(No Model.) 2 Sheets—Sheet 1.

M. R. WARNER, C. O. BULOCK & A. E. McLAUCHLIN.

APPARATUS FOR SUSPENDING, RAISING, AND LOWERING ELECTRIC LAMPS.

No. 589,881. Patented Sept. 14, 1897.

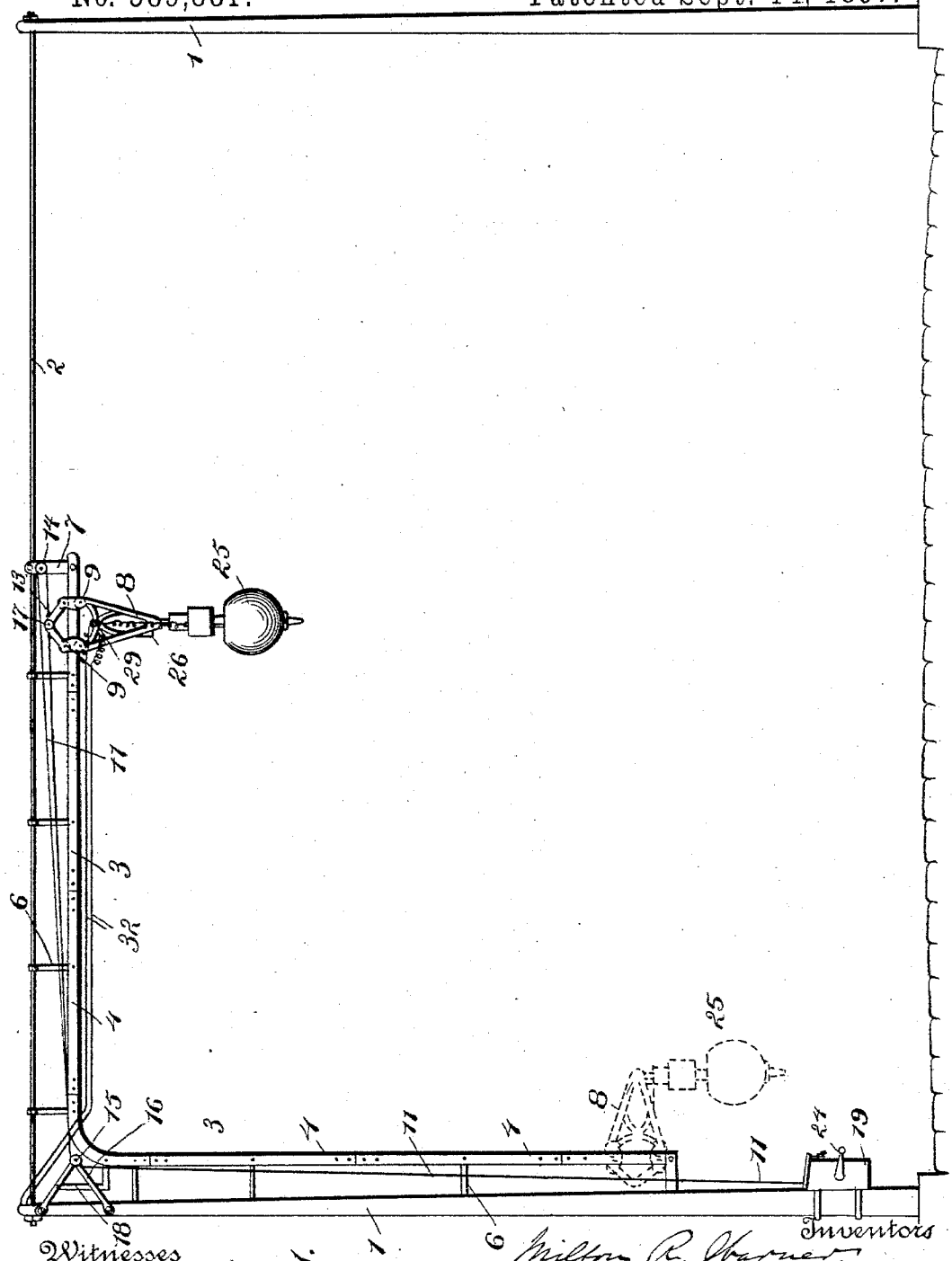


Fig. 1.

Witnesses
Geo. E. Frech.
Alfred T. Gage.

Inventors
Milton R. Warner,
Charles O. Bulock, and
Alexander E. McLauchlin,
by Wm. D. Hammond, Attorney.

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

(No Model.) 2 Sheets—Sheet 2.

