(No Model.)

2 Sheets—Sheet 1.

B. F. ORTON.

TOWER.

No. 290,099. Patented Dec. 11, 1883.

Fig 1.

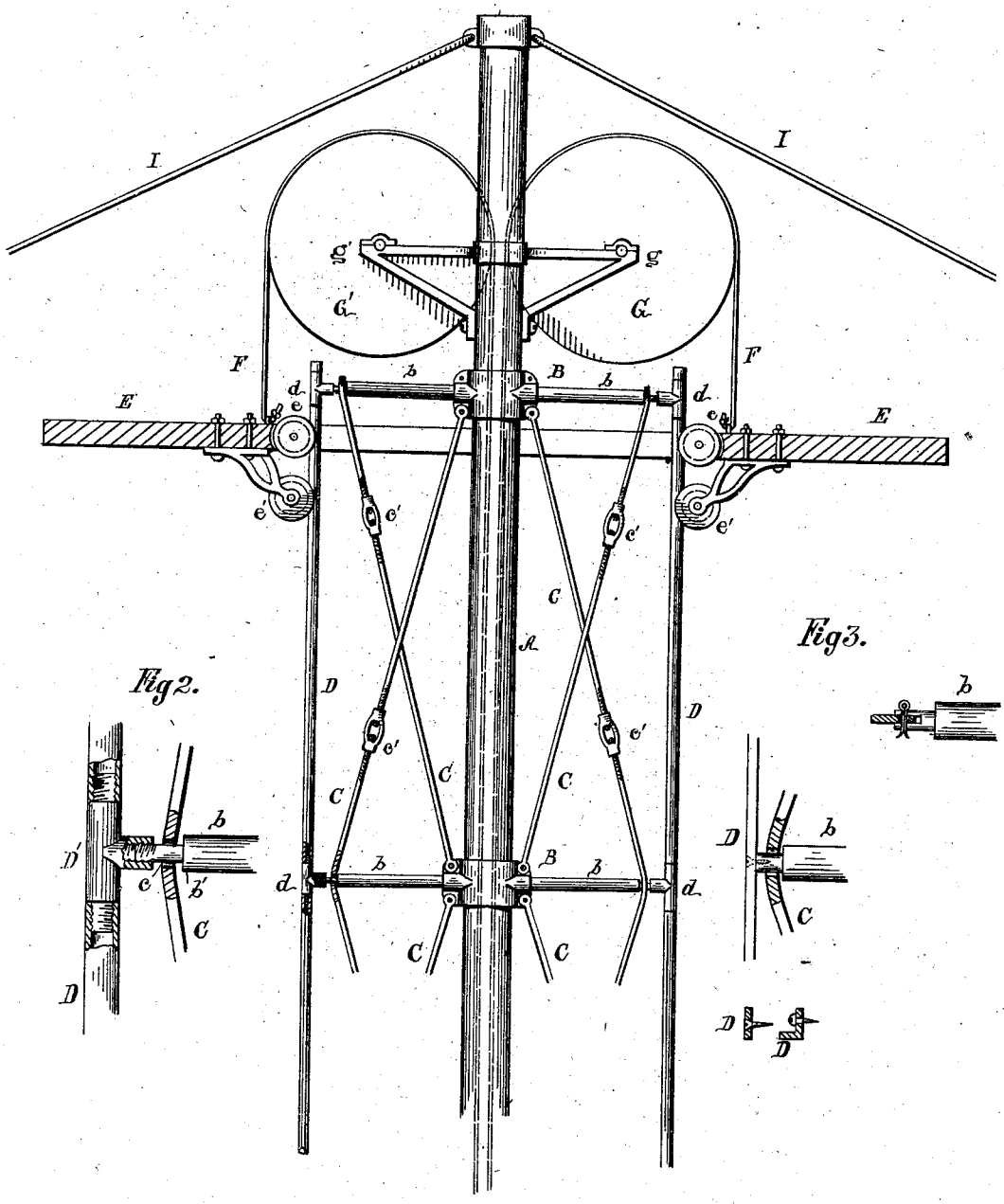


Fig 2.

