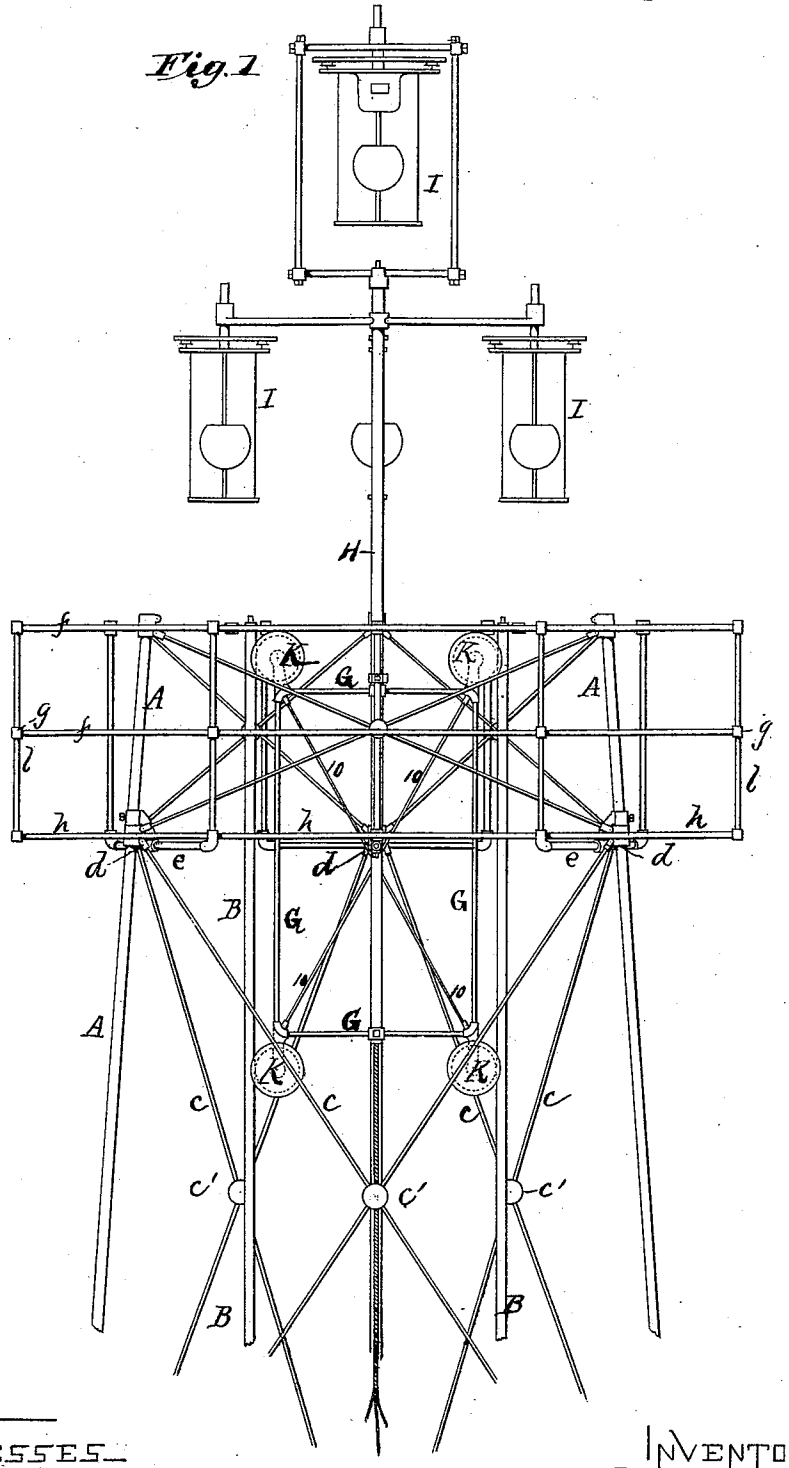
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ELECTRIC LIGHT TOWER.

No. 297,332. Patented Apr. 22, 1884.

Fig. 1



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Fig. 2.

