

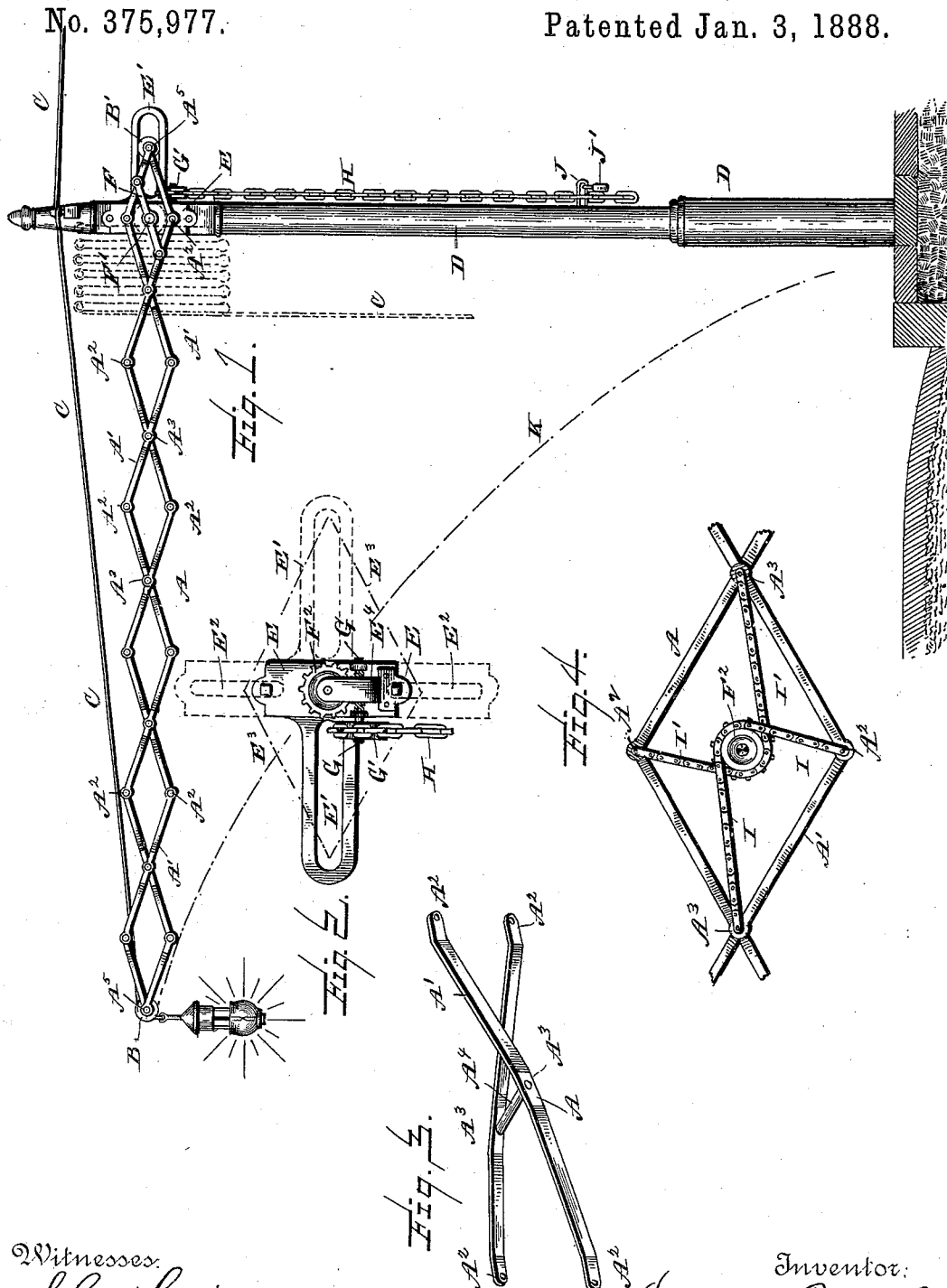
(No Model.)

D. B. BANKS & G. K. HUTCHINS.

SUPPORTING ARM FOR ELECTRIC LIGHTS.

No. 375,977.

Patented Jan. 3, 1888.



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# UNITED STATES PATENT OFFICE.

