No. 768,335. PATENTED AUG. 23, 1904.

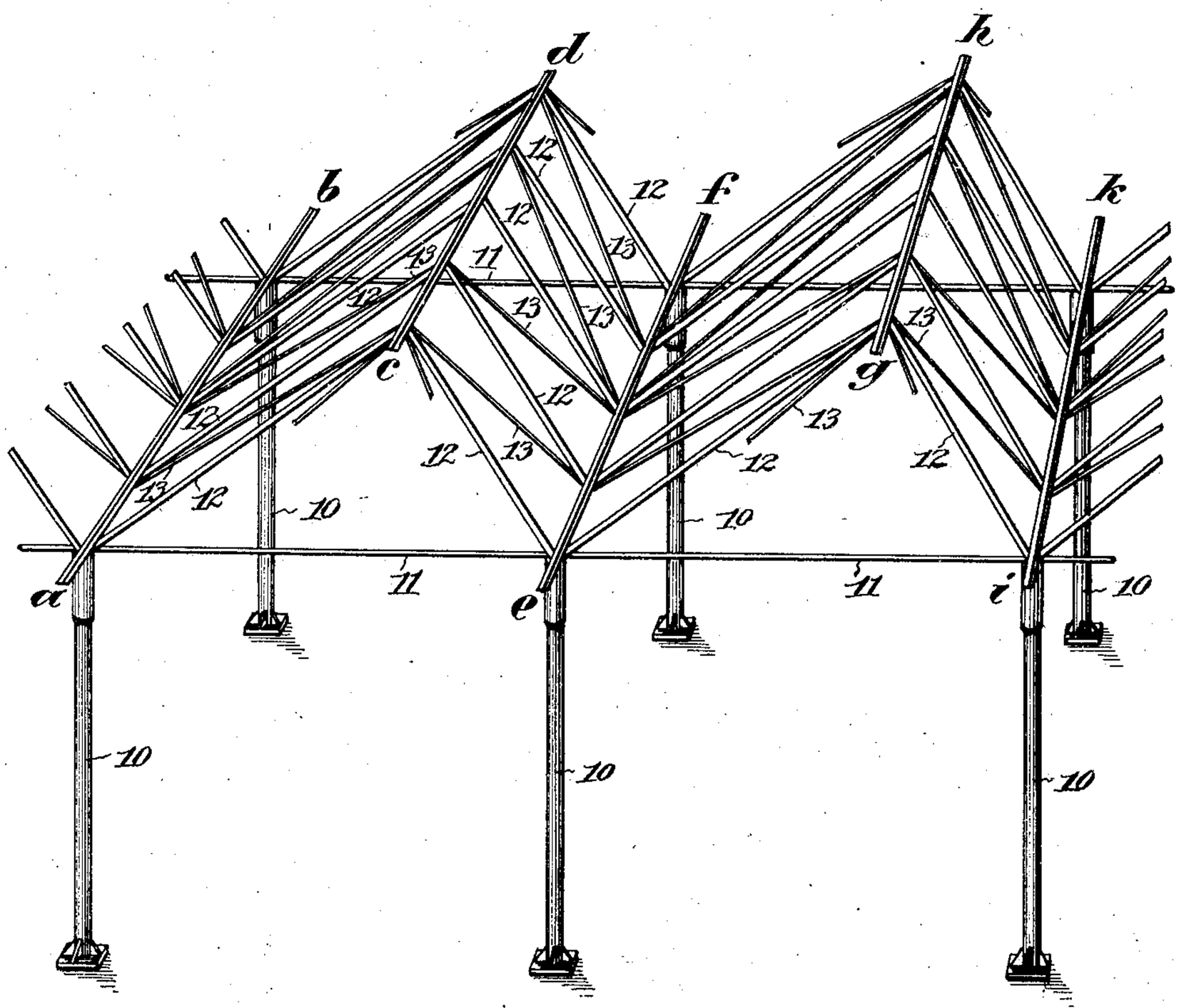
C. LOEHLE.

SADDLE ROOF.

APPLICATION FILED APR. 27, 1900.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



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NO MODEL. 3 SHEETS—SHEET 2.

