

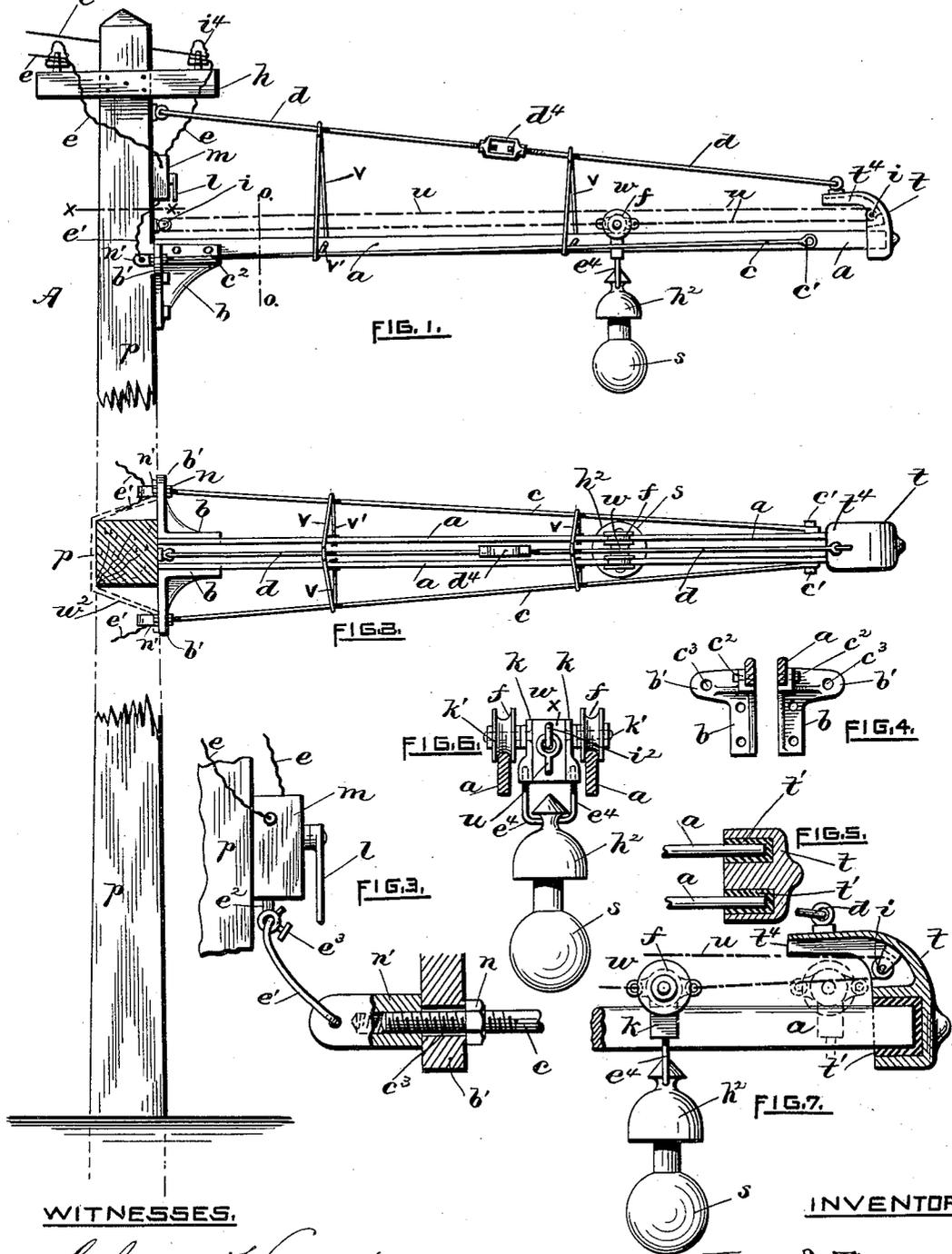
(No Model.)

2 Sheets—Sheet 1.

V. A. THOMAS.
MAST ARM FOR ELECTRIC LIGHTS.

No. 463,586.

Patented Nov. 17, 1891.



WITNESSES.

Charles Hannigan.

Charles W. Boardman.

