

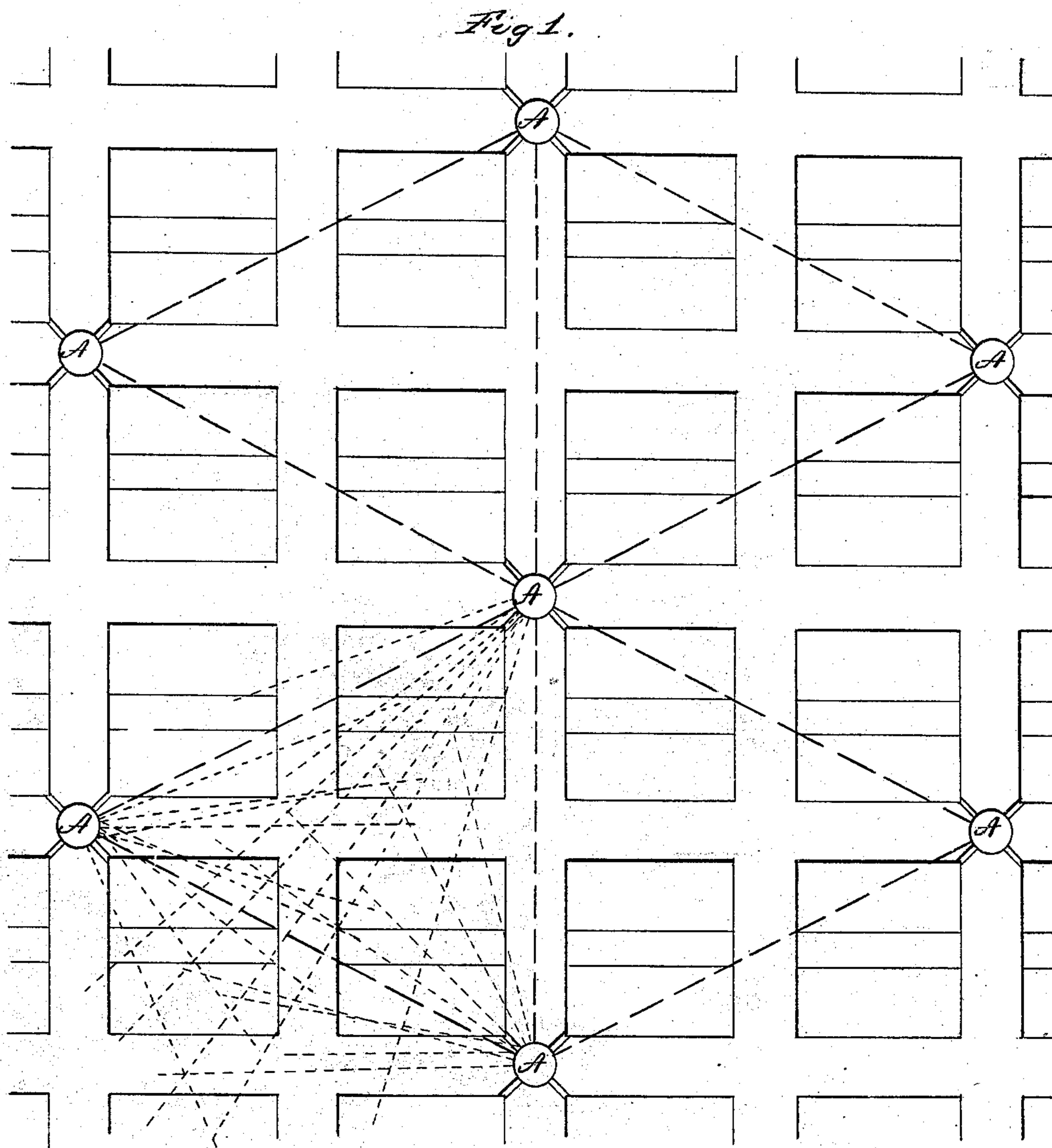
(No Model.)

3 Sheets—Sheet 1.

H. C. SPALDING.  
Lighting Cities by Electricity.

No. 235,913.

Patented Dec. 28, 1880.