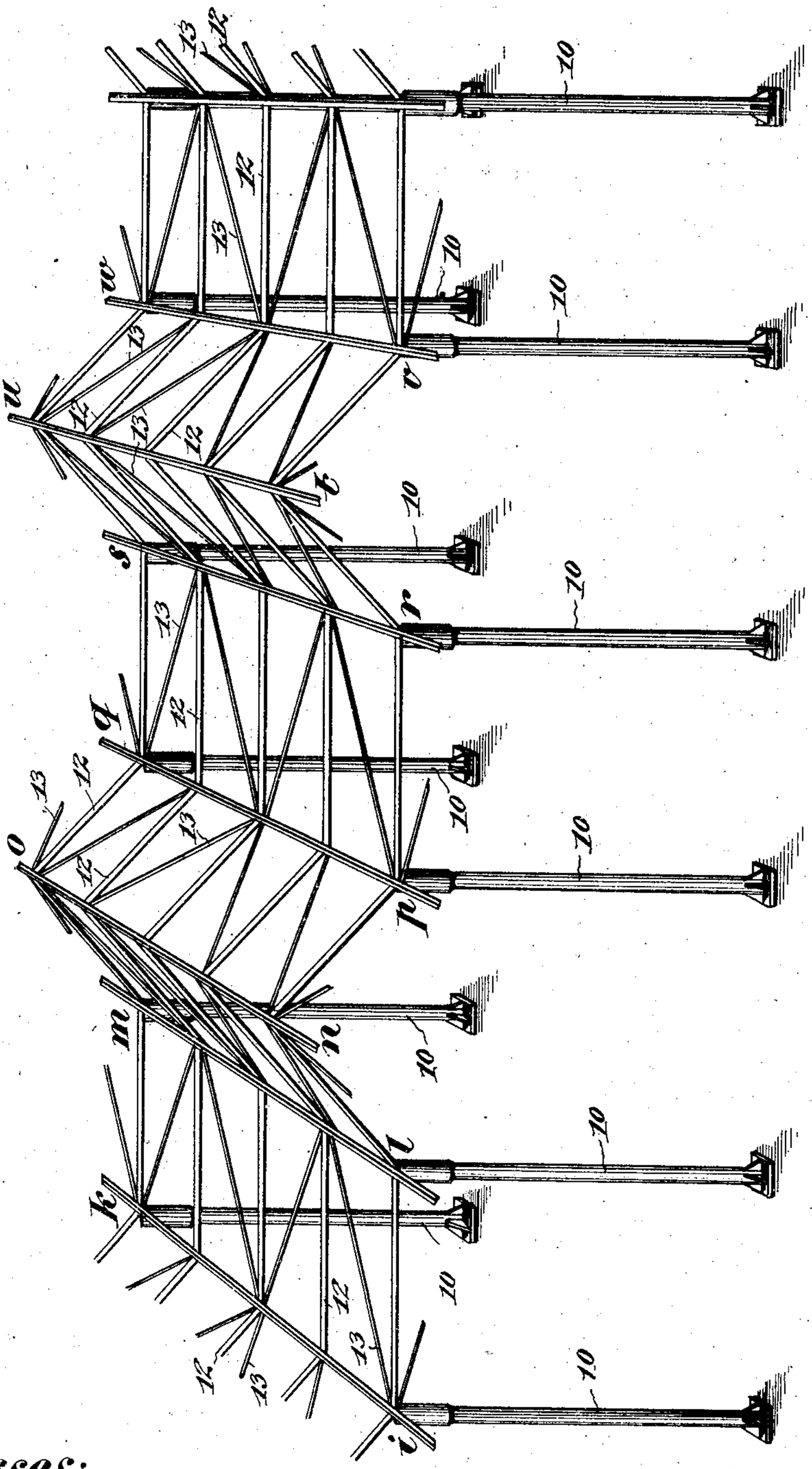

Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.

