No. 611,766. Patented Oct. 4, 1898.

J. BORKA.

DEVICE FOR SUSPENDING ARC LAMPS.

(Application filed Mar. 4, 1898.)

(No Model.) 2 Sheets—Sheet 1.

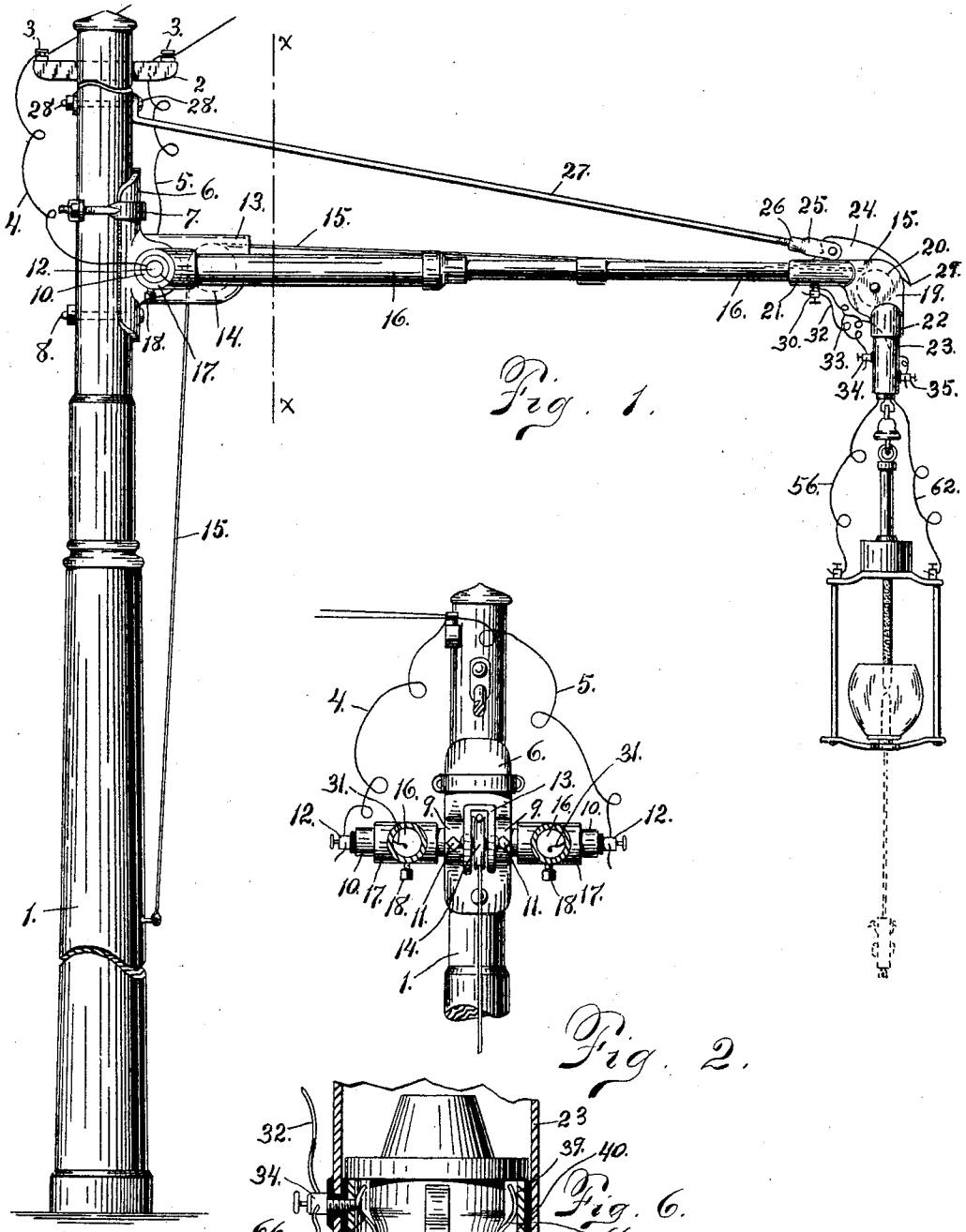


Fig. 1.

Fig. 2.

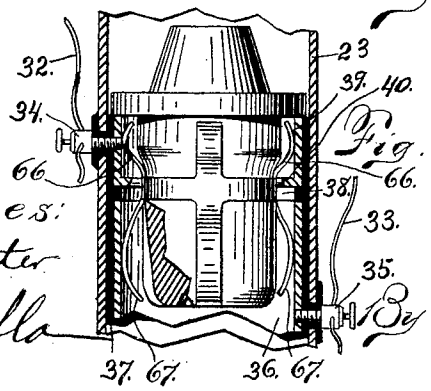


Fig. 6.

