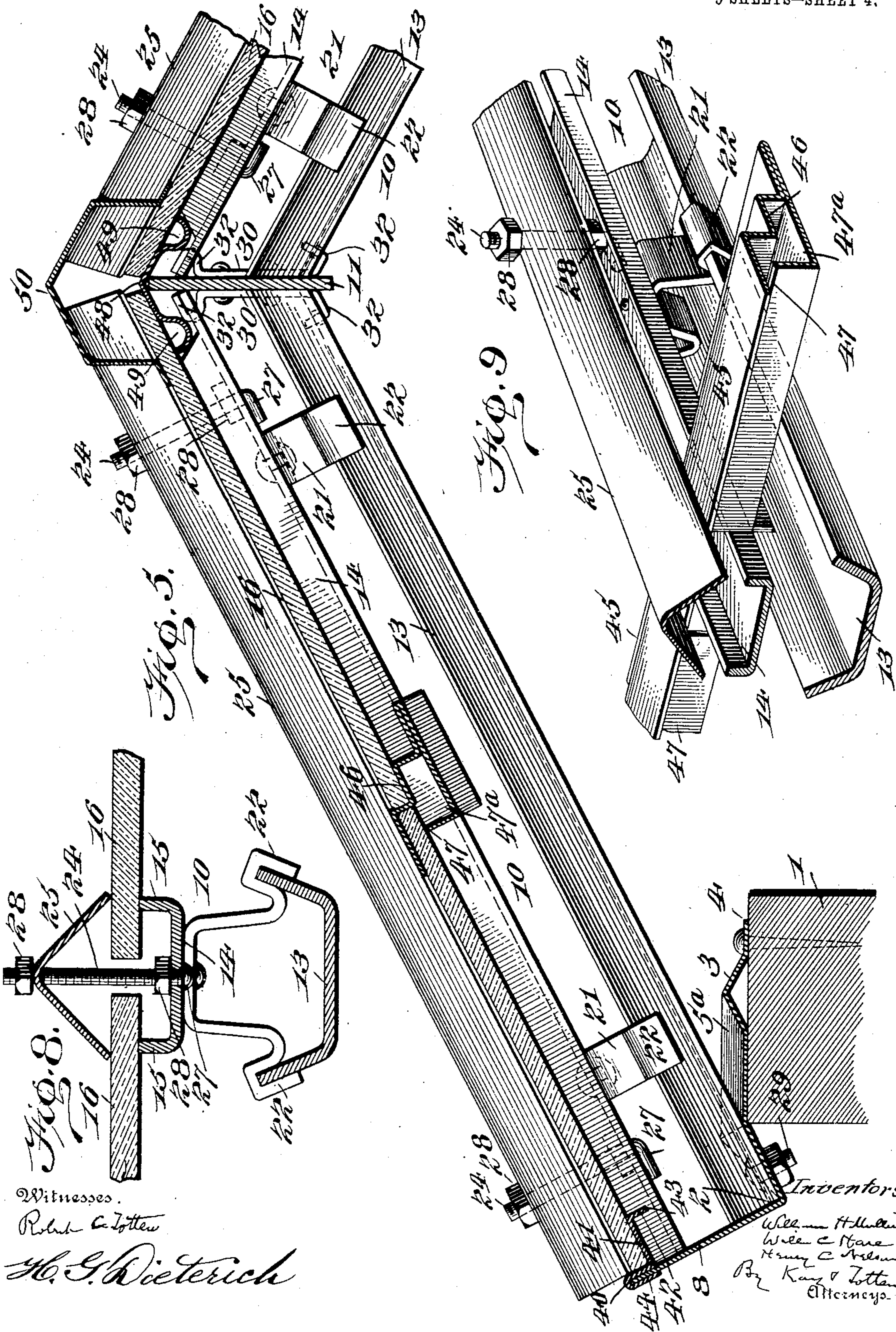
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5 SHEETS—SHEET 4.