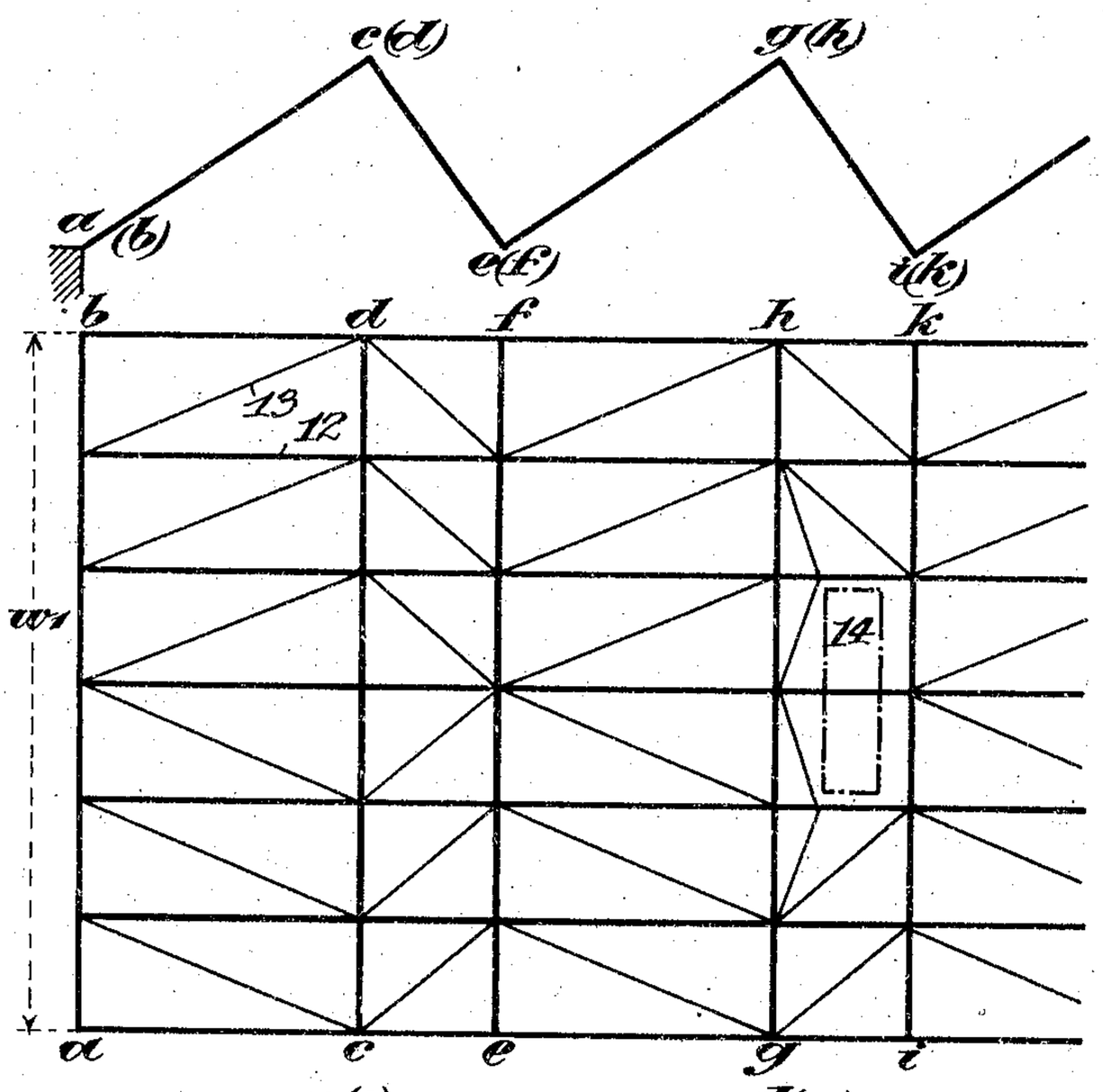

Fig. 4

Fig. 5.

