

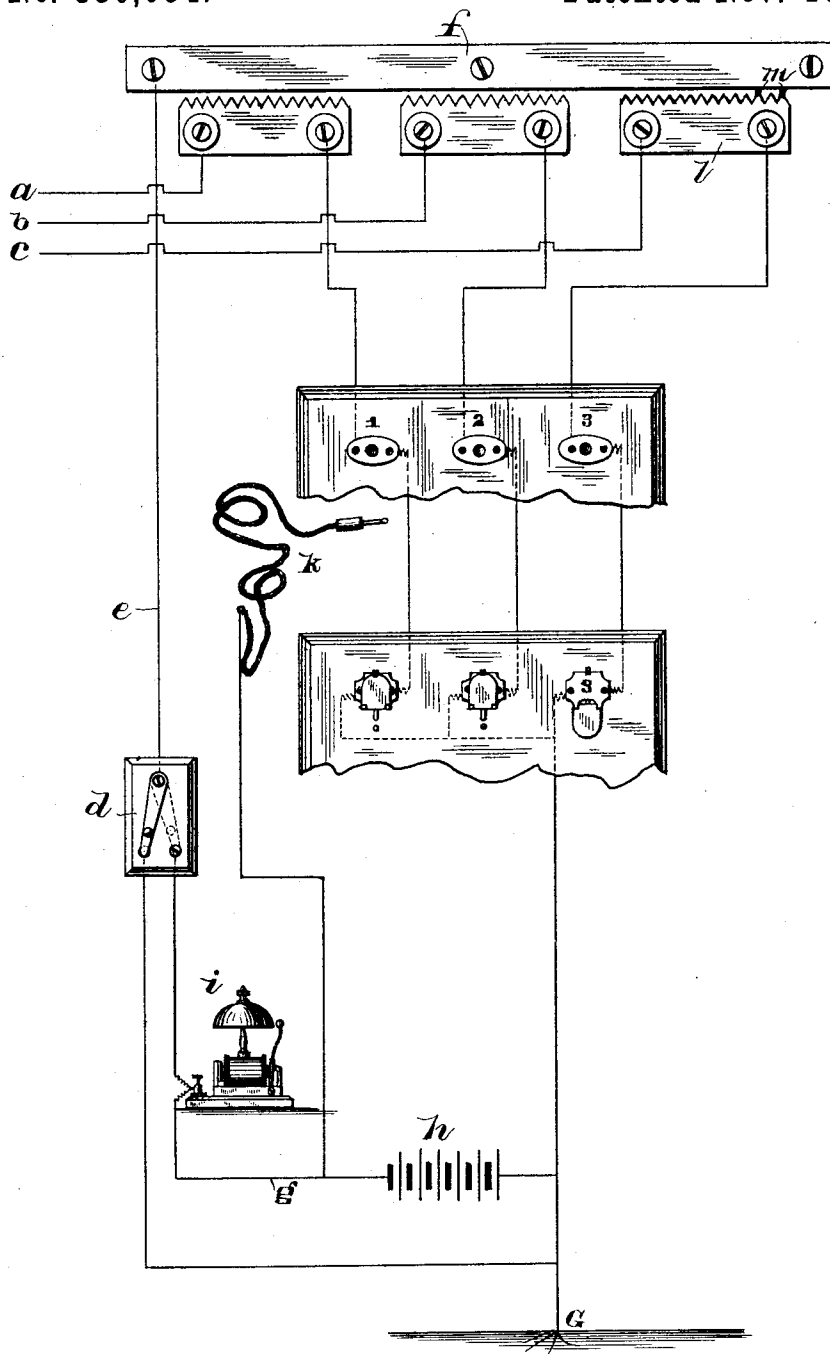
(No Model.)

C. E. SCRIBNER.

TESTING APPARATUS FOR LIGHTNING ARRESTERS.

No. 330,054.

Patented Nov. 10, 1885.



Attest

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TESTING APPARATUS FOR LIGHTNING-ARRESTERS.

SPECIFICATION forming part of Letters Patent No. 330,054, dated November 10, 1885.