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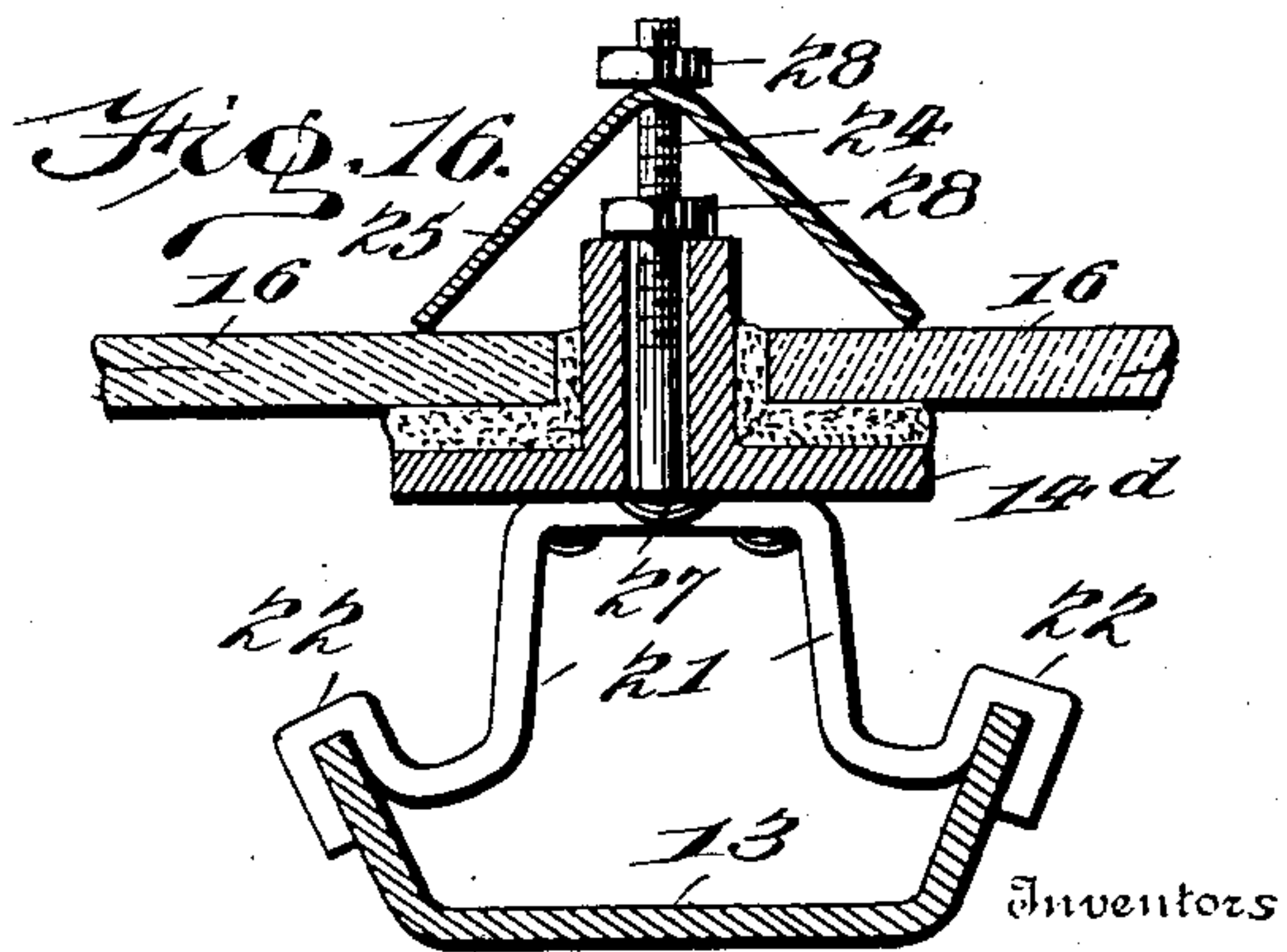