Witnesses:
C. Butler
W. F. Schiffler

Inventor:
Joseph Borka
W. T. Miller
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 611,766. Patented Oct. 4, 1898.

J. BORKA.

DEVICE FOR SUSPENDING ARC LAMPS.

(Application filed Mar. 4, 1898.)

(No Model.) 2 Sheets—Sheet 2.

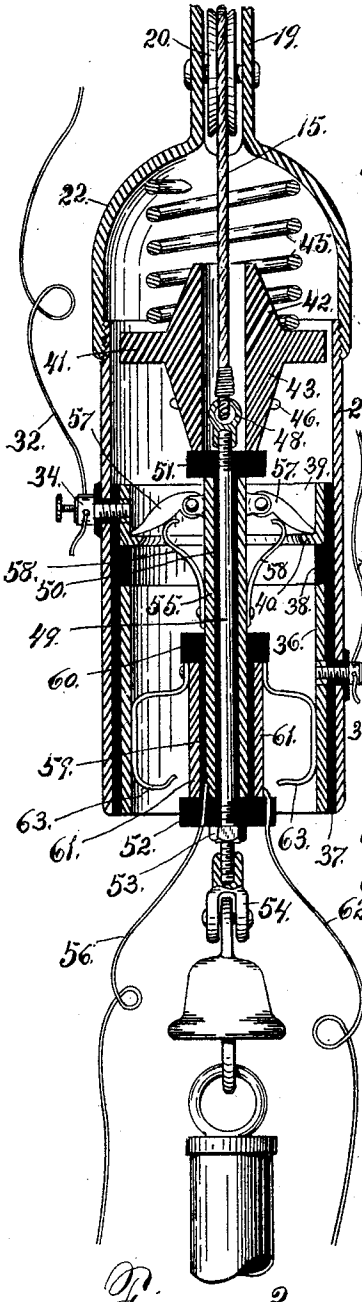


Fig. 3.

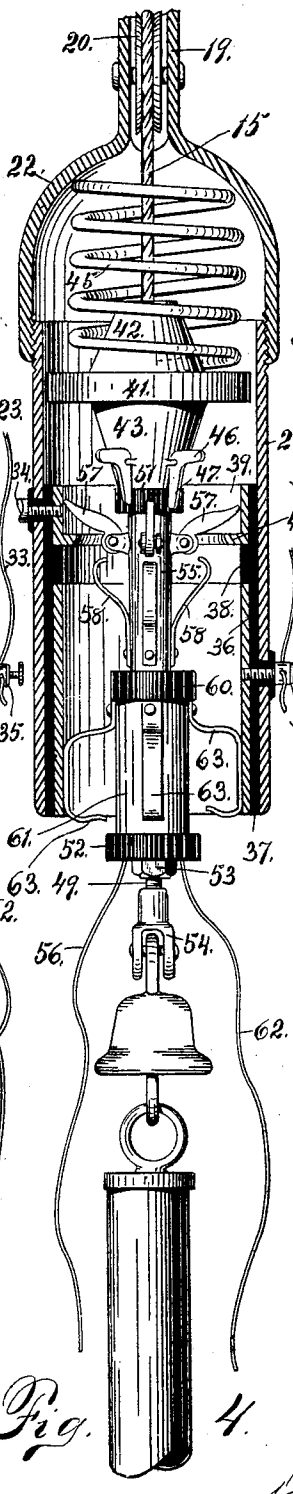


Fig. 4.

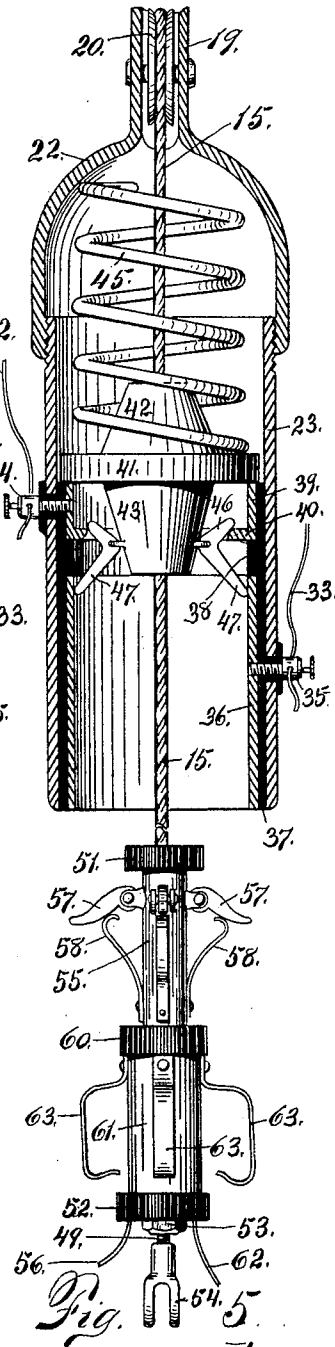


Fig. 5.