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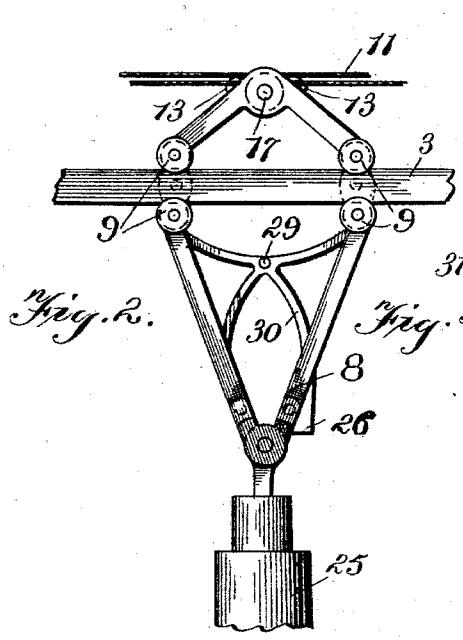


Fig. 2.

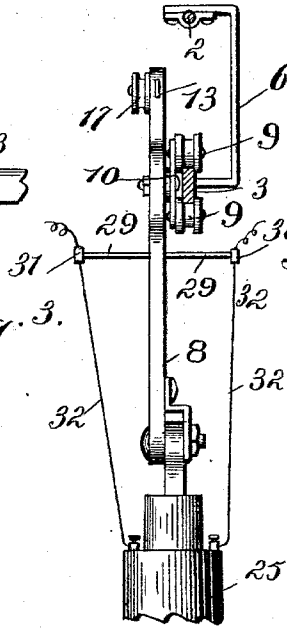


Fig. 3.

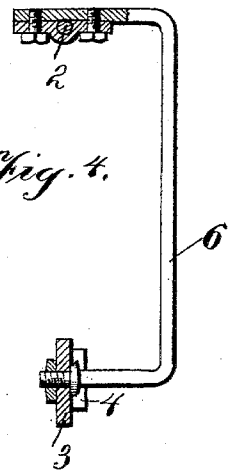


Fig. 4.

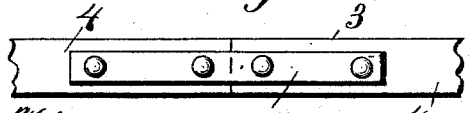


Fig. 5.

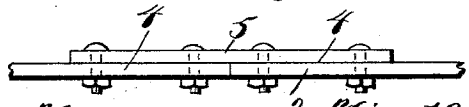


Fig. 6.

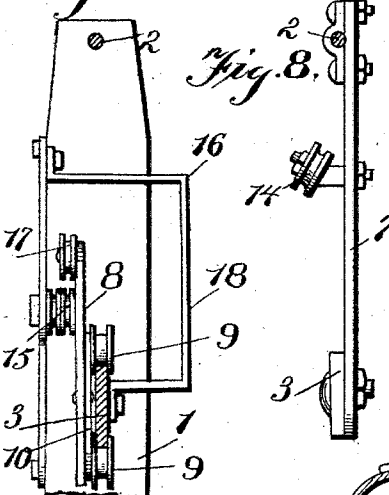


Fig. 7.

Fig. 8.

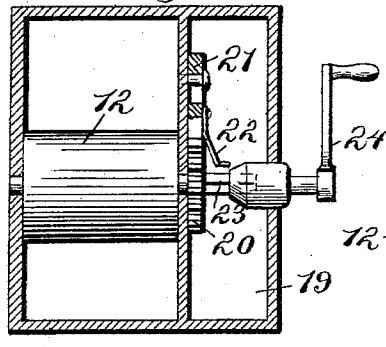


Fig. 9.

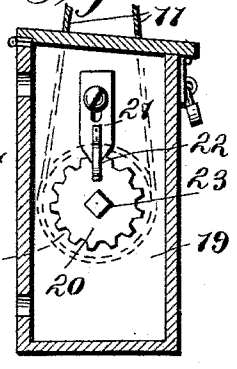


Fig. 10.

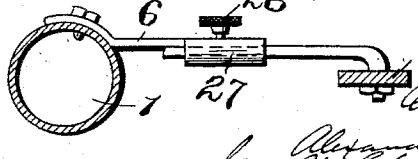


Fig. 11.

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

UNITED STATES PATENT OFFICE.

MILTON R. WARNER, OF MANCHESTER, AND CHARLES O. BULOCK AND ALEXANDER E. McLAUCHLIN, OF YORK HAVEN, PENNSYLVANIA.

APPARATUS FOR SUSPENDING, RAISING, AND LOWERING ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 589,881, dated September 14, 1897.

Application filed November 16, 1896. Serial No. 612,315. (No model.)

