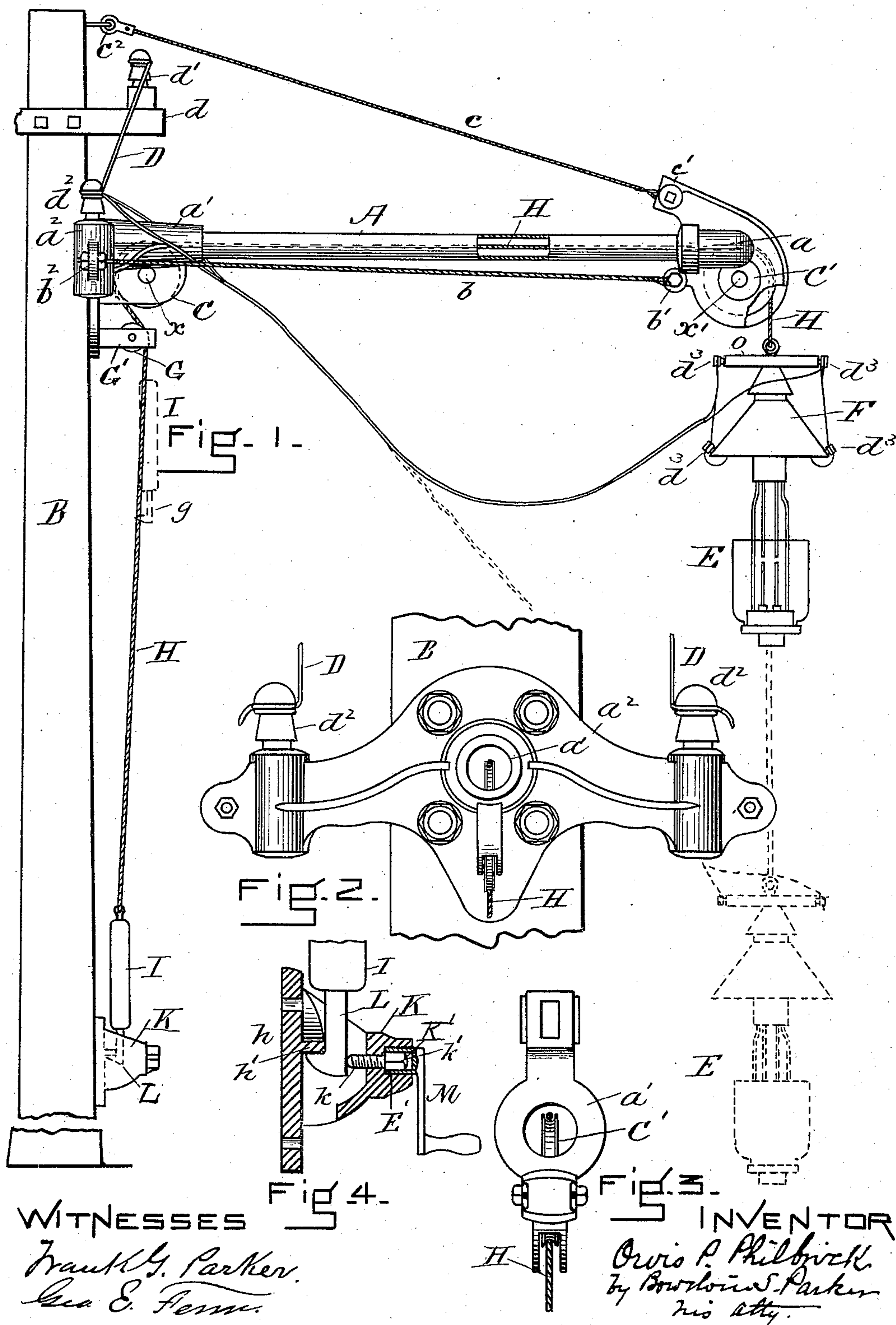


2 Sheets—Sheet 1.

No. 576,058.

Patented Jan. 26, 1897.



