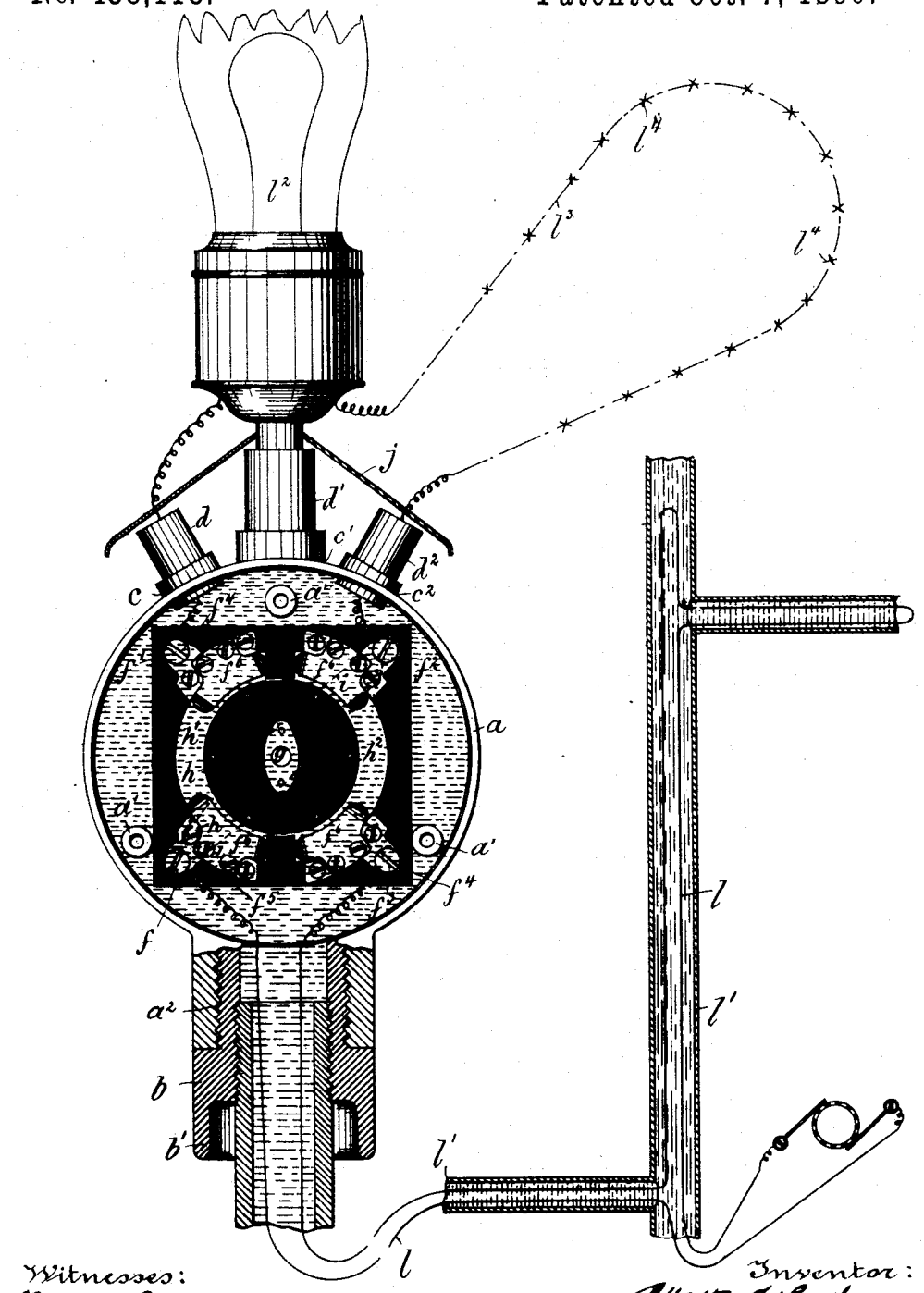
(No Model.) 2 Sheets—Sheet 1.

W. F. SMITH.

TERMINAL SWITCH OR CUT-OUT DEVICE FOR ELECTRIC LIGHTING SYSTEMS.

No. 438,118. Patented Oct. 7, 1890.



Witnesses:
Hermann Bonnaun
Thomas M. Smith.

Inventor:
Walter F. Smith,
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Att'y.