*Witnesses.*  
*W. L. Bennett.*  
*E. A. Graves.*

*Inventor.*  
*H. C. Spalding*  
*by his atty,*  
*E. L. Kenrick*

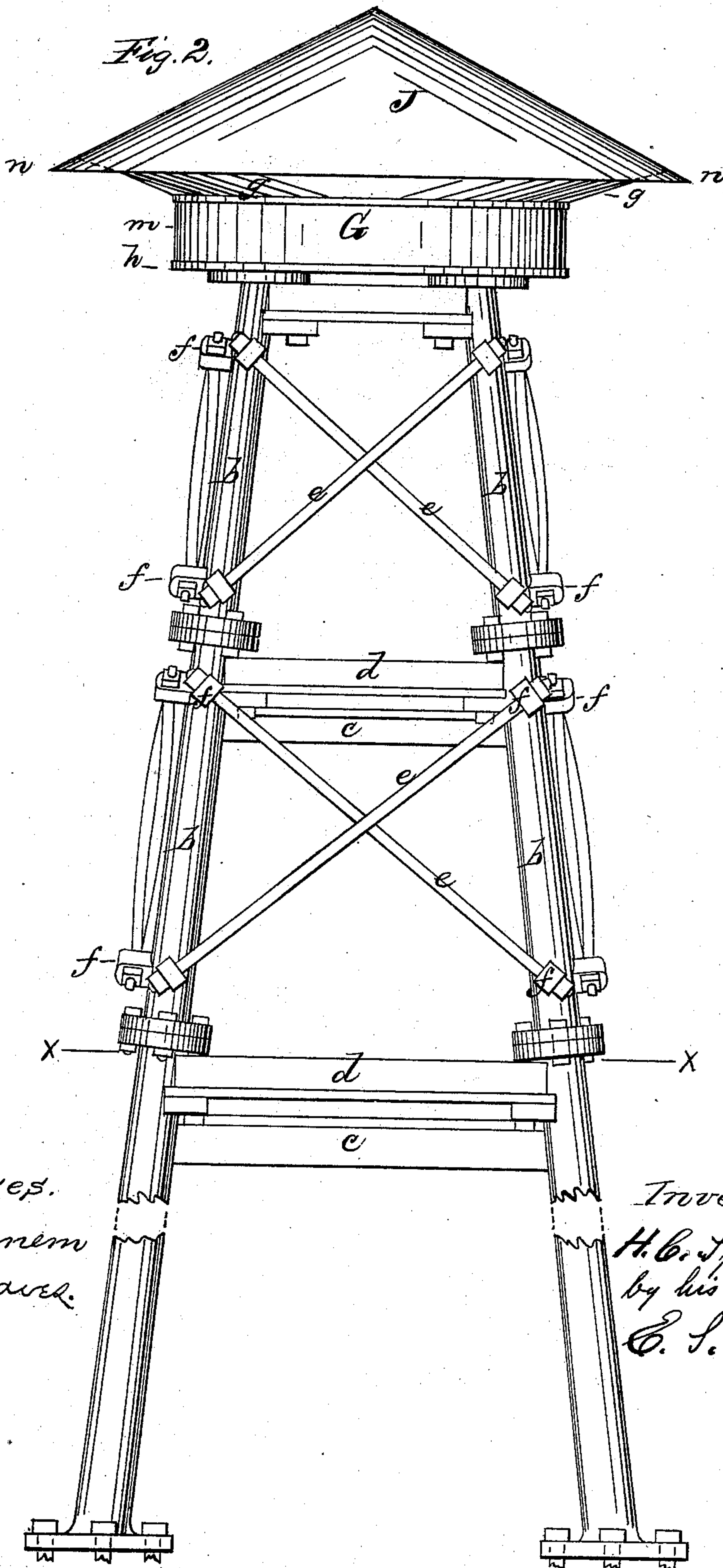
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8 Sheets—Sheet 2.

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C. L. Remick.

