(No Model.) 2 Sheets—Sheet 1.

K. L. LEHMANN.

TOWER.

No. 489,963. Patented Jan. 17, 1893.

Fig. 1.

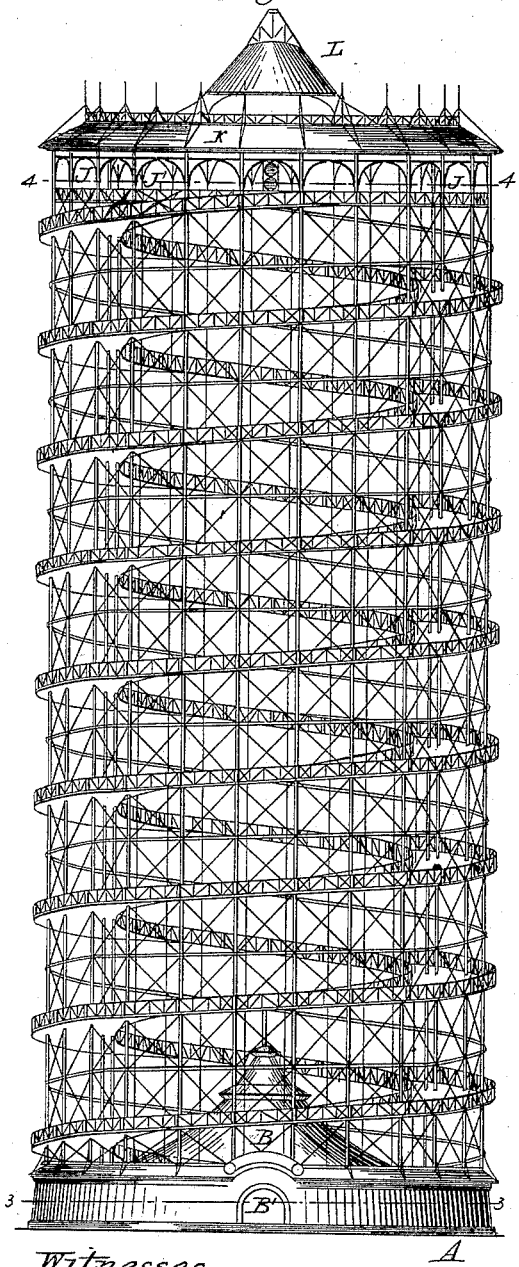
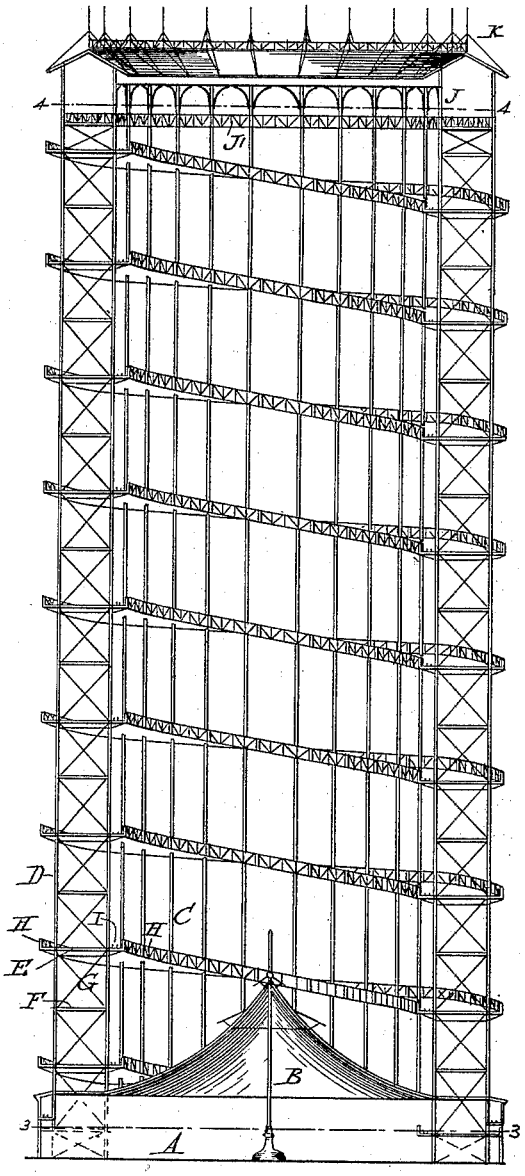


Fig. 2.



Witnesses,
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Joseph C. Stack.