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

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

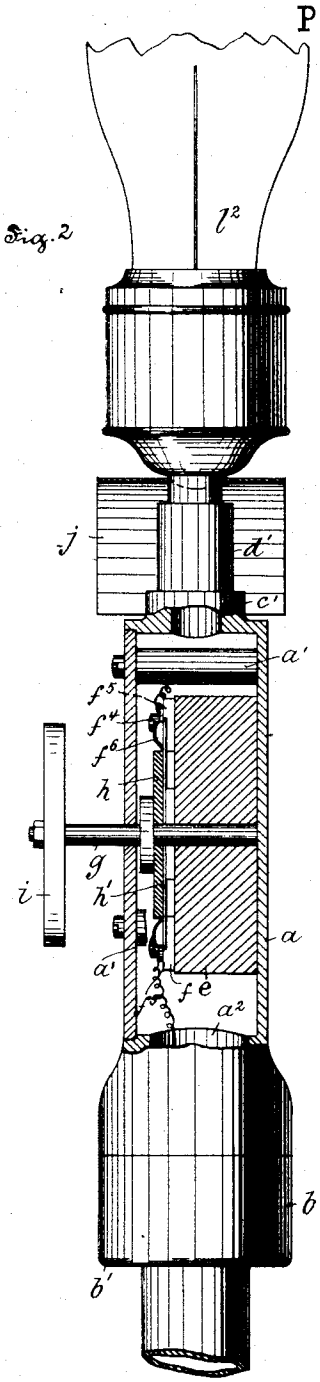
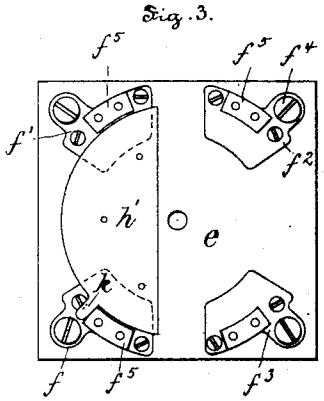


Fig. 3.



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UNITED STATES PATENT OFFICE.

WALTER F. SMITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE UNITED ELECTRIC IMPROVEMENT COMPANY, OF GLOUCESTER CITY, NEW JERSEY.

TERMINAL SWITCH OR CUT-OUT DEVICE FOR ELECTRIC-LIGHTING SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 438,118, dated October 7, 1890.

Application filed June 3, 1890. Serial No. 354,107. (No model.)

To all whom it may concern:

Be it known that I, WALTER F. SMITH, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Terminal Switches or Cut-Out Devices for Electric-Lighting Systems, of which the following is a specification.

My invention relates in general to terminal switches or devices for cutting out electric circuits and of a type adapted for use out of doors and in connection with lines or conductors laid underground in conduits, yet nevertheless equally applicable for use in connection with wires or conductors disposed overhead.

The principal objects of my invention are, first, to provide a simple, durable, and efficient terminal switch or cut-out device for electric-lighting systems; second, to prevent oxidation and corrosion of the metallic contacts by excluding gas and vapors from the housing thereof, and, third, to prevent accumulation of water and moisture in the housing, thus reducing electrical leakage to a minimum.

The nature and characteristic features of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a view, partly in elevation and partly in section, of a terminal switch or cut-out device embodying the particular features of my invention and having the cover removed therefrom, and also showing the same in application to a lamp, an overhead branch circuit, and an underground line circuit mounted in a conduit filled with an insulating-fluid; and Fig. 2 is a transverse sectional view on the line $x\,x$ of Fig. 1. Fig. 3 is a detail view of Fig. 1.

Referring to the drawings, a is the housing of a terminal switch or cut-out device having a plane surface and provided with tapped lugs a', in order that an air-tight cover may be firmly secured thereto.

a^2 is an orifice formed in the lower portion of the housing a and adapted for the reception of a ferrule or gasket b, composed of insulating material—such as hard rubber—provided with a depending recessed ring b', so that any water tending to climb up the interior surface of the gasket b by capillary action or otherwise will be deflected and will fall off in drops or streams without entering the interior of the housing a.

c, c', and c^2 are tapped or internally-threaded orifices formed in the upper portion of the housing.

d and d^2 are insulating-thimbles fitting into the orifices c and c^2, respectively, and adapted for the reception and passage therethrough of wires or conductors. d' is a removable insulating screw-plug fitting into the orifice c' and adapted to support a lamp l^2.