Fig 3.

WITNESSES

Samuel E. Thomas.

N. S. Wright.

INVENTOR

Benjamin F. Orton.

By W. W. Feggets.

Attorney.

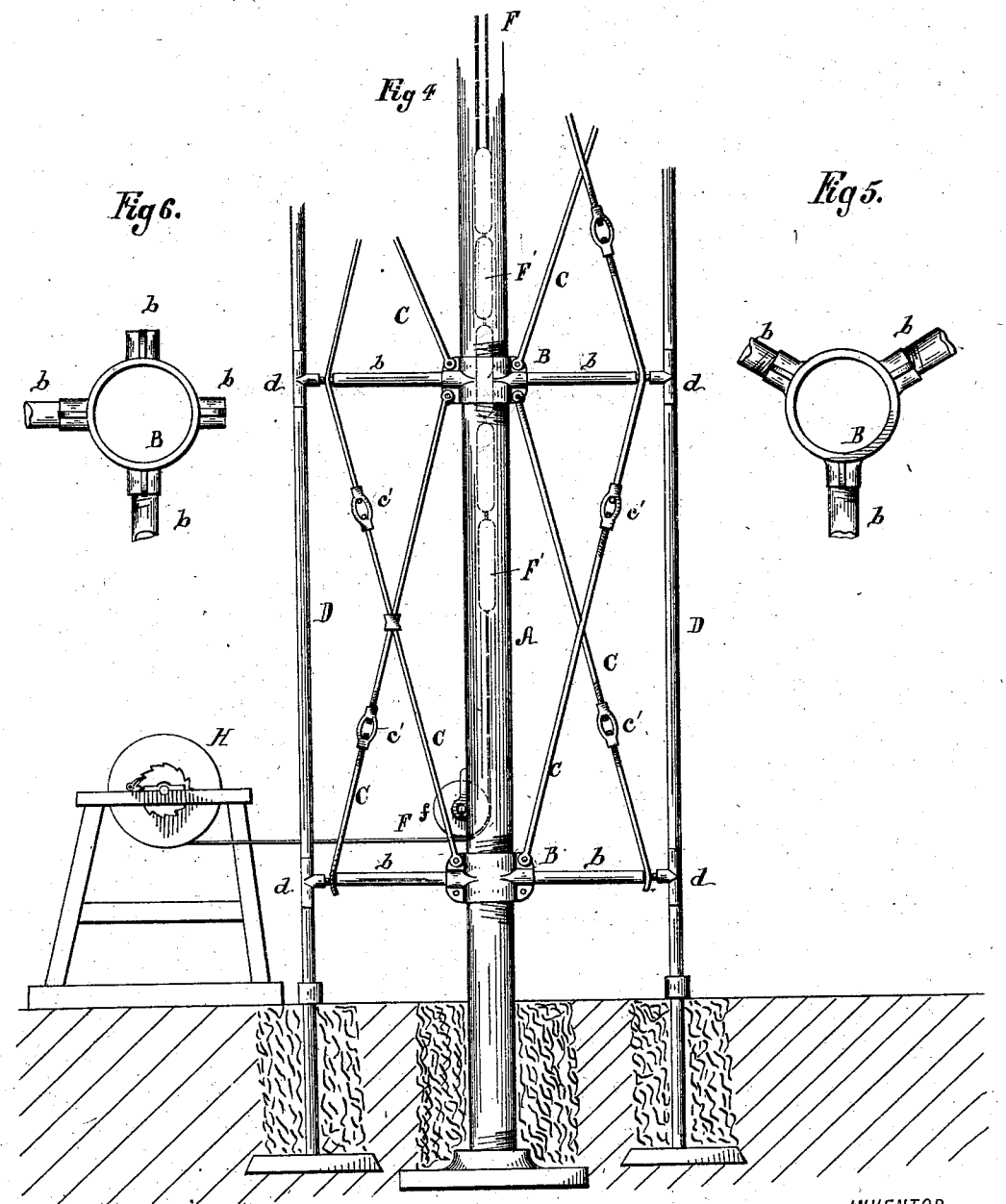
N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

BENJAMIN F. ORTON, OF EAST SAGINAW, MICHIGAN.