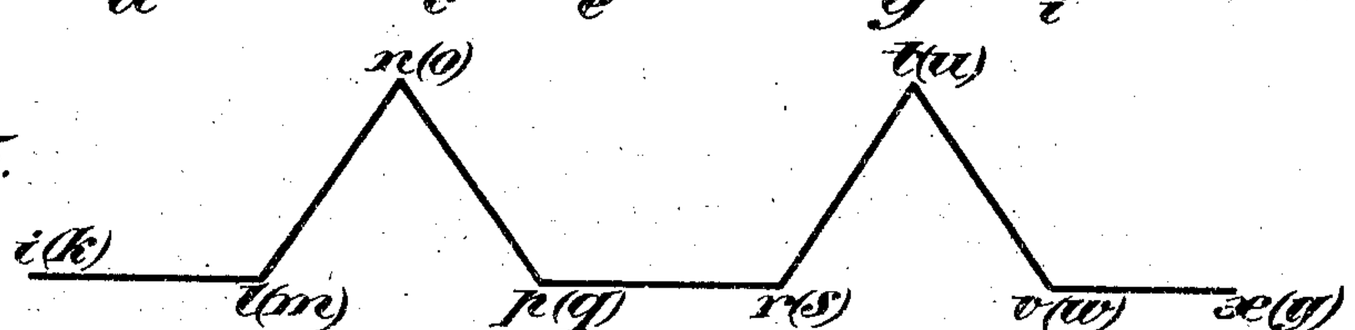

Fig. 6.

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No. 768,335. Patented August 23, 1904.

UNITED STATES PATENT OFFICE.

CHARLES LOEHLE, OF ZURICH, SWITZERLAND.

SADDLE-ROOF.

SPECIFICATION forming part of Letters Patent No. 768,335, dated August 23, 1904.

Application filed April 27, 1900. Serial No. 14,557. (No model.)

To all whom it may concern:

Be it known that I, CHARLES LOEHLE, a citizen of the Republic of Switzerland, residing at Zurich, Switzerland, have invented new and useful Improvements in Saddle-Roofs, (for which I have applied for a patent in Switzerland, dated October 3, 1899, No. 22,260; in Germany, dated October 6, 1899, No. 17,331, V/371; in Austria, dated January 8, 1900; in Hungary, dated January 21, 1900, No. 853; in Great Britain, dated April 4, 1900, No. 6,318, and in France, dated April 2, 1900, No. 287,032,) of which the following is a specification.

This invention relates to a new system of roof-trusses for a series of saddle-roofs and for roofs composed of saddles and intermediate flat roof-sections, which system allows of much greater spaces between the columns than has been possible with the systems heretofore known and also offering the further advantage of a considerable economy of material. These two advantages are obtained by a special arrangement of a number of roof-trusses in the sloping roof-surfaces, as will be fully described in the following description, and particularly pointed out in the claims.

Referring to the drawings, in which like parts are similarly designated, Figure 1 is a perspective view of a saddle-roof structure, and Fig. 2 a similar view of a roof composed of saddles with intermediate flat roof-sections. Fig. 3 is a diagrammatic end view; and Fig. 4, a plan of the same, clearly showing the truss structure. Fig. 5 is a diagrammatic end view of a saddle-roof having flat roof-sections, and Fig. 6 is a plan of the same.

When a space has to be covered with a series of shed-roofs or saddle-roofs, as is frequently the case with one-storied factory-buildings, trusses serve for carrying the purlins, the trusses being supported on columns. The distance between the trusses is limited, so as not to leave the purlins unsupported for this distance. If in order to utilize the floor-space to greater advantage or for any other reason a distance between the columns in the longitudinal direction of the roofs is desired exceeding the largest admissible span of the purlins, girders must be inserted between columns to support the intermediate trusses not resting directly upon the columns. The space required by the height of these supporting-girders, as a rule, cannot be utilized, and thereby forms a considerable disadvantage to this arrangement. If the depth of the girders is reduced in order to save space, they have to be made heavy, and their use, therefore, is limited, the distance of the columns from each other being rarely more than forty to fifty feet. In the case of a roof composed of saddle-roofs and intermediate flat roof-sections the conditions are similar.

The employment of the heavy supporting-girders can be obviated by placing longitudinal girders into the sloping sides of the roof itself, which longitudinal girders are connected with each other. This arrangement of longitudinal girders is a substitute for the supporting-girders as well as for the intermediate trusses. This new system of roof-trusses forming the subject of my invention thus consists in forming each saddle of the roof or a convenient length thereof of longitudinal girders, preferably trussed girders, placed into the planes occupied by the rafters of an ordinary roof, the height of these girders being equal to or nearly equal to the width of the sloping surface of the roof or to the length of the rafters in the usual arrangement of roofs, the girders of each saddle-roof being connected either directly, Fig. 1, or indirectly by a horizontal girder, Fig. 2, with the girders of each following saddle-roof. This new system of roof-trusses with a small expenditure makes it possible to space the columns far apart from each other.