INVENTOR

Van A. Thomas

By Remington & Henthorn
Attys

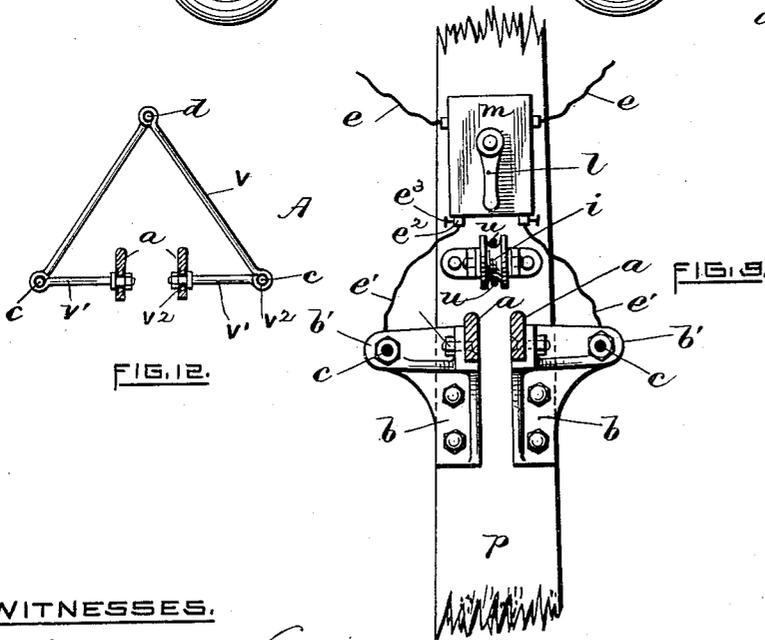
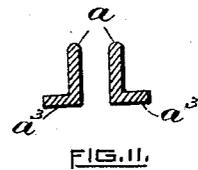
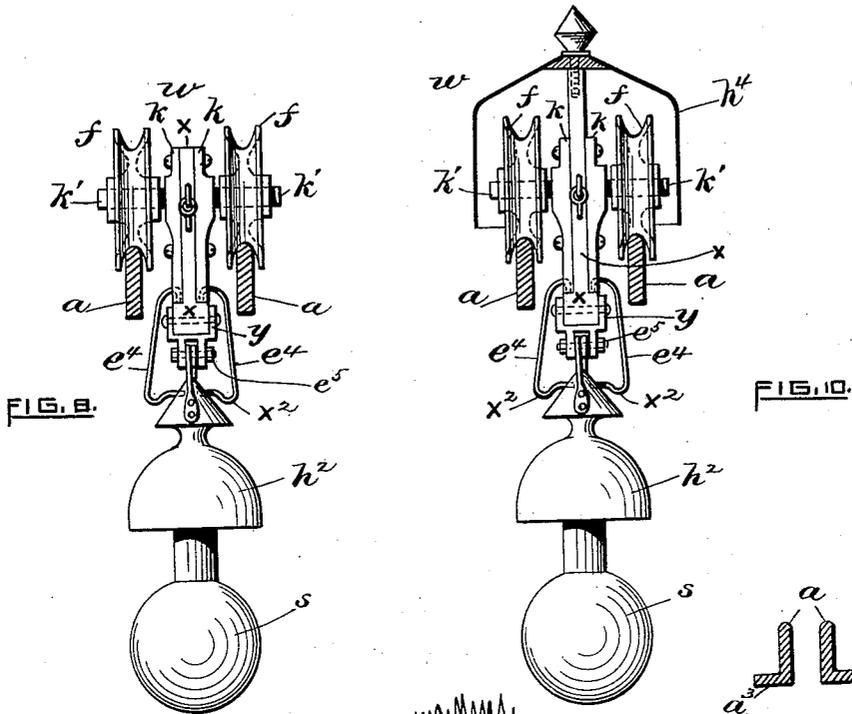
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UNITED STATES PATENT OFFICE.

VAN A. THOMAS, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF
TO ANDREW D. ROSS, OF SAME PLACE.

MAST-ARM FOR ELECTRIC LIGHTS.

SPECIFICATION forming part of Letters Patent No. 463,586, dated November 17, 1891.

Application filed October 6, 1890. Serial No. 367,189. (No model.)

To all whom it may concern:

Be it known that I, VAN A. THOMAS, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in a Combined Mast-Arm and Conductor for Electric Lamps; and I do hereby 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

In the construction and arrangement of mast-arms adapted to carry electric lamps it has been usual heretofore to conduct the electric current to such lamps by means of insulated flexible conductors. Sometimes, however, the current is conducted from a live or charged track to the lamp, the latter being mounted on a carriage arranged to travel back and forth upon the track, yet at the same time being insulated from it.

The object I have in view is to provide a mast-arm with improved means for electrically connecting arc lamps supported thereon.

To that end my invention consists, essentially, in the combination of a current-conducting double track insulated from the pole and supporting-braces and a movable lamp-carrying trolley or carriage mounted on the track and in direct electrical connection therewith, all as will be more fully hereinafter set forth and claimed.