To all whom it may concern:

Be it known that we, MILTON R. WARNER, a citizen of the United States, residing at Manchester, and CHARLES O. BULOCK, a citizen of the United States, and ALEXANDER E. McLAUCHLIN, a citizen of Canada, residing at York Haven, in the county of York, State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Suspending, Raising, and Lowering Electric Lamps; and we do 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 the figures of reference marked thereon, which form a part of this specification.

Our invention relates to an apparatus for suspending, raising, and lowering electric lamps.

It has for its object to provide a construction which will be simple, efficient, and comparatively inexpensive, and which will admit of the lamp being suspended over a drive or road way, and which can be readily and easily brought from over the roadway to a point at one side thereof and near the pavement, so that fresh carbons can be put in place without interfering at all with traffic on the roadway or street.

To the accomplishment of the foregoing and such other objects as may hereinafter appear the invention consists in the construction and in the combination of parts hereinafter particularly described, and then sought to be specifically defined by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a side elevation showing application of the invention. Fig. 2 is a detail side view of the lamp-carriage. Fig. 3 is an end view of the same and one of the track-brackets. Fig. 4 is an enlarged end view of one of the track-brackets. Figs. 5 and 6 are side and top views, respectively, of the connecting-plate for joining the track-sections. Fig. 7 is a detail of the supporting-sheave located at the curve in the track. Fig. 8 is a detail of the sheave located upon the bracket at the outer end of the track. Fig. 9 is a cross-section through the boxing of the winding-drum. Fig. 10 is a vertical section through one end of said boxing, and Fig. 11 is an enlarged detail of a modified form of bracket.

In the drawings the numeral 1 designates two poles, one upon each side of the roadway or street, and from one to the other of which extends a cable 2, which will constitute a support for a track upon which a lamp-carriage will travel, as hereinafter described.

The numeral 3 designates a track which is formed of sections of plates 4, placed end to end and provided at the joints with what we will designate as "fish-plates" 5. By thus forming the track it can be readily made in the length designed. The track is suspended from the cable 2 by means of brackets 6, placed at desired intervals apart, one end of which brackets is clamped to the cable 2 and the lower end bolted or otherwise secured to the track 3, the brackets 6 being arched so as to lie to one side of the track and its support in order that no obstruction may be offered to the free travel of the lamp-carriage, which will move upon the track. The outer end of the track 3 will be connected to the cable 2 by means of an arm 7, which will be suitably clamped to the cable. The track 3 extends inward to a point adjacent to one of the poles 1, and at that point is curved, as illustrated, and then extended downward parallel with the pole to a point at or adjacent to the base of the pole, and is braced and supported from the pole by the brackets 6, formed as before described, and one end of which will be secured in any suitable manner to the pole, while the other end will be secured to the track, as previously described.

Upon the track will travel the lamp-carriage 8, which will be made in the form of a frame of any suitable pattern and which will be provided with the two sets of sheaves 9, each set being secured to a plate 10, pivotally connected to the frame, so as to oscillate, the sheaves of each set being arranged so that one will bear against the top of the track and the other against the under side of the track, thus preventing the carriage from leaving the track.

The carriage is moved over the track by means of an endless wire or cable 11, which is wound around a drum 12, located near the lower part of the pole 1, and connected to the carriage say, at the point 13, so that when the endless cable is drawn in one direction the carriage will be moved along the track and brought to the lower part of the pole, so that the carbons can be renewed, and when drawn in the other direction the carriage will be moved along the track until it reaches the horizontal portion thereof and then moved along that portion until it reaches the point where the lamp is to remain suspended. This endless cable at the outer end of the track is passed around a sheave 14, supported from the arm 7, and at the point where the curve or bend is made in the track it passes over the two sheaves 15, supported by a bracket 16, which preferably is made of two arms, as shown, extending from the upper part of the pole 1. The slack in the endless cable is taken up in the travel of the carriage by a sheave 17, supported from the carriage at its upper end and over which sheave the endless cable will be drawn. This sheave 17 will also act to lift the endless cable from the sheave 15 at the curve in the track, above which the sheave 17 will pass as the carriage travels around the curve and after the carriage has passed the curve the endless cable will drop back onto its sheave and thus be supported at the curve. At the point where the curve is made in the track both the track and the bracket 16 are braced by means of an arched bracket 18, one end of which is secured to the bracket 16 and the other to the track 3, this bracket being so formed that the carriage and sheave 17 will pass without obstruction.

The drum 12 is journaled in a suitable box 19, located at the lower part of the pole 1, and is provided at one end with a toothed wheel 20, above which is a sliding pawl 21, which has the finger 22 projecting to a point near to the shaft 23 of the drum, so that when the crank 24 is slipped onto the shaft 23 it will contact with the lower end of the finger 22 and thus lift the pawl from engagement with the toothed wheel 20 and hold it out of engagement while the crank 24 is on the shaft 23 and the drum is being turned in the operation of either raising or lowering the lamp by moving the carriage over the track. The box 19 will have a door provided with a lock and key, so that the drum cannot be tampered with.