Figs. 1 and 2 show in perspective the new system of roof-trusses for both of the said kinds of roof. For a series of saddle-roofs, Fig. 1, supported on columns 10, the sloping sides *a b d c*, *c d f e*, *e f h g*, and so on between columns are each formed of a trussed girder and here shown as having top and bottom chords and tension and compression members 12 and 13. The points *a* and *e*, *b* and *f*, *e* and *i*, *f* and *k*, and so on are connected with one another by horizontal ties 11. Otherwise no cross connection is necessary. For the roof composed of saddles and

intermediate flat roof-sections, Fig. 2, the sides *i k m l*, *l m o n*, *n o p q*, *p q s r*, *r s u t*, *t u w v*, and so on between the columns are each formed also of a trussed girder. The trussed girders may be made of timber or iron. Instead of trussed girders, girders of concrete reinforced with iron may also be employed. As the whole width of the sloping roof-surface can be utilized as depth of girders and is great in comparison with the length of the same between two columns, long spans between the columns or supports of the roofs amounting for ordinary shed-roofs from one hundred to two hundred feet are practicable without difficulty.

In order to render the new system of roof-trusses more readily understood, we will elucidate its practical application by some examples.

First. Suppose that a rectangular space of the width *w'*, Figs. 3 and 4, and of any required length is to be covered with a series of shed-roofs without any intermediate columns. A series of trussed girders are placed across the buildings, their span being equal to the width *w'*. The top and bottom chords of these trussed girders will be *a b*, *c d*, *e f*, *g h*, and so on, and between the top and bottom chords are the tension and compression web members. With the exception of *a b* and of the bottom chord at the other end of the building (not shown on the drawings) each of these chords will preferably be common to two adjacent trussed girders meeting at the gutter or at the ridge; but in some cases the trussed girders will be made with separate chords with advantage. In the trusses or girders *c d f e*, *g h k i*, and so on, which carry the glazing, the tension members may when required be so arranged that they leave room for ventilating swivel-panes, as indicated at 14 at the right side of Fig. 4.

Second. In a roof composed of saddles with intermediate flat roof-sections arranged according to Figs. 5 and 6 the sloping sides of the skylight are formed of trussed girders *l m o n*, *n o p q*, *r s u t*, *t u w v*. The girders *p q s r* and so on in the flat parts of the roof are likewise preferably latticed, but may have solid webs.

Having thus described my said invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A new system of roof-trusses for a roof composed of saddles, which consists of built-up girders having tension and compression members all of the component parts of each girder being substantially in the same plane and placed in the sloping sides of the roof, said girders connected each with the next following and the depth of which girders is equal to or nearly equal to the width of the sides of the roof.

2. A new system of roof-trusses for a series of saddle-roofs each saddle having unequally-inclined sides, and built-up girders having tension and compression members all of the component parts of each girder being substantially in the same plane and placed in the sloping sides of the roof, said girders each connected with the next following and the depth of which girders is equal to or nearly equal to the width of the sides of the roof.

3. A new system of roof-trusses for a roof composed of saddles and intermediate flat roof-sections, each saddle formed by two built-up trussed girders, the depth of which girders is equal to or nearly equal to the width of the inclined sides of the saddles and each flat roof-section formed by a single trussed girder, substantially as described.

4. A new system of roof-trusses for a roof composed of saddles, which consists of built-up girders having tension and compression members all of the component parts of each girder being substantially in the same plane and placed in the sloping sides of the roof, said girders each connected with the next following and a continuous tie member 11 extending below the saddles along their line of support.

5. A roof structure composed of trussed girders, the component parts of each girder being in substantially the same plane, and each chord of adjacent girders being common to both of them, substantially as described.

6. A roof structure composed of trussed girders, all of the component parts of each girder being in substantially the same plane, and placed immediately under and parallel to the roof that they support, substantially as described.

7. A roof structure composed of trussed girders, the component parts of each being in substantially the same plane and the planes of adjacent girders forming an angle between them, substantially as described.

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

CHARLES LOEHLE.

Witnesses:

MORITZ VEITH,

A. LIEBERKNECHT.