Inventor
Karl L. Lehmann
by his attorneys
Baldwin Davidson & Wright.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

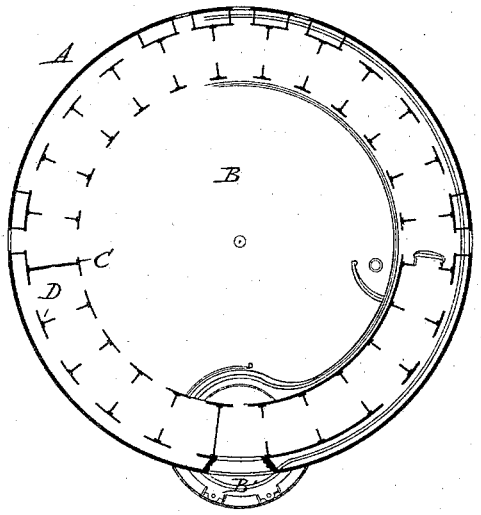


Fig. 4.

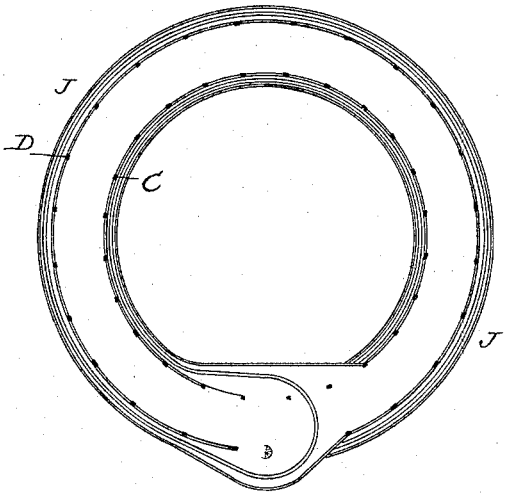


Fig. 5.

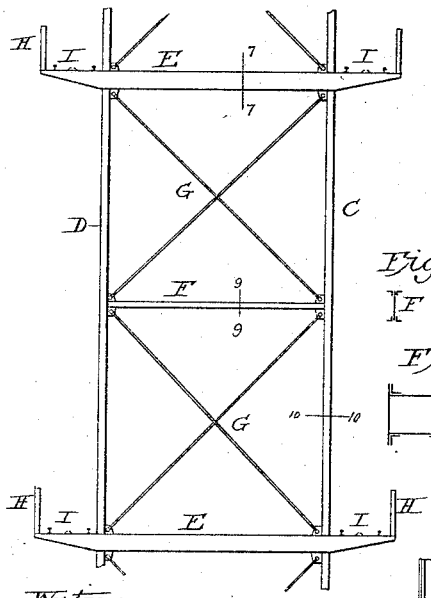


Fig. 7.

Fig. 8.

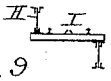


Fig. 9

Fig. 10

Fig. 6

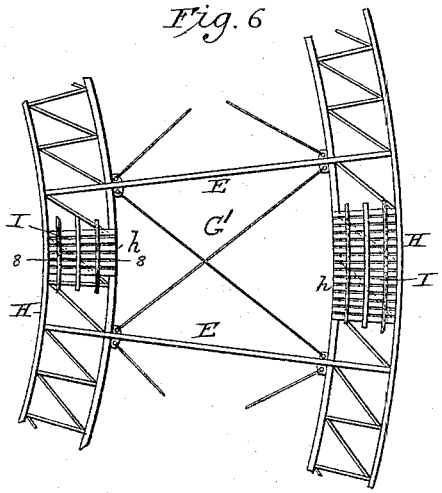
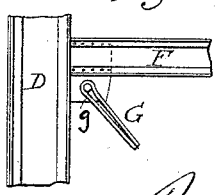


Fig. 11



Witnesses,
Sidney P. Hollingsworth
Joseph C. Stack.

Inventor
Karl L. Lehmann
by his attorneys
Baldwin Davidson & Wright

UNITED STATES PATENT OFFICE.

KARL L. LEHMANN, OF CHICAGO, ILLINOIS.

TOWER.

SPECIFICATION forming part of Letters Patent No. 489,963, dated January 17, 1893.

Application filed September 24, 1892. Serial No. 446,762. (No model.)

To all whom it may concern:

Be it known that I, KARL L. LEHMANN, a citizen of Norway, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Towers, of which the following is a specification.

My invention more especially relates to skeleton towers adapted to support a roadway or track for passengers, toboggans, cars or other vehicles.