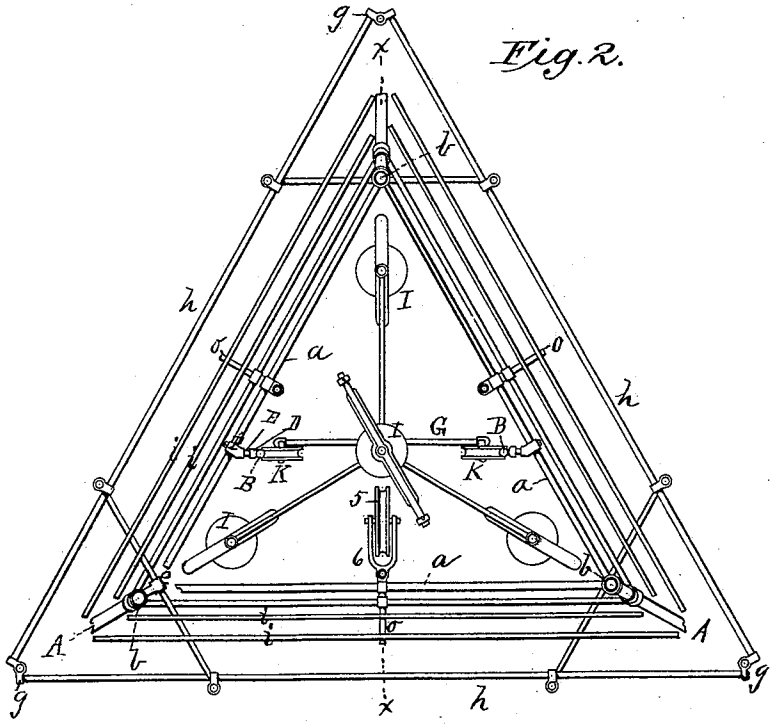


Fig. 4

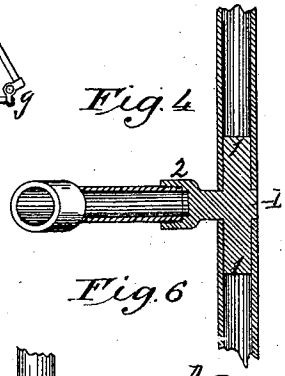


Fig. 3.

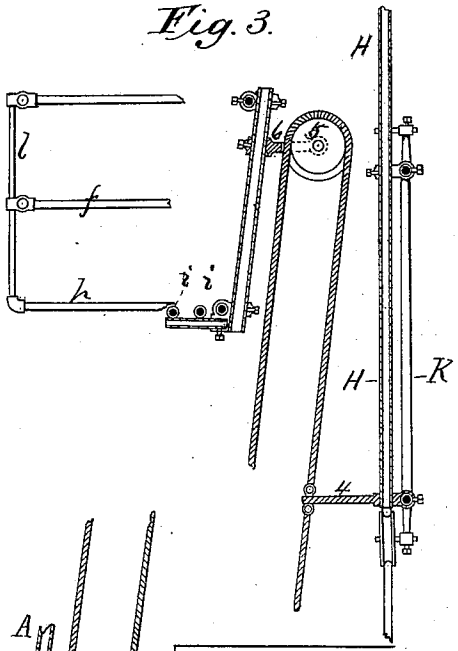


Fig. 5.

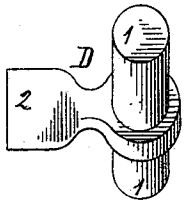
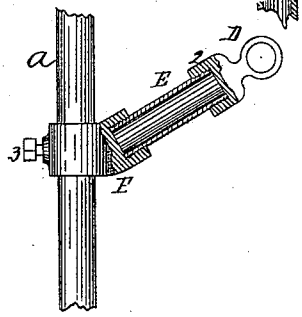
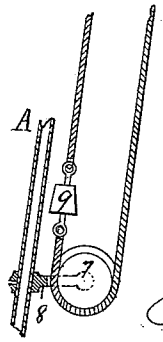