Witnesses:
A. Butter
W. F. Schiffler

Inventor:
Joseph Borka
By W. T. Miller
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH BORKA, OF BUFFALO, NEW YORK.

DEVICE FOR SUSPENDING ARC-LAMPS.

SPECIFICATION forming part of Letters Patent No. 611,766, dated October 4, 1898.

Application filed March 4, 1898. Serial No. 672,544. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BORKA, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Devices for Suspending 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 figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in electric-lamp poles and their attachments, its objects being, first, to provide an improved removable suspending arm of tubular construction, and, second, to provide improved means for holding the electric lamp in operative position, whereby when the lamp is in such position the current passes through the lamp and when it is disengaged to be lowered it is cut out of the circuit without breaking the same.

To these ends my invention consists of certain constructions and combinations of devices, all of which will be fully hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the pole with my attached improvements. Fig. 2 is a vertical section taken in the line *x x* of Fig. 1. Fig. 3 is a central vertical section of my improved means for holding the lamp in operative position and showing the lamp in full engagement therewith. Fig. 4 is a similar view showing the lamp partially disengaged. Fig. 5 is a similar view showing the lamp fully disengaged and cut out of the circuit, and Fig. 6 shows a modified detail.

Referring to the drawings, 1 is the pole, having at its top the cross-arm 2, carrying the insulators 3 3, to which are attached the wires 4 and 5 of the electric circuit.

6 is an elongated curved plate which rests against the side of the pole 1 near its upper end and is removably secured thereto by the upper screw-yoke 7 and the lower bolt 8, which passes through the plate 6 and pole 1.

9 9 are two cylindrical sockets integral with plate 6, adapted for the reception of the cylindrical rod 10, rigidly but removably secured therein by the binding-screws 11 11. In the outer ends of this rod 10 are secured the insulated binding-posts 12 12, to which are secured the circuit-wires 4 and 5.

Between the sockets 9 9 and extending out beyond the same is the casing 13, integral with plate 6. In the forward end of this casing is journaled the pulley 14, over which passes the cord 15, employed for raising and lowering the lamp. 16 16 are two tubular arms carrying at their inner ends the short open sockets 17 17, adapted to slide upon the rod 10 just beyond and outside of its sockets 9 9. The binding-screws 18 18 hold the sockets 17 17 in position upon the rod 10.

The tubular arms 16 can be of uniform size throughout their length or they can be constructed in sections decreasing in diameter, as shown in Fig. 1, in order to decrease their weight.

19 is a hollow frame within which is journaled a pulley 20, (shown in dotted lines in Fig. 1,) over which passes the cord 15, to which the lamp is secured. This frame 19 carries two integral sockets 21, adapted for the screw-threaded reception of the outer ends of the arms 16 16. In the lower end of the frame 19 is the socket 22, adapted for the screw-threaded reception of the outer tubular shell 23 of the lamp-engaging device, to be more fully hereinafter described.

Across the top of the frame 19 extends the plate 24, to the inner end of which is pivoted the yoke 25, carrying the socket 26, adapted for the screw-threaded reception of the tie-rod 27 for holding the arms 16 16 in a horizontal position, as shown in Fig. 1. The inner end of this tie-rod 27 is removably secured to the pole 1 by the securing-bolt 28. The outer end of plate 24 is formed into a projecting lug 29 to assist in raising the arms 16 16 and their attachments to their permanent position in the following manner: The loop or ring at the end of a rope is engaged with the lug 29 and the rope thrown over the cross-arm 2. By pulling down on this rope the frame 19 and arms 16 16 are raised to the position shown in Fig. 1, after which the tie-rod 27 is bolted to the pole 1, thus rigidly securing the parts in permanent position.