TOWER.

SPECIFICATION forming part of Letters Patent No. 290,099, dated December 11, 1883.

Application filed April 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. ORTON, of East Saginaw, county of Saginaw, State of Michigan, have invented a new and useful Improvement in Towers; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in the combination of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of the top of a device embodying my invention, showing parts in section and parts in elevation. Fig. 2 is a separate view of some of the parts. Fig. 3 illustrates variations of the same. Fig. 4 is a side elevation of the bottom of the device. Fig. 5 is a plan view of the spider. Fig. 6 is a variation of the same.

My invention relates to means for elevating electric lights and for other analogous purposes, and has for its object the construction of an improved mast or tower for such purposes which shall be strong, durable, and which may be manufactured and erected at a moderate cost. I accomplish this object as follows:

A represents the body of the mast composed of a series of metallic tubes or pipes of any desired diameter and number. The body of the mast is constructed of the desired height by coupling said tubes or pipes together in any suitable manner.

B represents a series of spiders, provided with arms *b*. These arms may be of any suitable number, preferably either three or four, as shown in Figs. 5 and 6. These spiders are so constructed that they may be suitably clamped about the pipes A in any proper manner; or they may, as shown in the drawings, be in the nature of pipe-joints, into which the adjacent sections of the pipe are secured, and thereby united.

C represents suitable truss-rods, secured over the ends of the spider-arms in any proper manner—as, for instance, by means of loops *c*, intermediate of their extremities, adapted to pass over the ends of said arms and be held in place against suitable shoulders *b'*, as shown more particularly in Fig. 2. I do not, however, confine myself to this specific method of securing the truss-rods upon the outer ends of the spider-arms. The extremities of said truss-rods are secured to the collar of the spider B in any desired manner; or said extremities may be secured upon the body of the mast separate from the collar of the spider, if preferred. By arranging the trusses so that the ends of one series shall terminate at the middle of the next, the body of the mast will be provided with double trusses. I would have it understood, however, that I contemplate either a single or a double set of trusses, as may be desired.

c' represents turn-buckles or any suitable means whereby the trusses may be properly tightened.

D represents perpendicular guide-rods, extending parallel with the body of the mast, and secured in any proper manner to the extremities of the spider-arms *b*, as shown at *d*. This may be readily accomplished, as shown in the drawings, by means of a coupling, D', to which are secured the ends of the spider-arms and the adjacent ends of the guide-rods, as shown more particularly in Fig. 2. I do not, however, confine myself to any precise method of securing the guide-rods to the extremities of the spider-arms, for it is evident that the guide-rods may be tubular, as shown in Fig. 2; or they may be constructed of metal bars, as shown in Fig. 3, either straight or angular, and may be secured to the end of the spider-arms by a screw, or by a key, or by any other desired means.

E is a carriage which supports the lights provided with suitable rollers, *e* and *e'*, secured thereto and adapted to travel up and down upon the guide-rods D. The carriage is suspended by cables F, passing over rollers G and G', located at the top of the mast, and provided with any supports, *g* and *g'*, in which said rollers have their bearings, the construction being such that the cables may pass down into the interior of the hollow body of the mast A. I prefer that the cables should be connected with weights F', said weights being so constructed and shaped as to have free play

to ascend and descend within the body of the mast. I prefer to link a series of weights together, as shown in Fig. 4, in sufficient numbers to suitably counterbalance the weight of the carriage E and the lamps which may be secured thereto, the cable F being connected at the bottom of said weights, extending downward to the desired point over a suitable pulley, *f*, and adapted to be wound upon a drum or cylinder, H.