Fig. 6





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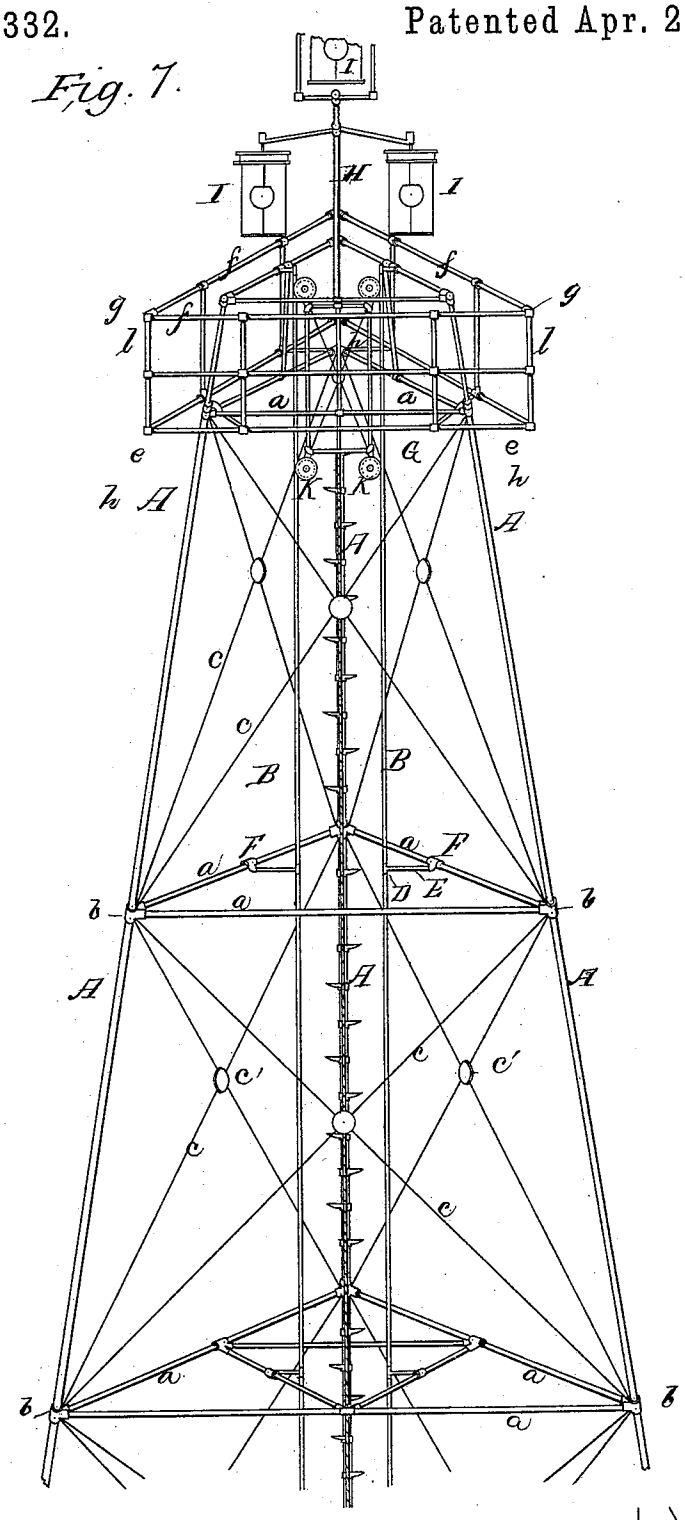
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Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN S. ADAMS, OF ELGIN, ILLINOIS, ASSIGNOR TO THE DETROIT IRON TOWER COMPANY, OF DETROIT, MICHIGAN.

ELECTRIC-LIGHT TOWER.

SPECIFICATION forming part of Letters Patent No. 297,332, dated April 22, 1884.

Application filed July 16, 1881. Renewed March 17, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. ADAMS, a citizen of the United States, residing in Elgin, county of Kane, and State of Illinois, have invented certain new and useful Improvements in Electric-Light Towers, of which the following is a specification.

My invention relates to improvements in towers, for which Letters Patent No. 187,078 were granted to me February 6, 1877, for adapting such towers for supporting electric lights.

The objects of my invention are, first, to provide for supporting one or more electric lights above the top of the tower proper; second, to provide means by which the elevated lamps may be lowered to or near the base of the tower, for supplying fresh carbons or for repairs, and thereby avoid the necessity of climbing the tower for these purposes; third, to provide a suitable carriage supporting the lamps, and ways for guiding the carriage to and from the top of the tower; fourth, to provide for the arrangement of the lamps upon the carriage whereby the lamps are raised and lowered in the angles of the tower; and, finally, to provide suitable and effective means for actuating and counterbalancing the carriage and lamps when raising and lowering the same. I attain these objects by devices illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of portions of a tower embodying my invention; Fig. 2, a top plan view of the same; Fig. 3, a vertical detail section of a portion of the top of the tower on line *x x*, Fig. 2, with the lamp-carriage in its operative position to project the lamps above the top of the tower; Fig. 4, a detail longitudinal section of the tubular ways or guides, the couplings, and the tube connecting the ways with the girts of the tower; Fig. 5, a perspective of the tubular-way coupling detached; Fig. 6, a longitudinal section through the tubular-way coupling, with the girt of the tower in full lines, but broken off; and Fig. 7, a perspective of my tower.

