(No Model.) 2 Sheets—Sheet 1.

# J. F. BEHN.

## APPARATUS FOR SUSPENDING, RAISING, AND LOWERING ELECTRIC LAMPS.

No. 249,449. Patented Nov. 15, 1881.

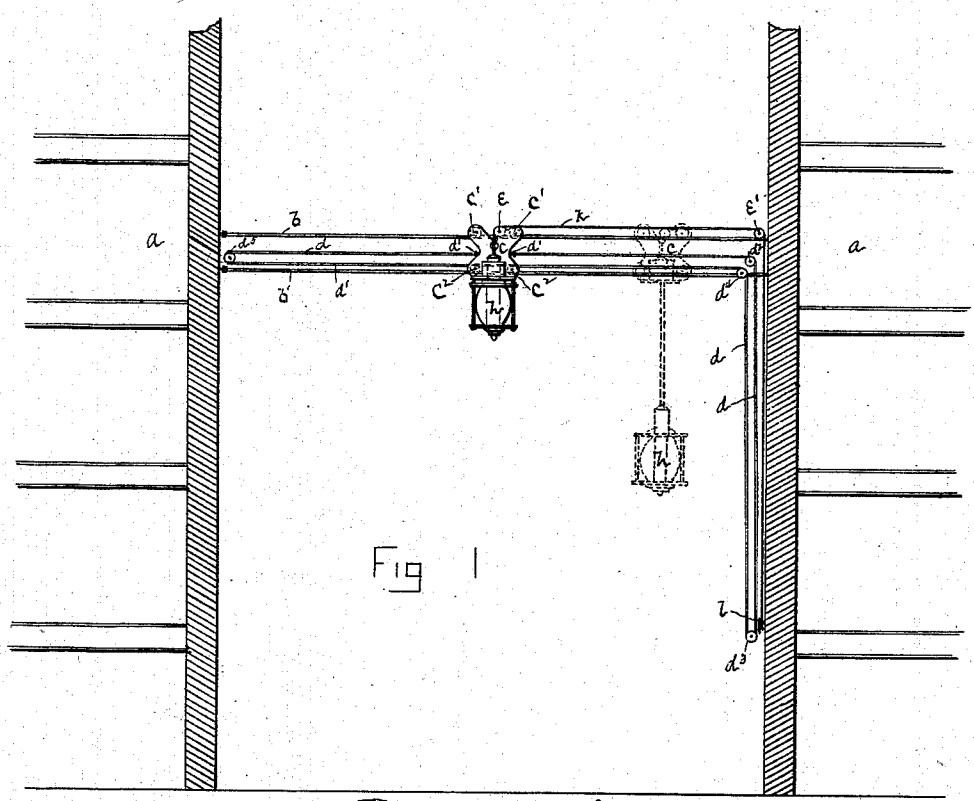


Fig 1

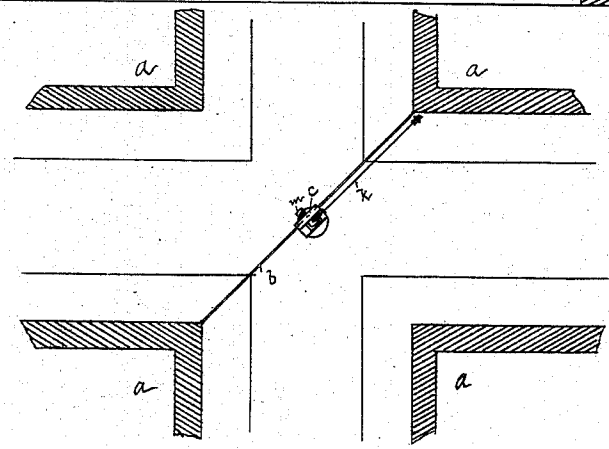


Fig 2

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(No Model.) 2 Sheets—Sheet 2.