The lamp 25, which may be of any approved pattern, will be pivoted to the lower end of the carriage 8, and a shoulder or stop 26 will be formed on the lower part of the carriage at such point that when the carriage passes from the horizontal to the upright portion of the track and the lamp swings to its vertical position it will strike against the stop 26 and the stop prevent the lamp from coming in contact with the track.

The brackets 6 may be made in one piece, but if desired they can be made in two parts, one part being made to pass through a socket 27, formed on the other part, and be held therein by a set-screw 28. In this way the brackets can be lengthened or shortened, so as to compensate for any sagging in the track and preserve the same in a true horizontal or vertical position.

The numeral 29 designates a rod supported in a bracket 30 of the lamp-carriage and provided at opposite ends with the insulators 31, around which will pass the light-wires 32, which pass from the main line to the lamp, which wires will lie on opposite sides of the track.

The track made up of the sections can be formed of comparatively thin plates, so that the weight of the entire track will be comparatively light, thereby permitting the track to be connected to the cable 2 before the latter is secured in position, the track being raised into position by lifting the cable 2 and then securing the cable first to one pole and then to the other. The upright portion of the track can be secured to the pole after the other part has been secured in place. The track being made in sections it can easily be given additional length by adding one or more sections after reaching the place where it is to be erected and to suit the conditions as they may exist at the time. The several parts being each simple in construction can be made at little cost, thus rendering the entire structure comparatively inexpensive and such as is practical where the cost of construction is an item to be carefully considered and which in many places would prevent the advantages of a structure of this character being availed of.

We have illustrated and described with particularity the preferred details of construction of the several parts of the apparatus; but changes can be made in such details and the essential features of our invention still be employed.

Having described our invention and set forth its merits, what we claim is—

1. An apparatus for suspending, raising and lowering electric lamps, consisting essentially of a transversely-extending cable, a vertically and horizontally extending track, arched brackets suspending said track from the cable so as to leave the top of the track unobstructed, a carriage traveling upon said track and carrying the lamp, and an endless carrying-cable connected to said carriage and adapted to draw the carriage over the horizontal and vertical portions of the track, substantially as and for the purposes described.

2. An apparatus for suspending, raising and lowering electric lamps, consisting essentially of a transversely-extending cable, a vertically and horizontally extending track composed of plate-sections, brackets for supending said track from the cable so as to permit a carriage to travel over said track, a car-

riage resting upon said track and carrying a lamp, and an endless carrying-cable connected to said carriage and adapted to draw the same over the horizontal and vertical portions of the track, substantially as and for the purposes described.

3. An apparatus for suspending, raising and lowering electric lamps, consisting essentially of a vertically and horizontally extending track, a support therefor, a carriage to travel over the track, an endless carrying-cable for moving the carriage back and forth over the horizontal and vertical extending portions of the track, sheaves for the endless cable to travel over located at one end of the track and at the point where the track changes from its vertical to its horizontal position, and a sheave supported by the carriage and receiving the endless cable and serving to lift the cable from its sheave-support where the carriage passes from its horizontal to its vertical position, substantially as and for the purposes described.

4. An apparatus for suspending, raising and lowering electric lamps, consisting essentially of a vertically and horizontally extending track, a support therefor, a carriage to travel over the track, a lamp pivotally suspended from the carriage, a stop to prevent the lamp striking against the track as the carriage travels along the vertical portion thereof, and an endless carrying-cable for moving the carriage back and forth over the horizontal and vertically extending portions of the track, substantially as and for the purposes described.

5. An apparatus for suspending, raising and lowering electric lamps, consisting essentially of the poles, the cable extending from one pole to the other, the horizontal and vertically extending track supported from the cable and one of the poles by brackets, a carriage to travel over the track provided with sheaves bearing against opposite faces of the track, an endless carrying-cable for moving the carriage back and forth over the horizontal and vertical portions of the track, a sheave at the end of the track for the endless cable, a bracket extending from one of the poles and provided with sheaves at the point where the track changes from a horizontal to a vertical position, said sheaves receiving the endless cable, a sheave supported by the carriage and lifting the cable from the sheave where the carriage passes from the horizontal to the vertical portion of the track, and a stop on the carriage to prevent the lamp from bearing against the track as the carriage moves along the vertical portion of the track, substantially as and for the purposes described.

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

MILTON R. WARNER.
CHARLES O. BULOCK.
ALEXANDER E. McLAUCHLIN.

Witnesses:
BRIGHT R. PAXTON,
JOHN STEWART.