Similar letters of reference indicate the same parts in the several figures of the drawings.

A represents sections of metal tubing, jointed together in any suitable manner and forming the uprights or pillars of the tower, said uprights being arranged at the three corners of a triangle, as indicated in Fig. 2, and converging from the base to the top of and of a length corresponding with the desired height of tower. The uprights A are suitably braced and held together by means of horizontal tubes or rods *a*, forming girts screw-threaded upon their ends, and held in couplings *b* on the uprights in the usual manner. Other and diagonally-extending rods or tubes *c c*, in sections of two pieces, connected at their intersections by lock-plate *c'*, are connected with the uprights by means of a clevis or yoke, *d*, at each end, which clevises are pivoted to the coupling on the uprights and have the diagonal intersecting rods secured into them, and are adjustable to increase or diminish their tension by reason of having on each end respectively a right and left hand screw.

The construction of the body of the tower, so far as my present invention is concerned, is essentially the same as that described and claimed in my patent referred to, excepting that the top of the tower is of somewhat greater diameter, and the upper ends of the uprights are connected by means of the girt *a* and coupling *b*, instead of a cap, to provide a central opening through which the supporting-frame of the lamps may be raised and lowered.

Secured to the uprights at each corner of the tower, and at a suitable distance below the top of the tower, are horizontal brackets *e*, projecting beyond the sides of the tower, and having secured at their extremities, by suitable couplings, (see Fig. 2,) horizontal tubes *h*, forming a triangular frame and a portion of the tower-platform, and supporting a railing extending above the platform; but instead of coupling the tubes *h* to the brackets, the tubes may simply rest on the bracket, as shown in Fig. 1, and be confined between parallel vertical extensions of the brackets, forming side posts for the railing.

The corner-posts *l*, which support the railing, are secured to the intersections of tubes *h* by means of suitable couplings, which also join the ends of these tubes.

The railing is composed of one or more horizontal tubes or rods, *f*, secured to the posts

formed by the vertical bracket-arms by suitable couplings, and at their corner intersections are connected together by couplings *g*, which couplings also connect them to the corner-posts *l*.

The platform proper is composed of separate tubes *i*, forming an open floor for the attendant to stand upon when necessary for him to ascend the tower, the tubes *i* being shortened to leave the corners of the platform open sufficient for him to pass through. These tubes rest upon the brackets *e* and the central support, *o*, to which they may be secured by binding-wire or any suitable fastening, and the platform may be covered with heavy wire-netting or any other suitable open fabric.

It will be noticed, that, by constructing the top of the tower in the manner described, a floor and railing is provided which is sufficiently open to afford little or no serious obstruction to the passage of the rays of light to the bottom of the tower, and that the center of the tower is left open from top to bottom, so that a suitable guideway may be formed for raising and lowering the lamps through the same.

B B are two vertical and parallel tubes in sections, forming the guideway or well for the lamp-carriage and mast, to be presently described, connected at their top ends and at intervals of their length to the girts *a* of the tower by means of a coupling, D, pipe E, and coupling F. (See Figs. 4, 5, and 6.) Coupling D has a flat circular body adapted to support the ends of the adjacent sections of the tubular guides, which body is provided with cylindrical projections or tenons 1 1, contiguous therewith and fitting and extending a sufficient distance with the inner diameter of the tubes to rigidly but detachably connect their sections together. A head, 2, upon the coupling, provided with a socket, screw-threaded, or otherwise, receives the tube E, which has its opposite end fitted into the coupling F, encircling the girt *a*, and secured thereby to a set-screw, 3.

A coupling having its body constructed as described not only serves to avoid the necessity of screw-threading the sections of pipe, but to form an unbroken continuation of the same upon their inner or operative faces for an unobstructed passage of the lamp-carriage, which could not be if ordinary pipe-coupling were used.