2 Sheets—Sheet 2.

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Patented Jan. 26, 1897.



WITNESSES

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INVENTOR

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his atty.

UNITED STATES PATENT OFFICE.

ORVIS P. PHILBRICK, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR OF
THREE-FOURTHS TO ORSON S. PHILBRICK, OF SAME PLACE.

MAST-ARM AND ATTACHMENT THERETO.

SPECIFICATION forming part of Letters Patent No. 576,058, dated January 26, 1897.

Application filed January 22, 1894. Serial No. 497,604. (No model.)

To all whom it may concern:

Be it known that I, ORVIS P. PHILBRICK, of Somerville, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Mast-Arms and Attachments Thereto, of which the following, taken in connection with the accompanying drawings, is a specification.

In the drawings like letters of reference indicate corresponding parts.

My present invention relates to mast-arms employed in the use of electric-arc lights for street-lighting and similar purposes.

The principal objects of my invention are to provide a suitable support for the lamp; to enable the lamp to be readily lowered to or near the ground for purposes of adjusting or replacing the carbons, repairing the lamp and its parts, &c.; to provide a simple connection of the feed-wires from the main circuit to the lamp; to enable the lamp to be lowered and again raised to its position without breaking the connection of the lamp with the feed-wires, and to provide suitable means for automatically removing ice or snow from the rope supporting the lamp and a free movement of the mechanism by which the adjusting devices are operated; also, suitable means for securing the parts in position and a locking device for preventing persons from improperly disengaging the parts and lowering the lamp, and an intermediate insulator between the lamp and rope supporting the same.

In the drawings, Figure 1 represents a side view of the arm and connecting devices. Fig. 2 is a front view of the pole-plate with insulator arms and holders. Fig. 3 is a front view of the cap-piece to arm A. Fig. 4 is a sectional view of the securing and locking device. Fig. 5 represents the intermediate insulator. Fig. 6 is a modified form of my invention.

A represents the arm proper; B, a post or pole; E, the lamp; F, the lamp-hood, to which the lamp is attached; D, the flexible feed-wires; H, the supporting wire rope; K, the shell or box for holding the locking device L, *k*, and *h'*; M, the crank socket-wrench for operating screw-nut *k* of the locking device;

G, the ice-breaker; C C', pulleys or sheaves for supporting and guiding wire rope H; N, the intermediate insulator.

The arm A is formed of metal, with an opening through its entire length for the passage of the rope H, as shown in the part broken away, Fig. 1. I preferably screw the outer cap A to the end of the arm and socket the other end in the sleeve *a'*, formed, preferably, on pole-plate *a*². (See Fig. 2.) The plate *a*² is bolted or otherwise suitably secured to post D, which post is usually of wood. The arm A may be formed of one piece throughout. The cap part *a* is held in place and the arm supported and steadied by the rods *b c*, the rod *c* being connected with cap *a* by bolt *c'* and to the post B by bolt *c*². The rod *b* is secured to the under side of cap *a* by bolt *b'* and preferably to post-plate *a*², as shown. In the cap part *a* is placed the pulley or sheave C', held by the pin *x'*, on which it revolves. The inner sleeve *a'* slips on the inner end of arm A and is formed to receive the pulley or sheave C, which is held in place by pin *x*. The parts *a* and *a'* each have a slot for the reception of sheaves C C', which fully protects the sheaves from, sleet, snow, ice, and dirt.

Beneath the inner sleeve *a'* is placed a pulley or wheel G, suitably held in a frame G', which frame is secured to the post B. The wheel G constitutes the ice-breaker. It is placed under the sheave C. The post-plate *a*² is suitably secured to post B. It has two arms, as shown in Fig. 2, formed to hold the insulators *d*² *d*², and has preferably the sleeve *a'* cast on it.