DANIEL B. BANKS AND GEORGE K. HUTCHINS, OF BALTIMORE, MARYLAND.

## SUPPORTING-ARM FOR ELECTRIC LIGHTS.

SPECIFICATION forming part of Letters Patent No. 375,977, dated January 3, 1888.

Application filed April 5, 1887. Serial No. 233,737. (No model.)

*To all whom it may concern:*

Be it known that we, DANIEL B. BANKS and GEORGE K. HUTCHINS, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Supporting-Arms for Electric Lights, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to an arm for supporting electric or other lights; and the object of the invention is to construct an arm in such a manner that it may be extended and retracted lengthwise for the purpose of determining the distance from the means of support at which a light may be hung, either by a separate rope, cord, or wire or by its electrical conductor or conductors, and to facilitate access to the light for cleaning and trimming purposes.

Heretofore in devices of this class the arm has been rigid and pivotally supported, so that when the arm is swung upon its pivot to lower the light the free end of the arm is moved in a circular path around the pivot as a center, and when used at the corner or side of a street it often has been necessary to await the passage or removal of carriages, wagons, and street-cars before the lamp could be lowered to a position where the same could be cleaned and trimmed.

By our invention of an extensible lamp-supporting arm the lamp, in the act of being lowered, takes a more direct course, so as to pass over carriages and cars before reaching its lowest position.

Other objects and advantages of our invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of a lamp-supporting arm constructed in accordance with our invention mounted on a mast or post, the dotted lines showing approximately the position assumed by the sections of the arm and the lamp-supporting cord or conductor when the arm is retracted. Fig. 2 is a side elevation of the arm-supporting bracket or plate. Fig. 3 is a modification employed for the purpose of strengthening the

arm against lateral displacement, and Fig. 4 is a modification of the arm distending and retracting devices.

Like letters indicate like parts in all the figures.

A represents the arm, and it consists of sections A', which are pivotally connected to each other at their ends, as at A<sup>2</sup>, and at their centers or mid-lengths, as at A<sup>3</sup>, after the manner of an ordinary lazy-tongs. Now, in order to give additional strength to the arm as regards any lateral displacement thereof, we may curve or bend each of the arms A' so that its center A<sup>3</sup> shall be at one side of its ends A<sup>2</sup>, in which case the pivot A<sup>4</sup>, employed at the mid-length of the sections, would be lengthened to constitute, also, a spacing-bar. Now it will be readily seen that the structure is broadened to withstand lateral strain, and is at the same time capable of expansion and retraction in the same manner as when the sections are straight. The terminal sections of the arm are brought to a common point and are united by a pivot, A<sup>5</sup>, which may also serve as the journal for the single or double grooved pulley B, over which the electrical conductor or conductors C, to which the lamp is connected, may pass. The same construction may be employed at the supported end of the arm--that is, the shorter terminal sections may be jointly pivoted to a pulley or roller, B'.

Upon a post or mast, D, or, it may be, upon a building or any other suitable structure for supporting the arm, we secure a plate, E, having an extended bracket, E', slotted for the reception and reciprocation of the end of the arm, its terminal pivot, and the roller mounted thereon. The object of the slotted bracket is to overcome the tendency of the free end of the arm to fall, and the same object may be secured by extending the bracket either to the front or to the rear; or, if desired, a second roller, B', may be connected with the pivot at the center of the first full-length sections of the arm, instead of or in connection with the roller B' at the end of the arm, in which case the plate E would be provided with two oppositely-disposed brackets, E', as shown by dotted lines in Fig. 2.

A further modification may be employed to

support the arm against the movement described, which consists in providing the plate E with slots E<sup>2</sup>, (see dotted lines, Fig. 2,) arranged vertically, and extending the pivots in the ends A<sup>2</sup> of the sections projecting into said slots, with or without anti-friction rollers, so that said ends of said sections will be retained in connection with said slotted plate while the arm is being extended and retracted. When retracted, said ends will occupy the outer ends of said slots, as shown by dotted lines E<sup>3</sup>, Fig. 2.