In the accompanying two sheets of drawings, Figure 1 is a side elevation of a mounted mast-arm embodying my improvement. Fig. 2 is a horizontal sectional view taken on line x of Fig. 1. Fig. 3 is an enlarged side view in partial section, showing a manner of connecting the conductor and cut-out box. Fig. 4 is a transverse sectional view taken on line o of Fig. 1. Fig. 5 is a horizontal sectional view showing the manner of mounting and insulating the outer end of the mast-arm or track. Fig. 6 is an enlarged transverse sectional view showing the manner of mounting, supporting, and electrically connecting the lamp. Fig. 7 is an enlarged side elevation, in partial section, of the lamp and outer

portion of the mast-arm. Fig. 8, Sheet 2, is a transverse sectional view of the track enlarged, showing a preferable manner of suspending the lamp from the mast-arm. Fig. 9 is an enlarged cross-sectional view taken, say, on line $a a$ of Fig. 1, showing the relation of the cut-out box to the track, &c. Fig. 10 is a sectional view similar to Fig. 8, the trolley in this case having a protecting-hood attached thereto. Fig. 11 shows, cross-sectionally, a modified form of the track; and Fig. 12 is a transverse sectional view of the track, showing a manner of staying the upper and lateral braces.

A more detailed description of my improved mast-arm, &c., is as follows: The arrangement, as a whole, is indicated by A. The mast-arm itself is secured to a pole p , the latter being provided at its upper end with a cross-bar h , having insulators which carry the main conductors or live wires e , as common.

The mast-arm consists of two supported and braced tracks $a a$, of iron or other suitable conducting material. I preferably arrange the tracks or bars a edgewise and parallel with but insulated from each other, the upper edges as drawn being well rounded. The inner end of each track is secured by bolts c^2 to a metal bracket b , which in turn is secured to the pole p . The other or outer ends of the track are supported in insulated or porcelain-lined pockets t' , formed in a metal cap t , the rear portion of which is extended, as at t^4 , so as to form a guard or shield for the trolley, about to be described. I would state that in lieu of the track represented by Figs. 4, 6, 8, 9, &c., the one shown in Fig. 11 may be employed. This latter may be made of wrought-iron rolled into an L form or "angle-iron." By means of such construction the lower member a^3 serves to greatly stiffen the track in a lateral direction. Obviously other forms may be substituted without departing from the spirit of the invention. In fact, the track shown by Fig. 11 may be inverted, the flange or rim of the trolley-wheels being modified accordingly. An upper tension-brace d is secured to the said cap t and pole p , substantially as shown by Fig. 1, thereby supporting the outer end of the mast-arm, &c. If desired, a screw-threaded turn-buckle d^4 may be em-

ployed to effect a longitudinal adjustment of the brace.

The trolley or carriage for carrying the lamp *s* is designated by *w*, Figs. 6, 8, &c. The trolley is provided with two small flanged wheels *f*, grooved to run upon the tracks *a*. The wheels are mounted on axles *k'*, secured to downwardly-extending side pieces *k*. These latter, as well as the axles and wheels, are made of suitable material, as brass, iron, &c., and serve as conductors for the electric current. Practically I prefer to make the flanges of the wheels quite large, as shown in Figs. 8 and 10. The side frames *k* are separated from each other laterally by a block *x* of insulating material, as vulcanite. The lower ends of the frames *k* are provided each with a lamp-supporting conductor *e'*, which pass into the hood *h*² and electrically connect, as common, with the lamp's mechanism. The trolley *w* is propelled back and forth upon the track by a cord *u*, passing over sheaves *i*, secured to the cap *t* and pole *p*, the ends of the cord being attached to staples *v*², secured to the block *x*. In Figs. 8 and 10 the lamp is mounted to swing or vibrate upon a bolt *e*⁵, passing through a yoke *y*, secured to the lower portion of the insulating-block *x*, thereby relieving the conductors *e'* from strain or pressure. At the same time the latter may be provided at its lower side with an offset or bend *x*², which in a measure acts to prevent the passage of water into the hood mechanism.

It will be seen that the brackets *b* are provided each with a lateral extension *b'*, having a hole *c*³ passing through it transversely to freely receive a lateral or wind brace *c*. These latter braces are made of suitable metal, as brass, iron, &c., and also serve as conductors of electricity. The brace is screwed into an elongated nut *n'*, (see Fig. 3,) preferably square in cross-section. An adjusting-nut *n* may also be used. The front ends of the conductor-braces *c* are secured to the corresponding ends of the adjacent tracks *a* by bolts *e'* or in any other suitable manner. In some cases the extensions *b'* of the brackets may be still further stiffened by a wrought-iron brace *w*², secured to the post, the ends being bent, insulated, and drilled to receive the rods *c* and held in place by said nuts *n'*, as shown by dotted lines, Fig. 2. It is not necessary that the arms *b'* be integral with the brackets as drawn, as obviously they may be independently secured to the post or other adjacent surface.