The lamp E is supported by the rope H, preferably formed of wire, which runs through the arm A, supported at each end by the sheaves C C'. In passing down, the wire rope contacts with the ice-breaking pulley G. On its lower end may be placed the weight I to partly balance the weight of the lamp hung upon the outer end of rope H. At the lower end, beneath the weight I, is formed the locking device for securing and holding the rope when the lamp is drawn up to its usual position. This device is well shown in Fig. 4. The shell K is secured through its back *h* to

the post B. Inside shell K is the catch h' and the screw-nut k , the head k' being set in a recess in K' of the shell K.

On the lower end of rope H, or of the weight I, if used, is secured a hook L, adapted to engage the catch h' and to be held thereto by the end of screw-nut k . The screw-nut is operated by the hand socket-wrench M.

The current of electricity is communicated to the lamp by means of insulated flexible wires D, running from the connections on lamp E to the wood insulators d^3 , thence to the insulators d^2 , thence to the main feed-wire insulator d' on post B, or to suitable connections in the main circuit.

The flexible wires D are made of sufficient length to allow the lamp to be lowered as required. The current is turned off by the ordinary cut-off in the lamp. If the said wires are long, the lamp will descend perpendicularly, but it is often desired to bring the lamp inward toward the pole to adjust the carbons in the lamp, &c. Now by shortening the flexible wires D when the lamp descends the wires attached to the lamp or hood will draw the lamp toward the pole, and the lamp will be firmly held by the combined attachments of the wire rope H and the flexible wires D, the rope H being held by the sheave C' in the end of the arm and the flexible wires D being held by the insulators d^2 . Thus the distance of the lamp from the pole, when down, may be varied by the length of the said wires D as desired.

In order to prevent a person from being shocked by handling the wire rope H or other contiguous parts, I have devised a special insulator to be placed between the outer end of rope H and the lamp or lamp-hood.

By referring to Fig. 5 the special insulating device will be understood. It consists of a glass, porcelain, or non-conductor N, formed with a hole n through it. Through this hole n the end of wire rope H is put and then suitably secured to the main wire rope. The insulator N is then secured by a staple or bolt to the cross-bar O of lamp-hood F.

Of course the form of insulator N and the way of securing it to the rope H and hood F may be varied to suit the form of parts or the style of lamps used; but I deem it important for safety that there should be a suitable insulator between the feed-wires and the rope or parts that might convey electricity onto the arm or pole.

Having described the several parts of my invention, I will now describe its mode of operation.

The lamp and other parts being in position the operator unscrews the screw-nut k with the socket-wrench M, unhooks the part L from catch h' , and allows the lamp to descend. For convenience he may carry a rod with a hook on one end or a small cord, and as the rope H ascends attach the same to part L, thus having a handy means of drawing the rope back again when elevating the lamp. New carbons having been placed in the lamp it is elevated and secured in its original position by reversing the operation already described.

In frosty weather the wire rope will become clogged with ice, so as to prevent its running freely in sheaves C C' . I have therefore devised the ice-breaker G, consisting of a pulley or roll so placed in relation to sheave C that it will crack and remove the ice on the wire rope H as the same ascends in the act of lowering the lamp.

As my invention is intended to be used chiefly in connection with the ordinary post or pole it is impracticable to hollow out the post for the reception of wire rope H; neither is it desirable to place a box or covered way up and down the post for the wire rope to run in, as it adds to the cost and is not so handy and accessible in practical use.

I do not desire to confine myself to the exact form of construction shown, as it may be varied somewhat without departing from the spirit of my invention. For instance, I show a modification in Fig. 6, in which the arm A, instead of being hollow, is solid, and the wire rope H, instead of passing through arm A, runs underneath. This construction is not as good, for the reason that ice is liable to accumulate on the wire rope under the arm, and this requires a second ice-breaker G^2 , Fig. 6, to be attached in order to have all parts work efficiently.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

In a mast-arm device for lowering electric lamps the locking device herein described consisting of the shell K, the catch h' , the screw-nut k , and the hook L, combined substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 16th day of January, A. D. 1894.

ORVIS P. PHILBRICK.

Witnesses:

ORSON S. PHILBRICK,
ORIN D. PHILBRICK.