(No Model.)

I. LA RUE JOHNSON.

METHOD OF VENTILATING SUBWAYS.

No. 415,110. Patented Nov. 12, 1889.

Fig. 1.

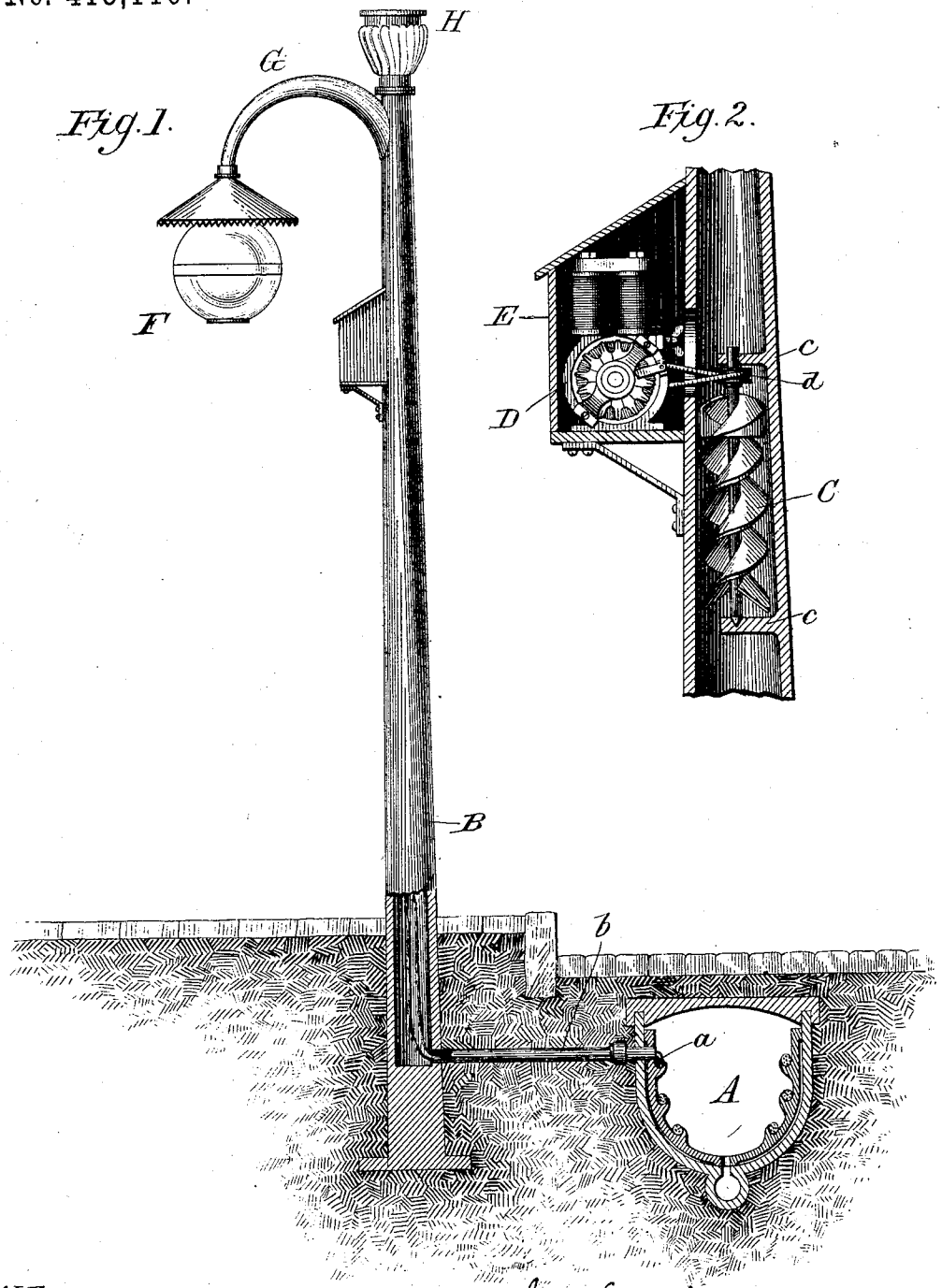


Fig. 2.

Witnesses:
R. A. Morrison.
H. H. Smith

Isaac LaRue Johnson Inventor.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ISAAC LA RUE JOHNSON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF TO OLIVER T. THOMPSON, OF SAME PLACE.

METHOD OF VENTILATING SUBWAYS.

SPECIFICATION forming part of Letters Patent No. 415,110, dated November 12, 1889.

Application filed July 9, 1889. Serial No. 316,997. (No model.)

To all whom it may concern:

Be it known that I, ISAAC LA RUE JOHNSON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in the Method of and Mechanism for Ventilating Electric Subways and Conduits; 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.

My invention relates to improvements in ventilation, which improvements are especially adapted to electrical conduits and subways, and has for its object the conveying away of gases, vapors, and moisture that collect in such subways, conduits, and their man-holes, and prevention of the admission of the external air thereto, all of which is accomplished by the method and mechanism for carrying out the same which will be hereinafter more fully set forth and described.