It will be understood, of course, that the length of the tubes E is varied in accordance with the distance between the girts and the tubular guides—as, for instance, the tubes E are much longer toward the base of than near the top of the tower, by reason of the converging form of the same.

G represents a rectangular open frame or carriage of tubing, to the upper and lower end and about the transverse center of which is rigidly secured a mast, H, which may be regarded as a portion of the carriage, and which extends sufficiently high to support upon its upper end the lamp or lamps I above the tower when the main body of the carriage is at its highest elevation in the tubular guides.

Owing to the great height of these towers, and principally to the limited space in which they are usually erected, it is obvious that the diameter of their base should not be greater than is consistent with maintaining the equilibrium of the tower; hence it is necessary to have the top of the tower of as small diameter as is consistent with the free passage of the lamps through the same when two or more lamps having the desired spread are arranged in the same plane; and to this end the lamps are suspended by arms from the carriage, so as to move up and down in the angles of the tower, as shown in Fig. 2. Furthermore, by thus arranging the lamps the top diameter of the tower under any circumstances is not greater than is absolutely required, as it would be if the lamps were suspended at a right angle to the sides of the tower.

Carriage H is provided at its four corners with flanged anti-friction rollers K K, embracing and adapted to travel on the periphery of the tubular guides, as clearly shown in Fig. 1. These anti-friction rollers are journaled in any suitable manner upon the carriage, but should be so arranged relative to each other and the tubular guides that the carriage will have a positive vertical or sliding but not a lateral movement. I do not, however, wish to be understood as limiting myself to anti-friction rollers for guiding the carriage, for I may have forked or V-shaped projections extending from the carriage and embracing the tubular guides.

The lamp-carriage is provided at the center of width of its base with a horizontally-projecting arm, 4, in the outer end of which is secured an endless rope or chain, preferably a wire rope, which passes over a sheave, 5, journaled in a horizontal bracket, 6, on a vertical piece of tubing secured between the top and second girt of the tower, (see Fig. 3,) and underneath is a similar sheave, 7, secured to a bracket, 8, on a girt at or near the base of the tower, a weight, 9, upon said rope serving to counterbalance the combined weight of the carriage and lamps.

The rectangular frame or lamp-carriage may be braced by diagonal tubes or rods 10, as shown in Fig. 1, in the same manner as the tower, if so desired; but ordinarily the frame is sufficiently rigid if properly jointed.

A tower constructed as above described and self-supporting provides an elevation for electric lights to illuminate large areas, particularly in cities, where space is an object and where guys would be objectionable, and also in small towns, where the country is flat and no ready means are at hand for the required elevation of the light. Furthermore, my tower provides for conveniently and quickly lowering the lamps for the insertion of fresh carbons, and effectually provides against any necessity of ascending the tower, though of course suitable

steps are provided for that purpose in case of necessity, as shown in Fig. 7.

The simplicity of the construction of my tower enables it to be readily and quickly put together when the parts are once formed, or to be taken apart and packed compactly for shipment.

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

1. The combination, with a tower and a way, of a lamp-carriage mounted in said way and projecting above the top of the tower, substantially as described.

2. The combination, with a tower, of a lamp-carriage, and a way for the same, said carriage being provided with a mast for supporting a lamp above the top of the carriage, substantially as described.

3. The combination, with a tower and an interior way, of a lamp-carriage mounted in said way, and one or more electric lamps supported on said carriage, substantially as described.

4. The combination, with a cross-sectionally-angular tower and a movable lamp-carriage, of lamps mounted upon the carriage and moving up and down in the angles of the tower, substantially as described.

5. The combination, with a tower and an interior way, of a lamp-carriage mounted in said way and projecting above the tower, substantially as described.

6. The combination, with a tower and a centrally interiorly arranged way, of a lamp-carriage mounted in said way, substantially as described.

7. The combination, with a tower and a centrally interiorly arranged way, of a lamp-carriage mounted in said way, and means for raising and lowering said carriage, substantially as described.

8. The combination, with a skeleton tower and an interior way, of a lamp-carriage supported in said way, and one or more electric lamps mounted on said carriage, substantially as described.

9. The combination, with the sectional tubular way, the girts, and the connecting-tubes, of a coupling provided with tenons entering each opposing tube-section of the way, and with a socket receiving the ends of the connecting-tubes, substantially as described.

JOHN S. ADAMS.

Witnesses:
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W. C. WHITING.