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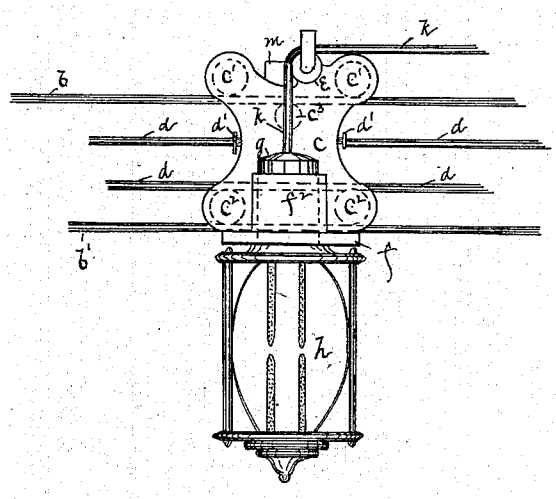


Fig 3

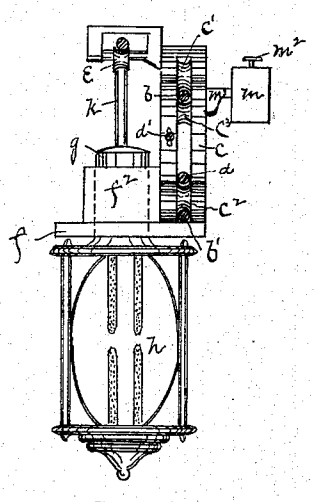


Fig 4

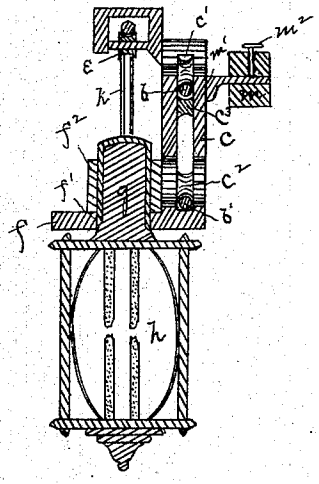


Fig 5

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# UNITED STATES PATENT OFFICE.

JOHN F. BEHN, OF BUFFALO, NEW YORK.

## APPARATUS FOR SUSPENDING, RAISING, AND LOWERING ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 249,449, dated November 15, 1881.

Application filed September 24, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN FREDK. BEHN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Apparatus for Suspending, Raising, and Lowering 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 or figures of reference marked thereon, which form a part of this specification.

My invention relates to an apparatus for suspending electric lamps in streets, highways, and halls; and has for its object to provide for an easy and rapid raising, lowering, and adjusting of the lamp, as well as the prevention of any swaying motion of the same when in position, which might be caused by heavy winds; and to this end my invention consists in a frame or carriage suspended upon two or more parallel cables, pipes, or cords firmly stretched or secured either to poles or to the walls of buildings, the carriage being provided with suitable pulleys or rollers, which adapt it to be moved back and forth upon the cables, &c. The carriage is operated from one side by a cord and pulleys, and is so arranged that when in its position in the center of a street or hall or at the intersection of two or more streets a projection on the lamp will rest securely in a socket upon the carriage, and as the carriage is moved upon its supporting-cables from its central position to either side the lamp will move downward in a diagonal path until it is at a point where it is easily accessible for renewing of carbons, cleaning, repairing, &c. The positive and negative wires which supply the lamp with electricity may be connected therewith in any suitable manner; but this forms no part of my invention.

In the drawings, Figures 1 and 2 are diagrams to illustrate the application and operation of my apparatus. Fig. 3 is a front view of the carriage and lamp when in position. Fig. 4 is a side view of the same, and Fig. 5 is a central transverse section of Fig. 3.

Referring to the drawings, *a a* in Figs. 1 and 2 represent in section the buildings from which the lamp is suspended.

*b b'* are two parallel metallic cables, pipes, or cords, which are firmly secured at their ends to the wall of the buildings *a a*, or they may be secured to poles where there are no buildings to be thus utilized. These cables or cords, as shown in Fig. 1, are secured one above the other in a vertical plane, and serve to support the lamp-carriage. This carriage consists of the frame *c*, in which are located the upper pulleys, $c'$ $c'$, and lower pulleys, $c^2$ $c^2$. The pulleys $c'$ $c'$, located at the top of the carriage, run upon the upper cable, *b*, and the pulleys $c^2$ $c^2$ at the bottom of the carriage run upon the lower cable, *b'*. These parallel cables, being placed one above the other, serve to keep the carriage always in a vertical position, and the pulleys allow it to be easily moved back and forth thereon. Just below the upper pulleys $c'$ $c'$, and midway between them, is placed the smaller pulley $c^3$, which bears against the upper cable, *b*, on its lower side, and serves to keep it in contact with the pulleys $c'$ $c'$.