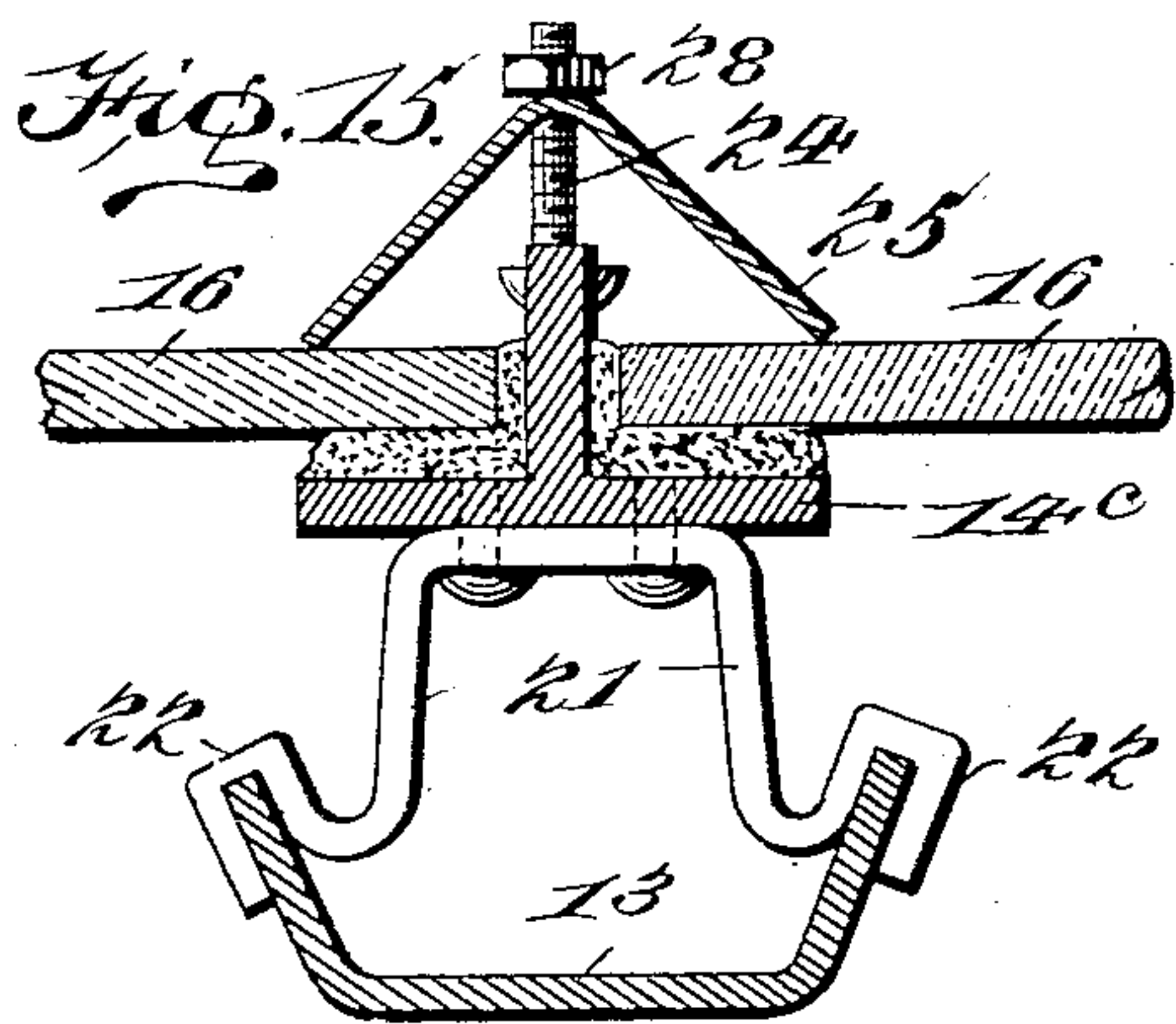
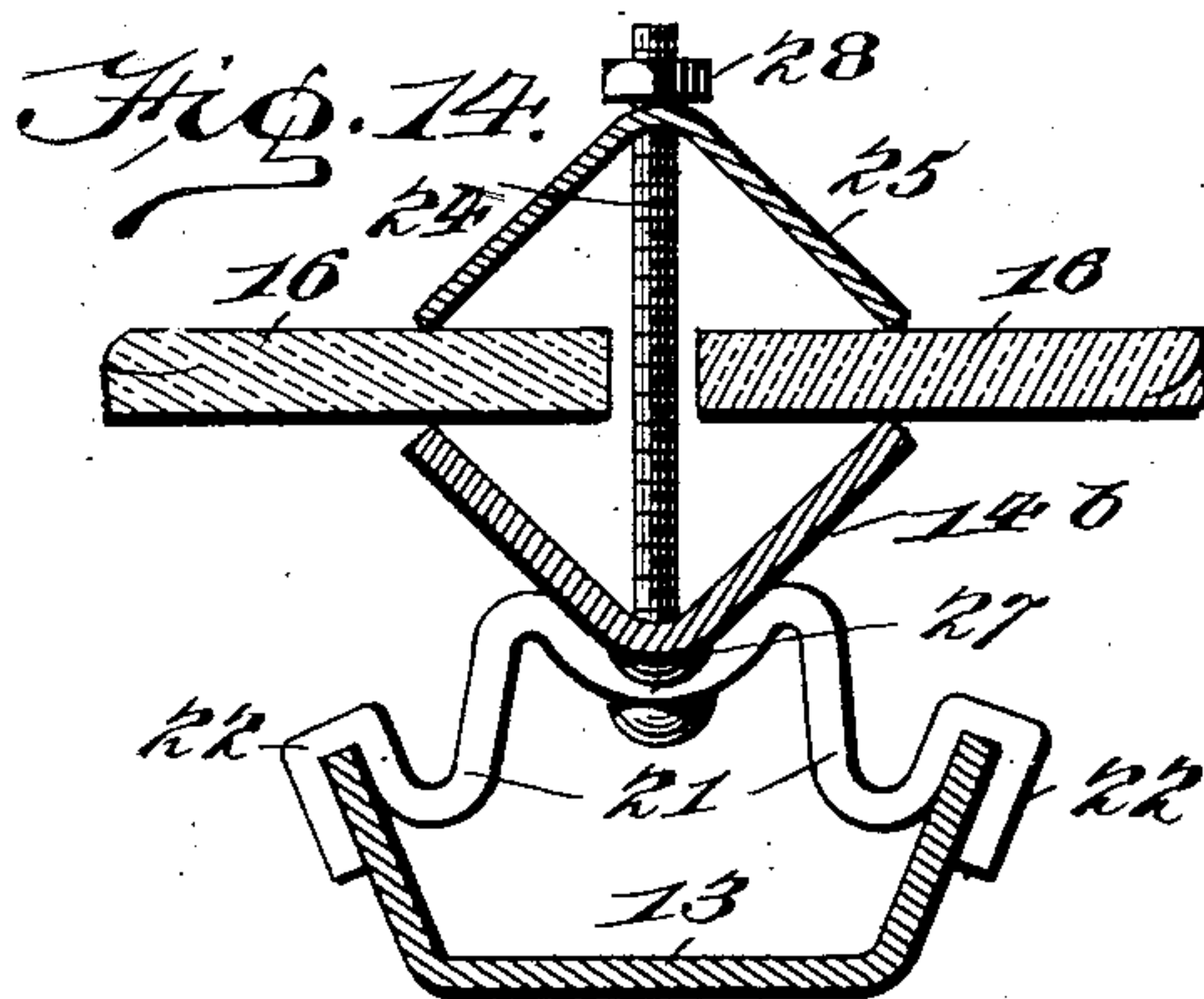