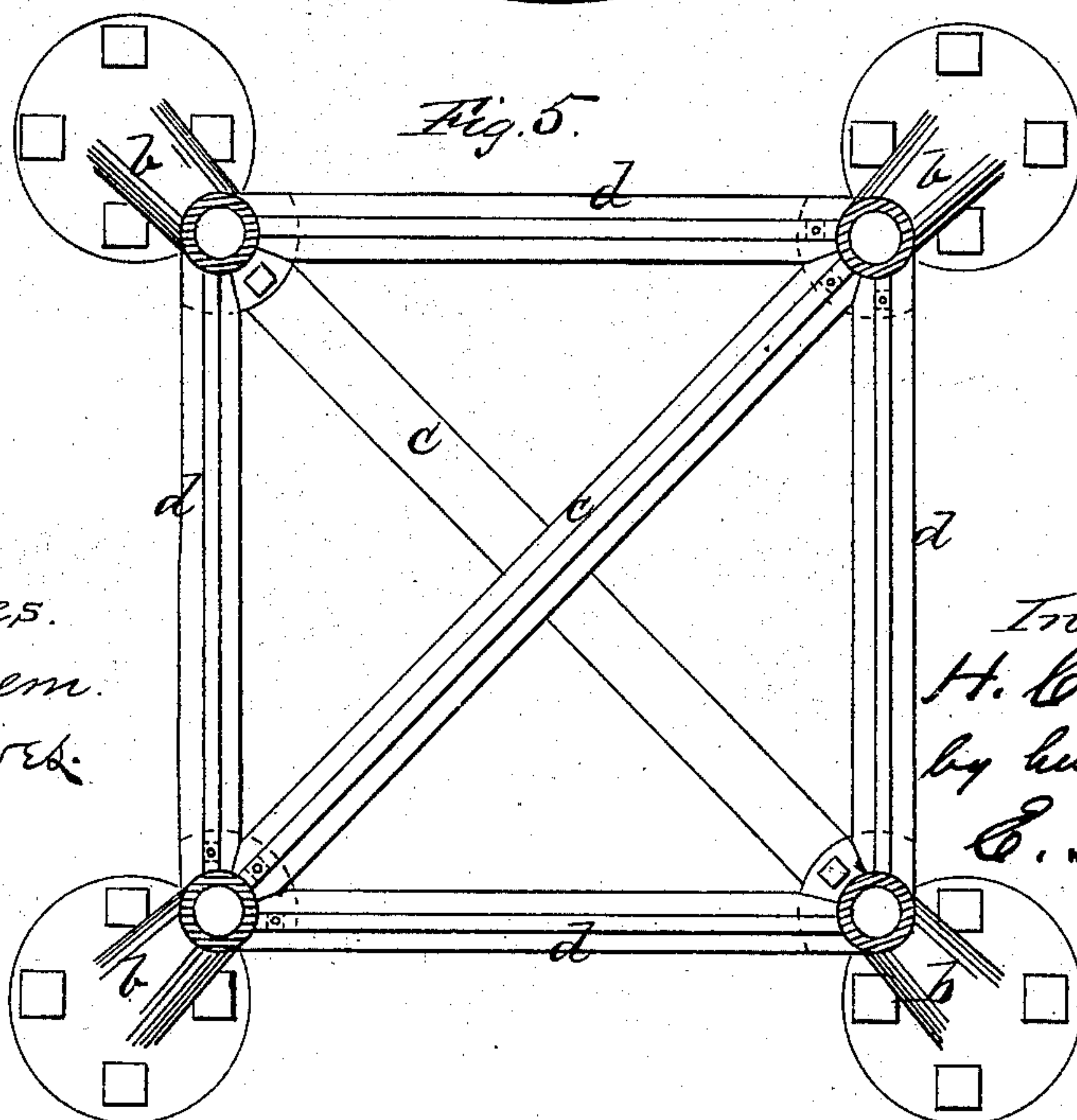
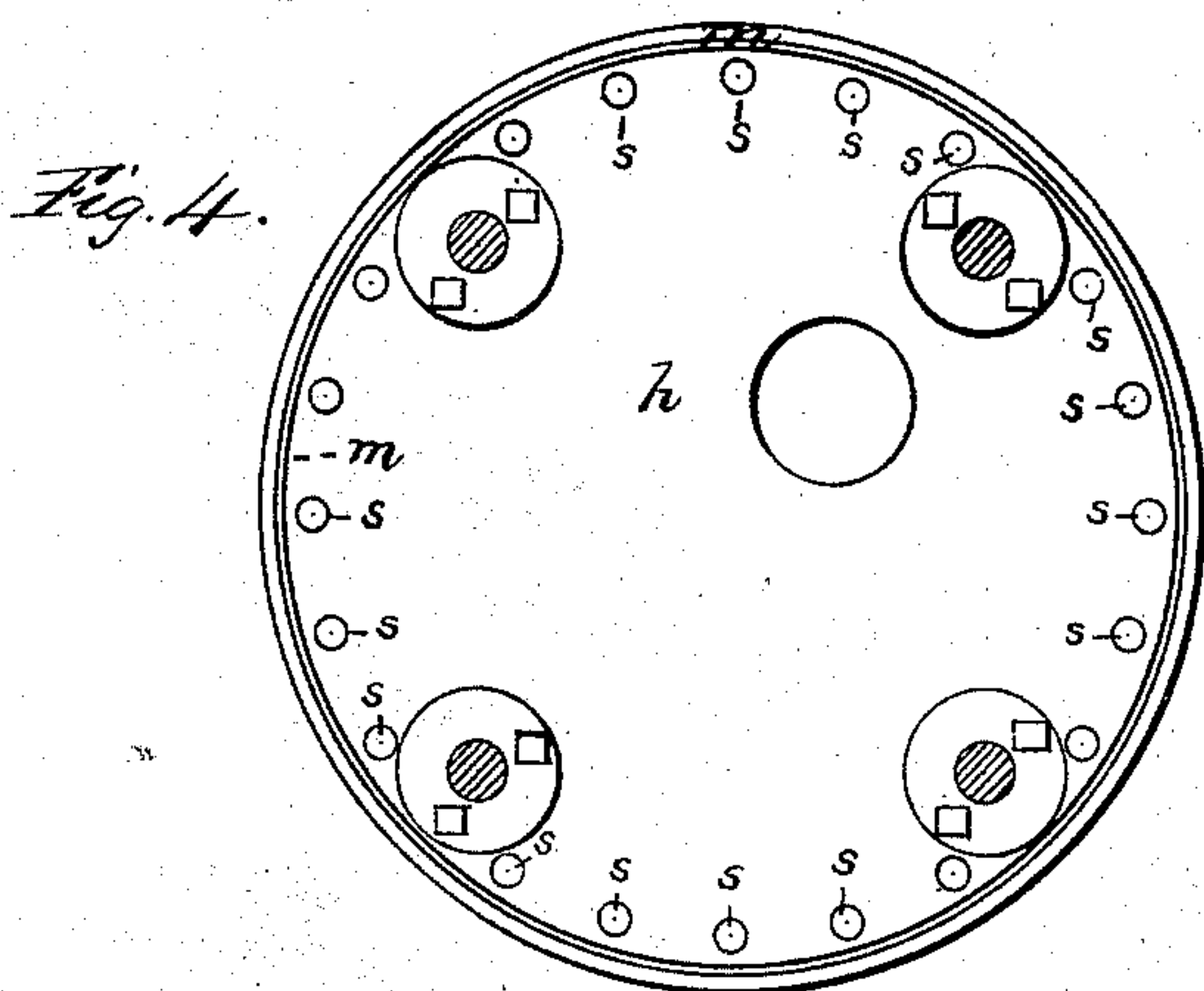