I represents guy-rods of any desired number secured at the top of the mast. It is evident that the guides D give additional support to the mast as well as the trusses, and also afford a track for the carriage E.

It is obvious that the body of the mast and the guide-rods and the spider-arms may all be constructed of gas-piping or other suitable tubing, in which case it will be convenient for the hub or collar of the spider to form the coupling of the joints composing the body of the mast, the spider-arms also being secured therein. I do not, however, confine myself to the use of said piping or tubing for the guide-rods and spider-arms, as they may be solid, if preferred.

What I claim is—

1. A tower consisting of a mast constructed of a series of pipes properly coupled together, a series of spiders secured at proper intervals upon said mast, provided with radial arms, trusses extending over the outer ends of said arms and secured at their extremities upon the mast, and in combination therewith guide-rods parallel with the mast, secured to the outer extremities of the spider-arms, substantially as described.

2. A tower consisting of a mast constructed of a series of pipes properly coupled together, a series of spiders secured at proper intervals upon said mast, provided with radial arms, trusses extending over the outer ends of said arms and secured at their extremities upon the mast, suitable guys for steadying the mast, and in combination therewith guide-rods extending parallel with the mast, secured to the outer extremities of the spider-arms and adapted for a carriage to ascend and descend thereon, substantially as described.

3. A tower consisting of a mast, constructed of a series of pipes properly coupled together, a series of spiders secured at proper intervals upon said mast, provided with radial arms, trusses extending over the outer ends of said arms and secured at their extremities upon the mast, guide-rods parallel with the mast, secured to the outer extremities of the spider-arms, and in connection therewith a lamp-carriage adapted to be hoisted and lowered by suitable mechanism, substantially as described.

4. The combination, with a mast constructed of pipes suitably coupled together, provided with spiders and truss-rods, of guides parallel with the mast, secured to the outer extremities of the arms of the spiders, and a lamp-carriage adapted to be hoisted and lowered upon said guides by suitable mechanism, the weight of said carriage being suitably counterbalanced by weights adapted to descend and ascend within the mast, substantially as and in the manner described.

5. The combination, with a mast constructed of pipes suitably coupled together, provided with spiders, truss-rods, and perpendicular guides secured to the outer extremities of the spider-arms, of a carriage adapted to be hoisted and lowered over and upon said guides, said carriage supported by cables which extend over suitable pulleys located at the top of the mast, and connected with counterbalancing-weights within the mast, said weights connected by a cable to a drum at the bottom of the mast, by means of which the carriage may be raised and lowered, substantially as described.

6. A tower consisting of a mast constructed of a series of pipes properly coupled together, a series of spiders secured at proper intervals upon said mast, provided with radial arms, double trusses secured at their extremities to suitable couplings upon the mast and passing over the arms of said spiders, and in combination therewith perpendicular guides secured to the said spider-arms, and a lamp-carriage adapted to be hoisted and lowered upon said guides, and mechanism adapted to raise and lower said carriage, substantially as described.

7. The combination, with a tower consisting of a mast constructed as herein described, and provided with spiders, trusses, and perpendicular guides, of pulleys located at the top of the mast, a carriage suspended by cables extending over said pulleys, and connected with counterbalancing-weights within the mast, and mechanism whereby the carriage may be raised and lowered, said carriage being provided with pulleys adapted to travel upon the guides, substantially as described.

8. In a tower, the combination, with a mast constructed of a series of pipes properly coupled together, of a series of spiders secured at proper intervals upon said mast, and provided with radial arms, and in connection therewith guide-rods extending parallel with the mast, said rods secured to the outer extremities of the spider-arms by means of a connecting-joint, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

BENJAMIN F. ORTON.

Witnesses:
N. S. WRIGHT,
SAMUEL E. THOMAS.