It consists in mechanism for and the method of ventilating conduits and subways by suitable mechanism connected with the lamp-mast of an electric-light lamp, whereby the tubular form of said mast is made available as an exhaust-pipe and as a conduit for conveying a current of electricity from the main conduit or subway to a motor for driving a suitable exhaust-fan; and it further consists in so constructing and adjusting the exhaust-fan as to prevent a downdraft through the lamp-mast, thus preventing the admission of the external air through said mast, which thereby prevents the discharge of the foul or damp air from the conduit, and thereby preventing explosions, which occur therein when atmospheric air mingles with illuminating and other gases which find access to the conduits and their man-holes; and it further consists in the means and mechanism to be more particularly hereinafter set forth in this specification.

To enable others skilled in the art to understand my invention, I will now proceed to a detailed description thereof in connection with the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, showing a conduit of any improved pattern and the means of connecting the conduit and the lamp-mast, a motor-case on said mast, and the conductors leading from the cable in the conduit to the interior of the mast and thence to the motor, and a hood or cowl is placed at the top of the mast. Fig. 2 is a sectional elevation showing the exhaust-fan and its motor.

Like reference-letters indicate corresponding parts in the several figures of the drawings, referring to which—

A designates a form of electrical subway, preferably an improvement upon that which is shown in Patents Nos. 281,064 and 281,220, and which it is proposed shall form the subject-matter of a separate application, it being shown here to more fully illustrate the present invention.

a indicates the cables from a conductor, in which the electric current is taken for driving the motor.

B is the lamp-mast, tubular in form and having a tubular arm G, to which the lamp is affixed.

C represents a preferred form of exhaust-fan having the convolutions of the screw. This form of fan fits snugly in the bore of the mast, and as it moves in but one direction—that is, to exhaust—there can be no downdraft through the mast to the conduit. The shaft of the fan is stepped in brackets or lugs *c*, that are affixed to or integral with the bore of the mast.

The motor and fan have suitable belt-and-pulley connections with each other, as indicated at *d*, though other means, as gearing and the like, may be employed.

E shows a case or housing for the motor, and F any desired form of lamp.

The prolongation of the bore of the tube is closed by a cowl or hood H, which is suitably capped to prevent the ingress of moisture and is provided with wings or blades against which the wind impinges to rotate the same.

The operation of the mechanism will be readily understood. A suitable number of masts may be employed on a line of subway, such number and their dimensions according with the size, capacity, and configuration of the conduit. The conduit may be of any desired form, though the one preferred is shown in the drawings. The pipe *b*, which connects

the mast and conduit by suitable air and water tight joints, conveys the current, (through suitable conductors) both for power and light from the conductor to the lamp and motor. The case containing the motor is provided with a door or opening through which the motors may be started or stopped and through which they may be reached for repairs. The fan, having any number of spirals and of any desired pitch, is actuated by the motor through the belt-and-pulley connections, as shown, and this exhausts the air or gases in the mast, and its continued operation removes all that may gather in the subway and its connections. It will be perceived that the fan rotating continuously in one direction will not permit the access of the external air by reason of the current which it will of itself generate from the subway. The work of the fan will be supplemented by that of the hood, which will eject the foul air without permitting the entrance of the external atmospheric air and thereby creating a downdraft, as both the reactionary effect of the outgoing current and the impact of the outer air upon the blades of the hood will assure a ready exit of the former.

When it is desired to apply the mechanism and method herein set forth to ventilating-conduits for low-tension currents, tubes analogous to the lamp-masts are to be substituted therefor, only such parts being dispensed with as are essential in electric lighting by means of the masts.

I do not limit myself to the mechanism above described, as modifications will readily suggest themselves, and of these I propose to avail myself.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A ventilator for conduits or subways, consisting of pipes or tubes connecting the same with a lamp-mast or similar structure, said lamp-mast containing an exhaust mechanism and a motor located thereon for actuating said exhaust mechanism.

2. A ventilator for conduits or subways, which consists in a tubular connection of the same with a lamp-mast or similar tubular structure, and an exhaust mechanism located in said structure and actuated by a motor located upon said mast.

3. A ventilator for conduits or subways, comprising a tubular connection of the same with a lamp-mast or similar structure, an exhaust-fan in said mast, and an electric motor for actuating the fan.

4. In a ventilator for conduits or subways, the combination of a tubular lamp-mast, an exhaust-fan located therein, a motor located thereon for actuating said fan, and a rotary cowl or hood on said mast for preventing a downdraft through said mast, and which by its rotary and reactionary motion ejects the air thrown up by the fan.

5. A lamp-mast having an exhaust-fan therein, an electric motor for actuating said fan, deriving its prime motor from the conduit or subway with which it is connected.

ISAAC LA RUE JOHNSON.

Witnesses:
BENJ. R. CATLIN,
J. MAWDSLEY.