On the lower side of each socket is secured an insulated binding-post 30. These bind-

ing-posts 30 are electrically connected with the binding-posts 12 12 on the rod 10 by insulated wires 31, (see Fig. 2,) which pass through the tubular arms 16 16. The wires 32 and 33 connect the binding-posts 30 with the binding-posts 34 and 35, secured in insulated bearings in the outer shell 23 of the lamp-engaging device. The lamp-supported apparatus just described is, as will be seen, of a comparatively light construction yet sufficiently rigid for all possible requirements. It is adapted for quick and easy assembling of parts and, what is most desirable, can be attached to any-sized wood pole. It can be quickly secured to the pole after its parts are assembled, and the longest wires between the main line and the lamp are protected by being passed along the interior of the supporting-arms.

I will now minutely describe the apparatus for throwing the lamp in and out of the circuit as it is raised into operative position or lowered for the insertion of fresh carbons.

Within the lower half of the outer metallic shell 23 is secured the metal shell or cylinder 36. Interposed between this shell or cylinder 36 and the outer shell 23 is the insulating-cylinder 37, preferably of hard rubber. The binding-post 35 passes through the insulating-cylinder 37 and is in screw-threaded engagement with the inner metal cylinder 36, thus electrically connecting it with the wire 33. The insulating-cylinder 37 extends up beyond the inner metal cylinder 36 and is provided with an inner annular flange or shelf 38. Within the upper part of the insulating-chamber 37 and resting upon the annular shelf 38 is the short metal shell or cylinder 39, provided at its lower end with the narrow annular flange 40. The short metal shell or cylinder 39 receives the insulated binding-post 34 in screw-threaded engagement, thus electrically connecting it with the wire 32. Within the shell 23 and socket 22 is a plunger consisting of the guiding-flange 41, the upper tapering portion 42, and the lower tapering portion 43. A central vertical orifice 44 is provided therein for the loose passage of the cord 15. Interposed between the guiding-flange 41 of the plunger and the roof of the socket 22 is the spiral spring 45, which exerts a downward pressure upon the plunger. Pivoted to the lower tapering portion 43 of the plunger upon its side wall are the angular metal connectors, preferably four in number, consisting of the short upper arms 46 and the long lower arms 47.

The end of the cord 15 is secured to a ring 48, (see Fig. 3,) having a socket for the screw-threaded reception of a metal rod 49, which rests within a hard-rubber insulating-tube 50, having a thick upper annular flange 51 and a similar lower annular flange 52. The rod 49 is removably secured within the hard-rubber tube 50 by the nut 53, which is in screw-threaded engagement with the lower end of the rod, to which is removably secured the yoke 54, from which the lamp is pivotally suspended. Surrounding the rubber tube 50 and resting between its upper and lower flanges 51 and 52 is the metal tube or conductor 55, which is electrically connected with the lamp by the wire 56.

To the upper end of the metal tube or conductor 55 are pivoted the metal locking-arms 57, preferably four in number, each provided with a leaf-spring 58, secured beneath them to the metal tube 55. Surrounding the lower end of the metal tube 55 is the hard-rubber insulating-tube 59, its lower end having contact with the hard-rubber flange 52 and its upper end being provided with a thick annular flange 60. Between this flange 60 and the flange 52 and surrounding the hard-rubber tube 59 is the metal tube or conductor 61, which is electrically connected to the lamp by the wire 62. Around the upper end of the metal tube or conductor are secured the bent leaf-springs 63, which have contact, as shown, with the inner surface of the metal tube 36.

The operation of my improved apparatus just described is as follows: As shown in Fig. 3, the parts are in operative position, the lamp being in the circuit. The plunger 41 42 43, through the medium of the spring 45, is exerting a downward pressure upon the rubber flange 51 and metal rod 49. The position of the pivoted locking-arms 57, resting against the inner wall of the metal tube 39 and the upper surface of its annular flange 40, prevents the downward movement of the lamp, as the length of the locking-arms 57 is too great to permit of their further upward swing while held in such position by the downward pressure of the plunger. In this locked position as just described the current from wire 32 passes through the binding-post 34 to the metal cylinder 39, then through the locking-arms 57 to the metal tube 55, and then through the connected wire 56 into the lamp. The current from wire 33 passes through the binding-post 35 to the inner metal cylinder 36, then through the contacting-springs 63 to the metal tube 61, and then through the connected wire 62 to the lamp, thus completing the circuit through the lamp. When it is desired to disconnect the lamp to lower the same, a short upward pull on the rod 49 through the attached cord 15 and against the spring-pressure of the plunger is necessary to carry the locking-arms 57 away from engagement with the metal cylinder 39. As soon as they are clear of the top of the metal cylinder 39 the plunger is allowed to exert its downward pressure upon the rod 49 and its attached parts to disengage the lamp. The released arms 57 being now permitted to swing inwardly can easily pass the annular flange 40 on the metal cylinder 39 in their descent, as shown in Fig. 4, and when the plunger strikes the upper end of the hard-rubber insulating-cylinder 37, as shown in Fig. 5, the springs 63 have been forced out of contact with the inner metal cylinder 36, when the lamp is free