According to my invention, I propose to construct a tower of great height, to use a minimum amount of material, but to so arrange the material as to afford the greatest possible strength, to sustain and resist any weight or strain to which it may be subjected. I employ two concentric circular series of upright posts, columns or standards, connect them by a series of horizontal braces spirally arranged, and extend these braces laterally from the columns and connect their outer ends to truss work, which greatly strengthens the girders and serves to prevent the columns from yielding under any strain to which they may be subjected, either vertical or lateral produced by weight, wind or other cause. One of the tracks or roadways is arranged outside the outer series of columns, and the other roadway is arranged inside the inner series of columns. The roadways are parallel with each other, and the truss works at the edge of both roadways coact to afford all the necessary strength for the structure.

In the accompanying drawings illustrating my invention, Figure 1 is an elevation of the tower; Fig. 2 is a vertical, central section thereof; Figs. 3 and 4 are transverse sections on the lines 3—3 and 4—4 respectively of Figs. 1 and 2. Fig. 5 is a detail view on an enlarged scale of a portion of the tower structure. Fig. 6 is a detail plan view thereof; Fig. 7 is a cross section on the line 7—7 of Fig. 5. Fig. 8, a cross section on the line 8—8 of Fig. 6. Figs. 9 and 10 are cross sections on the lines 9—9 and 10—10 of Fig. 5. Fig. 11 is a detail view on an enlarged scale showing the joint of some of the angle irons and bracing rods.

The foundation A, of the tower, may be constructed in any suitable way. It is shown as provided with a pavilion B, having an entrance B′.

C, indicates the inner series of vertical posts or columns, and D, the outer series. The columns are arranged in concentric circles. At suitable intervals apart, I connect the two series of posts by girders E, which are spirally arranged, as shown, from top to bottom of the tower. Between the girders E, I interpose supplemental girders F, and crossed braces G, connect the girders E with the girders F. The girders E, extend laterally from the columns C and D, and at their outer ends are provided with truss work H, which not only serves to greatly strengthen the girders, but also affords a railing for the tracks or ways I, on which the cars, toboggans or other vehicles run. As will be observed, the girders with their trusses are in effect wound around both the inside and outside of the vertical columns, and thus serve to hold them most securely in a vertical position, so that they cannot spread apart or collapse, or come together, but are always held true. At the top of the tower, I provide a horizontal column J, with a trussed railing J′, and over this gallery arrange a roof or cover K, and may add an ornamental cap L. The columns D and C, may be built up of angle irons, and connecting plates, as shown in Fig. 10, and the girders E and F, may be constructed in like manner, as shown in Figs. 7 and 9. The cross braces G, are looped at their ends, as shown in Fig. 11, and connected by pins *g*, at the joint of the girders with the columns.

In Fig. 6, a slight modification is shown, the tracks being supported on cross slats *h*, and horizontal crossed braces G′ are employed between the inner and outer spiral tracks. By so constructing the tower, I attain all the requisite strength and durability, and may build it expeditiously at a minimum cost. As the spiral ways are arranged parallel with each other instead of running in opposite directions, the girders which sustain the ways and their trusses, serve to brace each other and to brace and bind together the entire structure.

I claim as my invention,—

1. A skeleton tower, comprising a concentric series of parallel vertical posts or col-

umns, spirally arranged girders tying together the vertical columns and extending laterally therefrom both inside and out, parallel road-ways constructed inside and outside the vertical columns on the laterally projecting girders, parallel vertical railings or truss work at the edges of the inner and outer roadways, and diagonal crossed braces G′ tying together the vertical posts or columns within the road-ways.

2. A tower comprising an inner series of circularly arranged vertical posts or columns, an outer series of vertically-arranged posts or columns concentric with the inner series, spirally-arranged horizontal girders connecting the columns and extending laterally therefrom, supplemental horizontal girders arranged between the first mentioned girders, crossed rods connecting both sets of girders, and a railing constructed at the ends of the laterally projecting girders to form a truss work therefor, substantially as described.

3. A skeleton tower comprising concentric series of vertical posts or columns, spirally-arranged horizontal girders tying together the vertical columns and extending laterally therefrom both inside and out, horizontal crossed rods or braces between the columns, and vertically arranged crossed rods or braces between the girders.

In testimony whereof I have hereunto subscribed my name.

KARL L. LEHMANN.

Witnesses:
MARION PICKETT,
CHARLES P. PLATT.