The lamp-carriage is moved back and forth upon its supporting-cables by means of the cord *d*, which is secured at its ends $d'$ $d'$ to the sides of the carriage, and runs over certain pulleys in the following manner: Beginning at the right-hand side of the carriage, the cord *d* extends parallel with the supporting-cables to the pulley $d^2$ upon the side of the building; from thence it passes over such pulley down to and around the pulley $d^3$ secured to the side of the building and located at a convenient distance from the pavement, and from thence it passes up to and around pulley $d^4$, and through the carriage, across to and around the pulley $d^5$ attached to the opposite building, and then to the carriage, where it is secured.

It will be seen that the carriage can be moved back and forth upon its supporting-cables *b b'* by operating the cord *d* at its lower turn, where it passes around the pulley $d^3$, which is placed so that it can be reached and operated from the street by means of a ladder. At the top of the lamp-carriage, and at one side thereof, is located the pulley *e*, and at the bottom of the carriage, on the same side as the pulley *e*, and extending at right angles to the carriage, is the plate *f*, with a central opening, *f'*, therein. Surrounding this opening, and extending upwardly, is the socket $f^2$, in which the top projection, *g*, of the lamp *h* rests when the lamp is

in position. At the top of the projection $g$ is secured the cord or wire $k$, which passes over the pulley $e$, thence parallel with the pulley $b$ to and over the pulley $e'$, and down the side of the building to the button or staple $l$, where it is secured.

It is evident that the cord $k$ might be secured directly to the building where the pulley $e'$ is located, but my present arrangement enables me to lower the lamp from any point on the supporting-cables, should the carriage from any cause fail to operate.

To compensate for the weight of the lamp, the pulley $e$, and the plate $f$, with its socket $f^2$, which, it will be observed, are all placed upon one side of the carriage, I have provided a counterweight, $m$, adjustable upon the rod $m'$ and adapted to be held securely in place by the set-screw $m^2$. By adjusting this weight as occasion requires any undue strain or wear upon the cables $b$ $b'$ is avoided, and the lamp and its carriage held in a vertical position.

The operation of my device is as follows: When the lamp is in position, as shown in full lines in Fig. 1, and it is desired to lower the same, it is only necessary to move the carriage toward the building by operating the cord $d$. As the carriage is moved the slack of the cord $k$ is drawn down by the weight of the lamp, which moves out of its socket in the carriage and downwardly in a diagonal direction, as illustrated in dotted lines in Fig. 1, toward the building, where access may be had to it for renewing the carbons, cleaning, repairing, &c. By moving the cord $d$ in the opposite direction the lamp is caused to ascend in a diagonal path until its projection $g$ rests in the socket $f^2$ in the carriage.

It will be observed that by my improved apparatus the lamp is made easily accessible at all times, and the arrangement of the supporting-cables upon which the carriage travels precludes the possibility of any swaying motion of the lamp when in position. It will also be seen that the lamp or lamps can be suspended at any desired height from the pavement or road or at any desirable point therein and at crossings of streets or roads, as shown at Fig. 2.

I claim—

1. An apparatus for suspending, raising, and lowering electric lamps, consisting of two or more parallel cables or pipes firmly stretched or secured at their ends to buildings or poles, a carriage adapted to move back and forth upon such cables or pipes, and suitable cords and pulleys for operating the carriage upon the cables and raising and lowering the lamp to and from the carriage, substantially as shown and described.

2. In an apparatus for suspending, raising, and lowering electric lamps, the combination of the parallel cables or pipes with the lamp-carriage adapted to move back and forth upon such cables and provided with a socket to receive and hold a corresponding projection upon the lamp, substantially as shown and described.

3. In an apparatus for suspending, raising, and lowering electric lamps, the combination of the cables or pipes $b$ $b'$, the lamp-carriage provided with the pulleys $c'$ $c'$ and $c^2$ $c^2$, and the perforated plate $f$ and socket $f^2$, the operating cord $d$ and its pulleys $d^2$, $d^3$, $d^4$, and $d^5$, and the lamp $h$, provided with projection $g$ and suspending-cord $k$, substantially as shown and described.

4. In an apparatus for suspending, raising, and lowering electric lamps, the combination of the cables or pipes $b$ $b'$, the lamp-carriage provided with the pulleys $c'$, $c'$, $c^2$, $c^2$, and $e$, perforated plate $f$ and socket $f^2$, and adjustable counterweight $m$, the operating cord $d$ and its pulleys $d^2$, $d^3$, $d^4$, and $d^5$, and the lamp $h$, provided with projection $g$ and suspending-cord $k$, substantially as shown and described.

JOHN FREDERICK BEHN.

Witnesses:

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W. A. CHAMBERLIN.