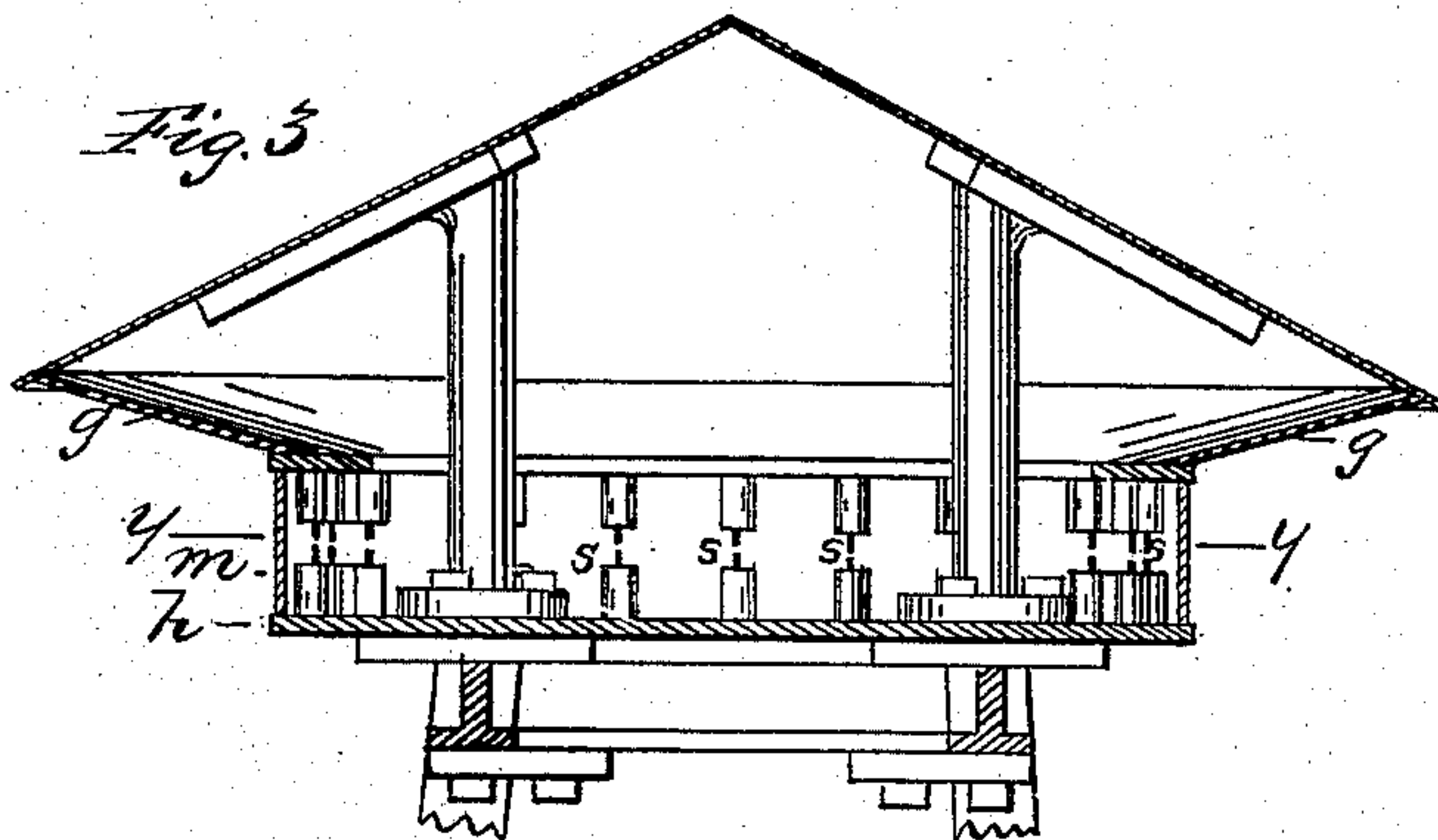
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3 Sheets—Sheet 3.