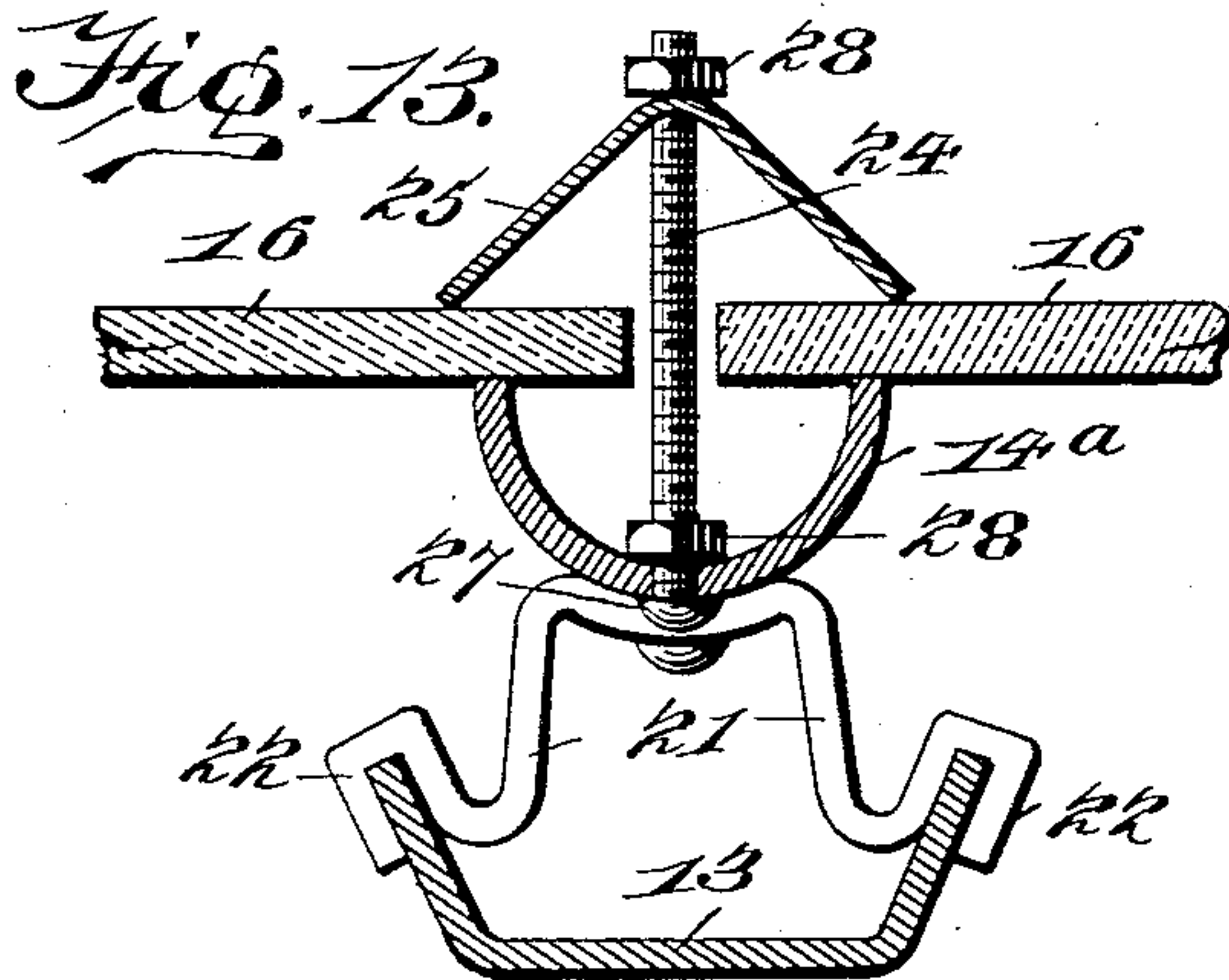
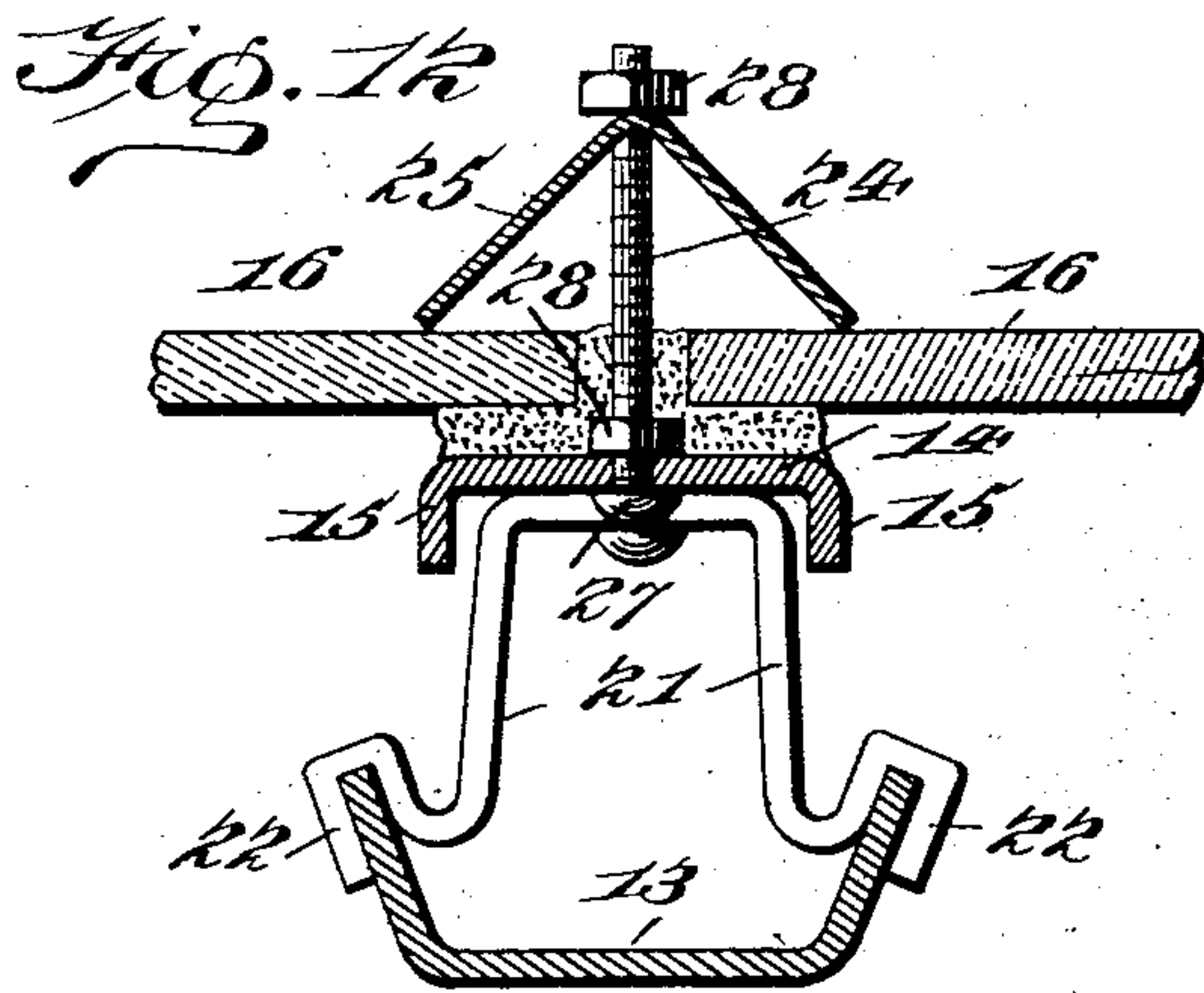
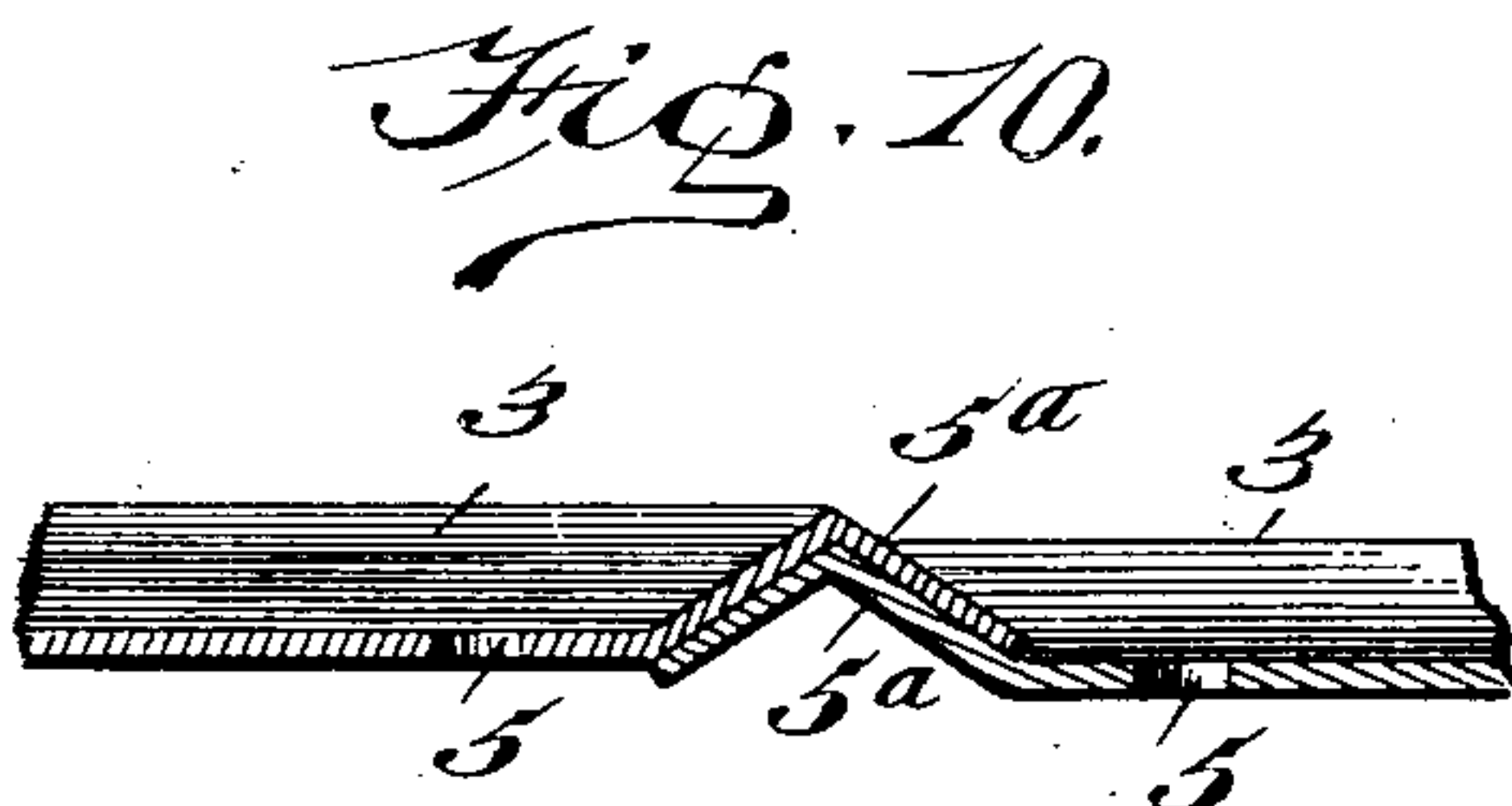
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APPLICATION FILED JUNE 6, 1903.