Intermediate of the cross-bar *h* and conductors *c* is located a cut-out box *m*, secured to the post *p*. This box may, however, be as usually constructed. The live wire or conductor *e* passes into the box and thence out at the bottom at *e*², Fig. 3. By means of a short wire *e'*, secured to the nut *n'*, and also to the box by a binding-screw *e*³, the current passes to the respective nut, brace *c*, bracket *b*, and track *a*, all being in circuit, but insu-

lated from the other track, brace, &c. The lateral or wind braces *c* are steadied by means of angle-braces *v*, which latter also connect with the upper rod *d*. The tracks are prevented from lateral vibration by short struts or spreaders *v'*. These are insulated by suitable material, as vulcanite, at *v*² from the track. In like manner they are also insulated from the rods *c*. (See Fig. 12.) By this arrangement it is obvious that the current is prevented from passing from one side to the other *via* the braces *v*.

Now, assuming that an electric lamp *s* is mounted upon my improved mast-arm, the operation of the device would be substantially as follows: The "trimmer" upon reaching the upper portion of the pole *p* first cuts out the current from the lamp, &c., by means of the lever *l*, attached to the cut-out box *m*, thereby causing the current to pass directly through the box, or he may first by means of the cord *u* draw the lamp within a convenient working distance and then shunt the current from the carbons by means of the switch-lever commonly present in lamps of this class. He next trims the lamp, as usual, then reverses the switch-lever and runs the lamp out, say, to the end of the track, (see dotted lines, Fig. 7,) the trolley, &c., then being protected from the weather by the hood or extension *t*. It is, however, much safer and better to first cut out the track, &c., by the lever *l*, as before stated, as then all the parts can be handled and operated without danger. In such cases the track and connected parts will not be "in circuit" during the day-time, the attendant being able to control the current at all times by simply moving the lever *l* of the cut-out box. From the foregoing it will be apparent that upon opening the circuit by a corresponding movement of the lever *l* the current passes along the live wire *e* into the box *m*, thence out at the bottom of the box and to the nut *n'*, thereby charging the same side of the mast-arm. The current now flows into the lamp *s* through the medium of the corresponding wheel *f*, resting upon its charged track *a*, and conductors *k e'*, and across the arc separating the carbons, and thence from the lower carbon the current passes upwardly through the lamp, as usual, and along the conductors, &c., of the other side of the mechanism or mast-arm, the current finally passing into the lower side of the cut-out box and out at the top, where it communicates with the return-wire *e*, thus completing the circuit. It will be seen that the braces *v*, *v'*, and *d*, and also the cap *t*, are at all times completely insulated from the other portions of the apparatus. It is further obvious that the current passes from the track into the lamp irrespective of its location upon the track.

In order to protect the trolley *w* in cases where the position of the lamp upon the mast-arm may be varied or not carried out to the extreme end of the arm, I preferably employ

a hood or guard h^1 , which is secured to the trolley or carriage itself, as clearly shown by Fig. 10.

I claim as my invention—

5 1. The combination, with a mounted mast-arm provided with parallel tracks insulated from each other and electrically connected with the poles of an electric-lighting circuit, of lateral braces, and angle-braces connect-
10 ing and steadying said lateral braces, substantially as specified.

2. The combination, with a mounted mast-arm provided with parallel tracks insulated from each other and electrically connected
15 with the poles of an electric-lighting circuit, of lateral braces, angle-braces connecting and steadying said lateral braces, and spreaders for laterally bracing the tracks, as set forth.

3. The combination, with a mounted mast-
20 arm provided with parallel tracks insulated from each other and electrically connected, as set forth, of lateral braces, angle-braces for steadying the same, and spreaders for laterally bracing the tracks and insulated from
25 the tracks and from the lateral braces and connected thereto, as set forth.

4. The combination, with a mounted mast-arm provided with parallel tracks insulated from each other and electrically connected with the poles of an electric-lighting circuit, of a lamp adapted to travel on said tracks, lateral braces, and angle-braces connecting and
30 steadying said lateral braces, substantially as specified.

5. The combination, with a mounted mast-
35 arm provided with parallel tracks insulated from each other and electrically connected with the poles of an electric-lighting circuit, of a lamp adapted to travel on said tracks by means of a trolley, mechanism for moving
40 the trolley, lateral braces, and angle-braces connecting and steadying said lateral braces, substantially as specified.

In testimony whereof I have affixed my signature in presence of two witnesses.

VAN A. THOMAS.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.