e is a block of wood or other insulating material suitably attached to the rear interior portion of the housing a and forming a support for the movable parts of the switch or cut-out.

f, f', f^2, and f^3 are stationary metallic contacts attached to the block e and insulated from one another. These contacts are provided with binding-posts f^4 and with lugs f^5, respectively.

f^6 are pieces or strips of spring metal attached to the lugs f^5 of the respective contacts.

g is a centrally-located spindle journaled to the block e and extending beyond the housing a.

h is an insulating-disk rigidly attached to the spindle g and having circular strips of metal or movable contacts h' and h^2 attached thereto and extending beyond the periphery between the contacts f, f', f^2, and f^3 and the pieces or strips of spring metal f^6, attached to the lugs f^5, so as to form sliding contacts. These movable contacts h' and h^2 are insulated from each other by means of the disk h, and are of such length as to extend from one of the stationary contacts f to another of said contacts f^3.

i is an insulating-handle attached to the spindle g and located outside of the housing a, so that the spindle g and parts attached

thereto may be readily and safely turned when required.

k is a radial projection attached to the movable contact h' and adapted to contact with the lug f^5 of the stationary contact f, and also with lug f^5 of the stationary contact f', thus limiting the motion of the spindle g and permitting the handle i to be turned, so that the movable contacts h' and h^2 bridge or electrically connect the stationary contacts f and f^3 and f' and f^2, respectively, or so that the movable contacts h' and h^2 bridge the stationary contacts f and f' and f^2 and f^3, respectively, as may be required.

j is a roof connected with the screw-plug d' for protecting the instrument from rain or inclement weather.

l is an underground line-circuit having the line-wires or conductors thereof inclosed in suitable tubes or conduits l', filled with paraffine, rosin-oil, or other suitable insulating material.

l^2 is a lamp located in a branch circuit.

l^3 is a branch overhead circuit having lamps l^4 arranged in series therein.

In use the tube l' of the underground system is brought above the level of the ground and screwed into the gasket b, and the conductors or line-wires l of the underground system are attached to the stationary contacts f and f^3 by means of the two lower binding-posts f^4. The line-wires of the lamp l^2 and of the branch overhead system l^3, passing through the insulating-gaskets d and d^2, are attached to the stationary contacts f' and f^2 by means of the two upper binding-posts f^4. The interior of the housing a, as well as the interior of the tube or conduit l' communicating therewith, is completely filled with paraffine, rosin-oil, or other equivalent insulating substance, which prevents any accumulation of gas or moisture in the housing a, and also preventing electrical leakage, and thus appreciably enhancing the efficiency and economy of the switch or cut-out device.

The rosin-oil, paraffine, or equivalent material may be readily introduced into the housing a by means of and through the orifice c' or c^2, or in any other convenient manner.

The mode of operation of the cut-out or terminal switch, hereinbefore described, is as follows: When required to include the branch circuit l^3 and lamp l^2 in the main-line circuit l, the handle i is turned so as to occupy the position illustrated in the drawings, and the current entering the stationary contacts f and f^3 traverses the movable contacts h' and h^2, the lamp l^2, and the branch circuit l^3. The lamp l^2 and branch circuit l^3 may be cut out and the main-line circuit l short-circuited by turning the handle i toward the right until the extension k strikes against the stationary contact f'. The main-line current will then traverse the stationary contacts f and f^3 and the movable contact h^2.

Although the invention has been described with reference to its use or employment with underground conduits in connection with overhead circuits, still it will be obvious that it may be applied to other circuits without departing from the spirit of the invention—for example, to overhead systems, in which case it would only be necessary to close the space between the sides of the gasket b and the conductors of the main circuit l' in order to retain the insulating liquid, oil, or fluid in the housing a.

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

1. The combination of a conduit, a line-circuit mounted therein, and a terminal switch or cut-out inclosed within an air-tight housing filled with a fluid insulating substance, substantially as and for the purposes set forth.

2. The combination, with an underground conduit, of a terminal switch or cut-out mounted in an air-tight housing connected with said conduit and containing a fluid insulating material, substantially as and for the purposes set forth.

3. The combination of a conduit, a line-circuit mounted therein, a terminal switch or cut-out inclosed within an air-tight housing filled with a fluid insulating substance or material, a branch circuit or circuits, and lamps included therein, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

WALTER F. SMITH.

Witnesses:
LISLE STOKES,
THOMAS M. SMITH.