NO MODEL.

5 SHEETS—SHEET 5.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. MULLINS, WILL C. HARE, AND HENRY C. NELSON, OF  
SALEM, OHIO.

## SKYLIGHT.

SPECIFICATION forming part of Letters Patent No. 751,746, dated February 9, 1904.

Application filed June 6, 1903. Serial No. 160,344. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM H. MULLINS, WILL C. HARE, and HENRY C. NELSON, residents of Salem, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Skylights; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to skylights, and the object is to provide a skylight which can be shipped in a knockdown condition and put up easily and quickly by unskilled labor and which nevertheless is strong and does not leak.

In the usual construction of skylights the supporting-framework for the glass is constructed to a considerable extent from sheet metal, and in old skylight constructions the supporting-bars for the glass have also been made of sheet metal bent into peculiar form, so as to provide a glass-rest and a trough or drain for receiving the condensation and leakage. This construction of skylights is not only quite expensive, but also in putting it up it is necessary to do more or less soldering to unite the parts and prevent leakage. As a consequence it requires considerable time and skilled labor to properly put up the ordinary skylight, and this adds materially to the cost thereof.

The principal object of our invention is to provide a skylight which can be easily and quickly put up by unskilled labor and which also is cheap to construct, strong, and practically cannot leak.

To the accomplishment of these objects the invention consists in the details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view showing the curb of our skylight. Fig. 2 is a similar view showing the ridge and hip bars in place. Fig. 3 is a similar view of the supporting-frame for the glass. Fig. 4 is a similar view showing the ridge and hip covers in place. Fig. 5 is a section through the ridge. Fig. 6 is a similar section through the hip-bar. Fig. 7 is a perspective view showing the capping in place.

Fig. 8 is a section through the main bar. Fig. 9 is a perspective view showing a main bar and a portion of the cross-clips. Fig. 10 is a section through a joint of the curbing. Fig. 11 is a perspective view illustrating the ridge-cover and one main bar, and Figs. 12, 13, 14, 15, and 16 are each sections through modified forms of main bars.

In the drawings our invention is illustrated as applied to a skylight of a ridge and hip form, and this form has been selected for purposes of illustration because it shows practically all of the different features of our invention; but our invention is not limited thereto, as many of the features can be applied to simple sloping skylights or to skylights having a ridge but no hip.

In the drawings, 1 represents the ordinary wooden base or wall surrounding the opening over which the skylight is to be placed. To this base is secured the sheet-metal curbing 2, which is so formed that it will effectually prevent the leakage from passing inwardly, but will lead the same outwardly beyond the base 1. This result is accomplished by providing said curbing near its inner edge with a ridge or water-guard 3 of sufficient height to prevent any water which may get into the skylight from passing inwardly. The fastening means 4 for the curb are located inside of said ridge, and outside of the same is a plain blank surface, either horizontal or sloping gradually toward the outer edge, and at the outer edge are a series of openings 5, through which the water can escape. The curbing is made up of sections, which are stamped into proper shape, and in order to obviate the necessity of soldering the joints where said sections meet they are provided with stamped-up ends having inverted-V-shaped ridges 5<sup>a</sup> extending transversely thereof, so that when one of said ends is lapped over an adjacent end, as illustrated in Fig. 10, one of said ridges fits over the adjacent ridge, thus preventing the entrance of water at the joint even though it is not soldered. In order to obviate the making of a joint at the corners of the skylight, the cor-



ner-pieces are preferably made as a single stamping 7, provided with the ridge or water-guard 3 and also with ridges 5<sup>a</sup> at each end, which merge into the ridge 3. The outer edges of the curb are turned upwardly, as shown at 8, the upturned flange of the corner-pieces being continuous on the two sides thereof, as shown in Fig. 1.

The supporting-frame for the glass comprises suitable main bars 10 and when applied to a ridge skylight also includes a ridge-bar 11 and when applied to a hip skylight also includes the hip-bars 12 and suitable cripple-bars similar to the main bars. The main bars are composed of two members 13 and 14, the lower one, 13, being of trough form and preferably somewhat wider than the upper member 14, so that any drippings from the upper member or from the cross-clips will fall into the trough member 13 and be conducted by the same down onto the curb 2 outside of the water-guard or ridge 3, and thus be delivered outside of the skylight. The upper member 14 of the main bars may be of various constructions. In Fig. 8 it is shown as a channel-bar having upwardly-turned flanges 15, forming rests for the glass 16. When applied to a puttied joint, this channel preferably will be turned upside down, as shown in Fig. 12. Instead of using a channel we may employ a semicylinder 14<sup>a</sup>, as shown in Fig. 13, or an angle-shaped trough 14<sup>b</sup>. (Shown in Fig. 14.) For puttied joints a T-bar 14<sup>c</sup>, such as shown in Fig. 15, or two sections of angle-bars 14<sup>d</sup>, as shown in Fig. 16, may be employed. The two members of the main bar will be suitably secured together, so as to form a single structure, and this may be accomplished by various means, that shown in the drawings comprising a clip or bracket 21, suitably secured, as by riveting, to the upper bar 14 and provided at its lower ends with the hooks 22, which are secured to the flanges of the lower member. Preferably these flanges will flare outwardly, as shown, and the hooks 21 will be made to conform thereto, thus making practically a dovetail joint, so that the hooks cannot be disengaged from said flanges. Preferably these hooks will be clamped onto the flanges tightly, so that they cannot slide endwise thereon, and the two bars are thus united as a single rigid structure.

The securing-bolts 24 for the bar-capping are secured to the upper bar 14, and the double-bar construction shown permits these securing-bolts to be passed through holes in said upper bar, for any moisture which may find its way through these holes will drip down into the trough-bar 13. For convenience of applying these bolts to the bar we prefer to form said bolts with lower hooked ends 27, which can be passed through the openings in the bar 14 from above and can be firmly secured there-

in by means of nuts 28, screwed down onto the bar. This mode of connection permits the bolts to be removed when shipping the skylight, so that they cannot become injured, as would be the case were they connected to the bars and projected therefrom.

The lower ends of the main and cripple bars are secured to the curbing in any convenient way, such as by means of the bolts 29, and in order to permit their attachment to the ridge-bar and hip-bars in a convenient manner, so as not to necessitate skilled labor, we attach to the ridge and hip bars the brackets or clips 30, preferably by riveting the same to said bars, these clips or brackets being provided with upturned bottom and top ends 32. The bars 13 and 14 are provided with holes near their ends, which are slipped over the upturned ends 32 of the clips 30, and then by means of a hammer or other suitable tool the upper projection 32 is bent over to the position shown in full lines in Fig. 5, thus securing the main bar in place.