Application filed August 12, 1882. Serial No. 69,228. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Testing Apparatus for Lightning-Arresters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

Lightning-arresters, as is well known, are provided for the telephone-lines of an exchange, and it frequently happens that after a thunder-storm one or several of the arresters will be found to have been fused, so as to be connected electrically to the ground-strap. In this way the lines are grounded at the strap, and thus rendered inoperative. Heretofore the central office has had no special means for locating this trouble.

My invention is designed to enable the central office to find out readily which of the lightning-arresters have been thus grounded.

The drawing is illustrative of my invention. The telephone or other lines, *abc*, are shown entering the central office and passing to the lightning-arresters, spring-jacks, and annunciators, and to ground in the usual manner. Each subscriber may be provided with the usual telephone outfit, and any well-known operator's outfit may be used at the central office.

I have placed the switch *d* in line *e*, which connects strap *f* with the ground as long as the switch remains in the position indicated by the full lines. I have also provided the branch line *g*, which includes the battery *h*. The signal-bell *i* may also be included in this branch line. The flexible cord and plug *k* are provided, so that the battery may be used ordinarily for calling the subscribers who are wanted.

It should be remarked that the lightning-arresters are usually placed in the tower, so that they cannot be inspected readily; and it should be borne in mind that the strap *f* remains open as long as the arresters remain integral.

Suppose, now, that one or more of the lightning-arresters have been fused, so as to be con-

nected electrically to the ground-strap, and that it is desired to find out which of the arresters have been injured. The arrester *l*, for example, we will suppose connected to the ground-strap, as indicated at *m*. By simply moving the switch *d* into connection with branch line *g*, as indicated by dotted lines, the circuit of the battery *h* will be closed through the annunciator 3 of line *c*, and the annunciator-shutter will thus be thrown down, as shown. The bell *i*, when included in the circuit, will ring, indicating that the trouble or ground is at the strap *f*.

The bell is of advantage when several of the arresters are connected with the strap, so that the circuit of the battery is branched through many annunciators, thus weakening the current through any given annunciator to such an extent as to render the current ineffective. The bell thus locates the ground, though it does not indicate which particular arresters are connected to the strap.

The bell may be used with systems like the Law system, in which annunciators are not used in the telephone-lines which are sometimes left open at the central office.

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

1. The combination of several telephone-lines provided with lightning-arresters and annunciators and terminating in a common line, a line containing a battery branching from said common line, and a switch placed in the ground-line of the strap of the lightning-arresters, whereby the strap may be connected to the battery in the branch line, substantially as and for the purpose specified.

2. The combination of several telephone-lines and their lightning-arresters with a battery and bell, and a switch in the ground-line of the strap and the common line, whereby the common line and strap may be connected together through the bell and battery, substantially as and for the purpose specified.

3. The combination of the bell and battery with the lightning-arresters and annunciators in the telephone-lines, the ground-strap and switch, whereby the strap may be connected

through the bell and battery to the telephone-lines, substantially as and for the purpose specified.

4. An apparatus for testing the lightning-
5 arresters of a system of electrical lines, consisting of a battery and call-bell placed in a branch line connected at one end to the several lines of the system and at the other to a switch, whereby it may be connected to the
10 ground-strap of the arresters, substantially as set forth.

5. A series of telephone-lines provided with lightning-arresters and annunciators, in combination with a battery one pole of which is
15 connected electrically to the several lines of the series and the other to a switch, whereby a connection from said battery may be made through the annunciators to the different parts of the lightning-arresters for the purpose of
20 testing the same.

6. The combination, with the lightning-arresters of a series of telephone or other lines,

of a branch line containing a battery and call-bell and connected at one end to the several lines of the series and at the other adapted to
25 be connected at will to the ground-strap of the said arresters for the purpose of testing the same in the manner substantially as set forth.

7. The combination of telephone-lines with lightning-arresters, the strap of said arresters
30 being connected with a switch, and a ground-circuit branched to said switch, one branch including a battery and signal-instrument, whereby the said battery and signal-instrument may be included in the circuit of said
35 ground-strap or disconnected therefrom, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 31st day of July, A. D. 1882.

CHARLES E. SCRIBNER.

Witnesses:

PAUL A. STALEY,
CHAS. A. WARREN.