It now remains to provide a device or mechanism for distending and retracting the arm. Pivotally connected midway between the center and end of one of the longer sections, and at the middle of the opposite shorter terminal section of the arm, is an operating-bar, F, which is itself rigidly mounted upon a shaft, F', passing through the plate E, and in this instance through the mast or post D also, and provided with a pinion, F<sup>2</sup>, at the end opposite that to which the bar is secured. It is apparent that the bar and pinion may be arranged on one and the same side of the post or mast. In this case the shaft F' need not necessarily extend entirely through said post or mast; but it may have one bearing in the plate E and another bearing in a bracket, E', projecting from said plate and outside of the pinion. A worm-shaft, G, may be arranged below the pinion F<sup>2</sup> and mesh therewith, and it may carry a sprocket-wheel, G', over which an endless chain, H, is passed, so that by revolving the sprocket-wheel the pinion and bar F, secured thereto, are oscillated so as to separate or bring together the sections to which the bar is pivotally connected, and by reason of the pivotal connections of all the sections of the arm the latter may, by the devices described, be distended and retracted at will from a position on the ground near the mast or other support.

Instead of the bar F, we may employ in connection with the pinion F<sup>2</sup> or a sprocket-wheel, which is the equivalent thereof, sprocket-chains I I', extending from the middle and end pivots of the opposite sections and around opposite sides of the sprocket-wheel or pinion F<sup>2</sup>, as shown in Fig. 4. Now it will be noticed that by rotating the wheel F<sup>2</sup> in one direction the diametrically-opposite pivotal ends of the sections are drawn toward each other, and the chains are paid out so as to permit of the separation of the remaining opposite pivotal connections of the sections. Instead of sprocket chains, we may employ ropes; but in such case each rope would be passed completely around a preferably grooved pulley in order to secure sufficient frictional contact therewith. To prevent unauthorized tampering with the arm, a staple, J, may be fixed in the support D and passed through a link or links of the chain, and a lock, J', may be secured in the staple, thus securing the object in view. Now it will be noticed that when it is desired to lower the lamp into an accessi-

ble position from the ground the chain may be drawn so as to retract the arm. As the arm retracts in a substantially straight horizontal line toward the support, the pulley B moves with it, and the conductors C ride over the pulley and the lamp begins to descend; but by reason of the horizontal movement of the pulley B the lamp takes a course in substantially a direct line toward a point near the base of the support instead of an outwardly-curved path. The path of the lamp in lowering is substantially indicated by the dotted line K. This is much preferable to the path assumed by a lamp lowered by a rigid pivoted arm, for the reasons hereinbefore given.

One advantage of our invention is that the electrical conductors serve as vertically-strengthening guys and also are maintained in a substantially taut condition.

What we claim is—

1. An arm for supporting electric lights, formed of pivotally-connected and laterally-curved or bent sections, substantially as specified.
2. An arm for supporting electric lights, formed of pivotally-connected sections and provided with a device connected with opposite sections and operating to distend and retract the arm, substantially as specified.
3. An arm for supporting an electric light, consisting of a series of pivotally-connected sections, terminating with a device for the movable connection and operation of electrical conductors, or a separate lamp-supporting cord, rope, or wire, substantially as specified.
4. An arm for supporting an electric light, comprising movable sections, those at opposite ends of the arm being pivotally connected by a bolt, shaft, pin, or rod, and intermediate opposite sections being connected by an arm distending and retracting device, substantially as specified.
5. An arm for supporting an electric light, comprising movable sections, those at the ends thereof being pivotally connected, and intermediate opposite sections being connected by an arm distending and retracting device, in combination with means for oscillating said device, substantially as specified.
6. In combination with an extensible arm for supporting electric lights and with opposite sections thereof, a device comprising a shaft and arm mounted between and pivotally connected with said opposite sections and a system of gearing for operating said shaft, substantially as specified.
7. The combination, with an extensible arm for supporting electric lights and with a pole or mast for supporting the arm, of a plate having a slotted bracket for the reception of one end of the arm, and an opposite plate having bearings for a shaft passing through the plate and for a worm-shaft crossing the plate, substantially as specified.
8. The combination, with the support D, arm A, and the devices for operating the same,

of the chain H, staple J, and lock J', substantially as specified.

9. The combination of chain H, sprocket G', worm G, pinion F', and bar F with the sections A' of the arm, substantially as specified.

10. The combination of shaft F', bar F, and sections A' with a suitable support, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

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Witnesses:

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