For hip skylights a plate 35 is secured to the end of the ridge-bar and extends at right angles thereto. This plate is provided with bent ends 36, to which the upper ends of the hip-bars 12 are secured. Also secured to this plate is a bracket 30, to which a main bar can be secured.

The supporting-frame described consists of parts which can be readily connected to each other by unskilled labor, therefore enabling the skylight to be shipped in a knockdown condition. All of the connections are very simple and can be put together without soldering or the like.

The upturned flange 8 on the curb projects preferably slightly higher than the upper faces of the main bars, and in order to secure said flange to the main bars and also strengthen the same at the overlapping ends of the curb-sections we provide a suitable sheet-metal clip 40, which has a horizontal portion 41, providing a glass-rest, and having its inner edge turned downwardly at 42 and engaging notches 43 in the upper bar 14. The outer edge of this clip is bent upwardly and then downwardly, as shown at 44, and fits over the edge of the flange 8 of the curb, thus strengthening said curb at the point where the sections are overlapped and also securing the same to the main bars.

The cross-clips 45 may be of the usual or any desired construction, those shown being formed by suitably bending up sheet metal to provide a seat 46 for the upper glass portion and a seat 47 for the lower glass portion. The parts 47<sup>a</sup> of said clip practically form troughs or gutters, which receive the water of condensation or of leakage and lead the same to the main bars, where said water drips down into the trough-bar 13 and by the latter



is conducted to the curb 2 and escapes at the openings 5. Sheet-metal cover-plates 48 are placed over the ridge-bar and also over the hip-bars and are provided on each side with a gutter 49. The edges of these gutters are cut or bent down at each main or cripple bar, so as to deliver any leakage which gets in at the ridge or hip to said bars, whereby it is conducted down to the curb. A stamped cover-plate 48<sup>a</sup> is placed at the apex of the hip, and this has gutters 49<sup>a</sup>, which lead to the gutters 49 of the hip-cover plates.

Over the glass at the ridge is placed the ridge-capping 50, and over the glass at the hip is a similar hip-capping. These are of sheet metal of general ridge form and provided at intervals along their sides with openings 51 for receiving the ends of the main or cripple bar cappings 25, so that said ridge and hip cappings are held in place by the main and cripple bar cappings and require no further fastening means. The skylight will also be provided with the coping 52 at the angle of the hip, said coping being a stamping overlapping the ridge and hip cappings and secured in place without soldering.

The skylight shown and described is simple and cheap of construction, as all parts thereof can be formed without very expensive machinery and from ordinary commercial sheet and plate metal. The different sheet-metal parts—such as the curb, hip and ridge covers, cappings, and clips—will be stamped and bent to the desired shape at the factory and shipped as such. The main bars will be suitably assembled at the factory, but will be shipped disconnected from the hip and ridge bars and the various securing-bolts can also be shipped separately. As a consequence all parts of the skylight can be packed very close, there being practically no projecting parts, so that a minimum amount of space in shipping is required. At the point of destination the skylight can be easily and quickly assembled by unskilled labor, it having been demonstrated that it can be put together in about one-fifth or one-sixth of the time necessary to put up skylights as ordinarily constructed.

In putting up the skylight the curb is first laid on the base, with the different sections thereof properly overlapped, so as to make water-guarded joints. Then the hip and ridge bars, if any, are secured together by the bolts shown and also properly secured to the curb. The main and cripple bars then have their lower ends secured to the curb by means of the bolts shown and their upper ends hooked over the clips 30. Then by means of a hammer or similar tool the upper end of the clip is bent down onto the upper bar 14, thus firmly securing the bar in place. Then the glass-rest clip 40 at the base is put in place, the cover-sheets 48 are placed over the ridge and

hip bars, and the securing-bolts 24 can be readily attached to the main and cripple bars. The glass and cross clips are put in place, and then the ridge and hip capping and main and cripple bar capping are put in place, the latter having their ends projecting into the openings of the ridge or hip capping and being held down by means of the bolts 24, thereby also securing the ridge and hip capping in place. The coping at the corner of the hip is then put in place, and this completes the skylight. This can all be done without the necessity of soldering a single joint and by no fastening means other than ordinary bolts with the exception of the bending over of the upper ends of the clips 30. None of this, however, requires any special tools nor a skilled workman. The skylight when assembled in this manner is practically free from leaks, any slight moisture that may find its way through any of the joints being conducted by the several parts of the supporting-frame and delivered outside of the skylight-opening. The moisture of condensation on the inner surface of the glass will be likewise conducted and delivered outside of the skylight-opening. Any moisture finding its way through the ridge or hips will flow into the gutters 49 and by these will be delivered to the main or cripple bars, and any moisture finding its way under the main-bar capping will drip down into the main bars, and the moisture of condensation on the inner surface of the glass will flow down until it meets the cross-clips 45 and will by them be conducted to the main bars. The latter being trough-shaped necessarily convey the water down to the outer edge of the curb, whence it escapes through the openings 5. Any moisture finding its way through at the fastening-bolts 24 will necessarily be caught by the lower trough-bar 13, and any moisture which escapes from the channel of the upper bar will also be received by the lower trough-bar, inasmuch as the latter is wider than the upper bar. It will thus be seen that the double construction of the main bar is of especial value for the purpose of gathering and conducting away any water that may find its way through the joints.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a skylight, the combination with the ridge or hip bar, of clips or brackets secured thereto and provided with an upwardly-projecting finger, a main or cripple bar having holes through its end adapted to receive the projecting fingers of the said clip and have the latter bent down to secure the same in place.