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W. L. Bennet.  
C. K. Graves.

Inventor.  
H. C. Spalding  
by his atty.  
C. L. Kemwick



# UNITED STATES PATENT OFFICE.

HENRY C. SPALDING, OF BLOOMFIELD, NEW JERSEY.

## LIGHTING CITIES BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 235,913, dated December 28, 1880.

Application filed June 19, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY CURTIS SPALDING, of Bloomfield, in the county of Essex and State of New Jersey, have made an invention of certain new and useful Improvements in the Art and Means of Lighting Cities by Means of Electricity; and I do hereby declare that the following, taken in connection with the accompanying drawings, is a full, clear, and exact description and specification of the same.

The object of this invention is to light cities by means of electricity with economy and in such manner as to cast the least possible shadows from the buildings.

In the accompanying drawings, Figure 1 represents a plan of a town lighted upon my system. Fig. 2 represents a side view of a single light-tower. Fig. 3 represents a central vertical section of a tower-lantern. Fig. 4 represents a horizontal section of a tower-lantern at the line *y y*, Fig. 2. Fig. 5 represents a horizontal section of the same at the line *x x*, Fig. 2.

In order that a town or city may be properly lighted the atmosphere must be flooded with such a quantity of light, irradiated in many directions, as to reduce to a minimum or practically prevent the casting of shadows. I accomplish this object by the employment of groups of electric lights, each group consisting of a number of lights massed together, supported, by towers or other suitable means, at a high level, say from one hundred to two hundred feet, according to the height of buildings, so as to be above the houses, the several groups being arranged in such proximity to one another as to light the spaces intervening between them. I prefer to arrange the towers or other supports for the groups of massed lights in triangular groups of not less than three towers, whereby the rays of light cast by the electric lights of one tower are caused to cross angularly those cast by the remaining towers. Each light-tower supports a reflecting-lantern containing electric lights, as hereinafter described. The height above the street at which these lanterns are supported causes the light to penetrate between the buildings; and in order that such penetration may be enhanced I prefer to arrange my light-towers at the intersections of streets. This system is represented in Fig. 1, in which case

seven light-towers, A, are combined in a triangular system. Each light-tower A is arranged opposite the space between the other two, so that each three towers form a group, the members of which are at the apexes of a triangle, (indicated by the broken lines A A, A A, A A.) By reason of this arrangement the rays of light proceeding from the lanterns of any one of the towers are crossed by the rays proceeding from the other two of the triangular group, as represented by the fine dotted lines, and consequently the objects beneath are lighted at different sides, thus diminishing the shadows to the lowest possible limit.

Each light-tower, as represented in detail at Figs. 2, 3, 4, and 5, is composed of four tubular sectional posts, *b*, connected by means of horizontal braces *c c d d d d* and by diagonal screw tie-rods *e*, whose ends are passed through ears *f*, cast upon the posts, and are drawn taut by means of nuts applied to their screwed ends. In practice, the sections of the posts are made not less than twenty feet in length, and their ends are formed with flanges, which are turned to fit each other, and are connected by means of screw-bolts.

Each light-tower supports an electric-light lantern, G, consisting of a gallery or floor, *h*, surrounded by glass *m*, and inclosing a group of electric lights, *s*. The lights are massed in a circular group, as represented in the drawings, and this group surrounds and is external to the frame or posts *b* of the tower, so that these posts do not cast shadows. Each group is composed, by preference, of not less than twenty lights of three thousand candle-power each, and the number may be increased as found expedient.

In order that the light which is radiated in an upward direction from the electric lights may not be lost, each group of electric lights is surrounded by a circular or conical reflector, *g*, projecting beyond the group of lights. This reflector, so arranged, intercepts the rising rays of light and reflects them angularly downward. Moreover, as each reflector is combined with a group of lights, the rays are not only reflected downward in lines radiating centrally from the lantern, but are radiated in directions angular to such central radial lines, thereby reaching portions of the streets and houses which would not be reached if the en-



tire light of one lantern proceeded from a single central light.

In order that the lantern and reflector of each tower may be protected from the weather, 5 each lantern is surmounted by a conical roof, J, whose eaves *n* project over the rim of the reflector *g* and protect it, as well as the lantern beneath it.

Access can be had to each lantern by means 10 of ladders or stairs connected with the tower and leading to an opening in the bottom of the gallery forming the bottom of the lantern.

The electric lights may be of any approved construction, and may be supplied with elec- 15 tricity from generators arranged either in buildings adjacent to the tower or at a distance, the electricity being conducted to the lights by means of suitable conductors.

I claim as my invention—

20 1. The improvement in the art of lighting

towns, consisting in the employment of assemblages or groups of electric lights, each group of a number of lights massed together, supported in an elevated position above the roofs of buildings, and the several groups ar- 25 ranged in such proximity to one another as to light the spaces intervening between them.

2. The improvement in the art of lighting towns by electricity by means of light-towers arranged in triangular groups of three or more, 30 each tower supporting a lantern containing a group of electric lights with suitable reflectors for deflecting and diffusing the light, substantially as hereinbefore set forth.

In witness whereof I have hereto set my 35 hand.

HENRY CURTIS SPALDING.

Witnesses:

J. CONVERSE GRAY,  
ROBT. J. TAYLOR.