to be lowered. The releasing of parts just described necessarily breaks the circuit, which is instantly restored by means of the angular connectors, the upper short arms 46 of which have contact with the annular flange 40 of the cylinder 39 and the lower long arms 47 have contact with the lower inner metal cylinder 36, the current now passing from wire 32 through binding-post 34 to cylinder 39, then through the pivoted metal connectors 46 47 to cylinder 36, then through connected binding-post 35 to the wire 33, thus completing the circuit from which the lamp has just been cut out. By raising the lamp the parts are again quickly reëngaged and locked, as shown in Fig. 3.

In Fig. 6 I have shown a modified form of plunger in which I have substituted for the pivoted metal connectors 46 47 the series of metal leaf-springs consisting of the upper curved arms 66, having contact with the metal cylinder 39, and the lower curved arms 67, having contact with the metal cylinder 36, the function of these springs being identical with that of the connectors 46 47.

I claim—

1. A device for suspending an electric lamp from a pole consisting of a plate removably secured to the pole, sockets integral with the plate, a cylindrical rod removably secured in such sockets, a pair of tubular supporting-arms journaled upon the cylindrical rod outside of its sockets, a casing integral with the plate and between the sockets, a pulley journaled in such casing, a frame in which the outer ends of the tubular supporting-arms are connected, a pulley in such frame a tie-rod secured at one end to such frame and removably secured at its other end to the pole and a cord passing over both pulleys for operating the suspended lamp all combined and operating substantially as stated.

2. A device for suspending an electric lamp, from a pole consisting of a plate removably secured to the pole, sockets integral with the plate, a cylindrical rod removably secured in such sockets, a pair of tubular supporting-arms journaled upon the cylindrical rod outside of its sockets, a casing integral with the plate and between the sockets, a pulley journaled in such casing, a frame in which the outer ends of the tubular supporting-arms are connected, a projecting lug integral with the frame, a pulley in such frame, a tie-rod secured at one end to such frame and removably secured at its other end to the pole and a cord passing over both pulleys for operating the suspended lamp, all combined and operating substantially as stated.

3. In a device for suspending electric lamps from a pole, an apparatus for engaging and locking the lamp and for disengaging and cutting the lamp out of the circuit and restoring the broken circuit consisting of an outer metal shell attached to the suspending-frame, two inner metal shells insulated from the outer shell and from each other and electrically connected to the wires of the circuit, a spring-pressed plunger provided with means for restoring the broken circuit through the two inner shells, and two insulated metal conductors secured to the movable suspending-cord of the lamp and electrically connected to the circuit-wires of the lamp, one of these conductors having attached means for locking and electric contact with one of the inner shells, the other conductor being provided with means for electrically connecting it with the remaining inner shell when the parts are in locked position all combined and operating substantially as stated.

4. In a device for suspending electric lamps from a pole, an apparatus for engaging and locking the lamp and for disengaging and cutting the lamp out of the circuit and restoring the broken circuit consisting of the following instrumentalities viz: an outer metal cylindrical shell secured in a socket in the suspending-frame, a long inner metal cylinder insulated from the outer shell and electrically connected with one of the wires of the circuit, a short inner metal cylinder provided with a lower annular flange and insulated from the outer shell and from the long inner metal cylinder and electrically connected with the other wire of the circuit, a spring-pressed plunger within the outer shell carrying metal connectors for contact with the two inner metal cylinders for restoring the broken circuit, a metal rod secured to the suspending-cord and to the lamp an insulating-tube surrounding such rod and having upper and lower annular shoulders, a metal tube surrounding the insulating-tube between its upper and lower annular shoulders and electrically connected to the lamp a set of metal arms pivoted to such metal tube for locking engagement with the short flanged inner metal cylinder, springs secured to the metal tube for action against the locking-arms, a second insulating-tube surrounding the lower half of metal tube, and provided with an upper annular shoulder, a second metal tube surrounding the second insulating-tube between its upper flange and the lower flange of the first insulating-tube, the second metal tube being electrically connected with the lamp and bent leaf-springs secured to the second metal tube and having contact with the long inner metal cylinder, all combined and operating substantially as stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH BORKA.

Witnesses:
W. T. MILLER,
C. B. BUTLER.