2. In a skylight, the combination with the ridge or hip bar, of a clip or bracket secured thereto and provided with two projecting fingers, and a bar having upper and lower mem-



bers each provided with a hole at its end and adapted to receive the projecting fingers of the bracket, the upper one of said fingers being adapted to be bent down to secure the bar  
5 in place.

3. In a skylight, the combination with the ridge or hip bar, of a clip or bracket riveted thereto and having its ends bent outwardly and then upwardly, and a bar comprising top and  
10 bottom members suitably secured together and each having a hole in its end adapted to receive the projecting ends of said bracket, the upper one of said projecting ends being adapted to be bent down onto the bar to se-  
15 cure the same in place.

4. In a skylight, the combination with a ridge-bar, of a plate secured to the end thereof and at right angles thereto and having bent ends, and hip-bars secured to said bent ends.

20 5. In a skylight, the combination with a ridge-bar, of a plate secured to the end thereof at right angles thereto and having bent ends, hip-bars secured to said bent ends, clips or brackets secured to said ridge-bar, hip-bar  
25 and plate, and main and cripple bars having their upper ends secured to said clips.

6. In a skylight, the combination with a ridge-bar, of main bars attached thereto, a ridge-capping provided with flanges at its  
30 lower edges and openings in its sides above said flanges, bar-cappings having their ends inserted in said openings, and means for securing said bar-cappings in place.

7. In a skylight, the combination with a hip-  
35 bar, of cripple-bars attached thereto, a hip-capping provided with flanges at its lower edges and openings in its sides above said flanges, cripple-bar cappings having their ends inserted in said openings, and means for secur-  
40 ing said cripple-bar cappings in place.

8. In a skylight, the combination with the ridge-bar, of main bars securely fastened thereto and providing a trough, and a ridge-  
45 cover plate separate from the ridge-bar and overlapping the same, said cover-plate providing a glass-rest and having a gutter communicating with the main bars.

9. In a skylight, the combination with a hip-  
50 bar, of cripple-bars securely fastened thereto, and a hip-cover plate separate from said hip-bar and fitting over the same, said cover-plate providing a glass-rest and provided with a gutter on each side leading to the curb.

10. In a skylight, the combination with the  
55 ridge-bar, of hip-bars secured thereto, main bars secured to the ridge-bar, a cover-plate fitting over the hip-bars and provided with a gutter on each side, and an angle cover-plate fitting over the ridge and hip bars and pro-  
60 vided with gutters communicating with the gutters of the hip-cover plate.

11. In a skylight, the combination with the ridge-bar, of main bars secured thereto and comprising an upper and a lower member

suitably secured together, the lower member 65 being of trough form, a ridge-cover plate separate from the ridge-bar and provided with a gutter having openings or depressions opposite each main bar, cross-clips providing  
70 gutters leading to said main bars, and suitable securing means for the cappings connected to the upper members of said main bars.

12. In a skylight, the combination with the curb provided with fastening means at its inner edge and having an upwardly-projecting  
75 flange at its outer edge, of main bars having their lower ends secured to said curb, and a glass-rest secured to the lower ends of said main bars and having its edge fitting over the upwardly-projecting flange of the curb. 80

13. In a skylight, the combination with a curb-sheet provided with fastening means at its inner edge and an upwardly-projecting  
85 flange at its outer edge, of main bars having their lower ends resting on said curb and provided with notches or grooves in their upper edges, and a glass-rest having a downwardly-turned flange engaging the grooves of said  
90 main bars and having its outer edge bent upwardly and then downwardly and engaging the flange of the curb.

14. In a skylight, a curb comprising a metal sheet adapted to be secured to a base and provided with a longitudinal ridge or water-  
95 guard, and having a portion projecting inwardly from said ridge and serving to receive the fastening means.

15. In a skylight, a curb comprising a metal sheet adapted to be secured to the base and having an upwardly-turned flange and drip-  
100 openings at its outer edge, said curb being provided with a longitudinal ridge or water-guard and having a portion projecting inwardly from said ridge and adapted to receive the fastening means. 105

16. A curb for skylights comprising sheet-metal plates stamped into shape with inverted-  
110 V ridges at their ends extending transversely thereof, whereby by overlapping said ends a water-tight joint is provided.

17. A curb for skylights comprising sheet-metal plates provided with securing means at their inner edges and a ridge formed therein  
115 outside of said securing means and also provided with inverted-V ridges at their ends extending transversely of the plates and intersecting the ridge formed adjacent to the inner edge thereof.

18. A curb for skylights comprising a corner-section and side members, each being pro-  
120 vided with a ridge adjacent to its inner edge and with inverted-V ridges at each end extending transversely of said sections and adapted to overlap and form water-tight joints. 125

19. In a skylight, the combination of a curb consisting of a sheet-metal plate provided at its inner ends with means for securing the



same to a base and having a ridge or water-  
guard formed adjacent to said inner edge, said  
curb having an upwardly-extending flange at  
its outer end and being provided with drip-  
5 openings adjacent to said flange, of main bars  
having their lower ends secured to said curb  
and providing a trough for conducting water  
to said curb, and a glass-rest secured to said  
main bars and having its edge fitting over the  
10 upwardly-projecting flange of the curb.

In testimony whereof we, the said WILLIAM  
H. MULLINS, WILL C. HARE, and HENRY C.  
NELSON, have hereunto set our hands.

WILLIAM H. MULLINS.  
WILL C. HARE.  
HENRY C. NELSON.

Witnesses:

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ROBERT C. TOTTEN.