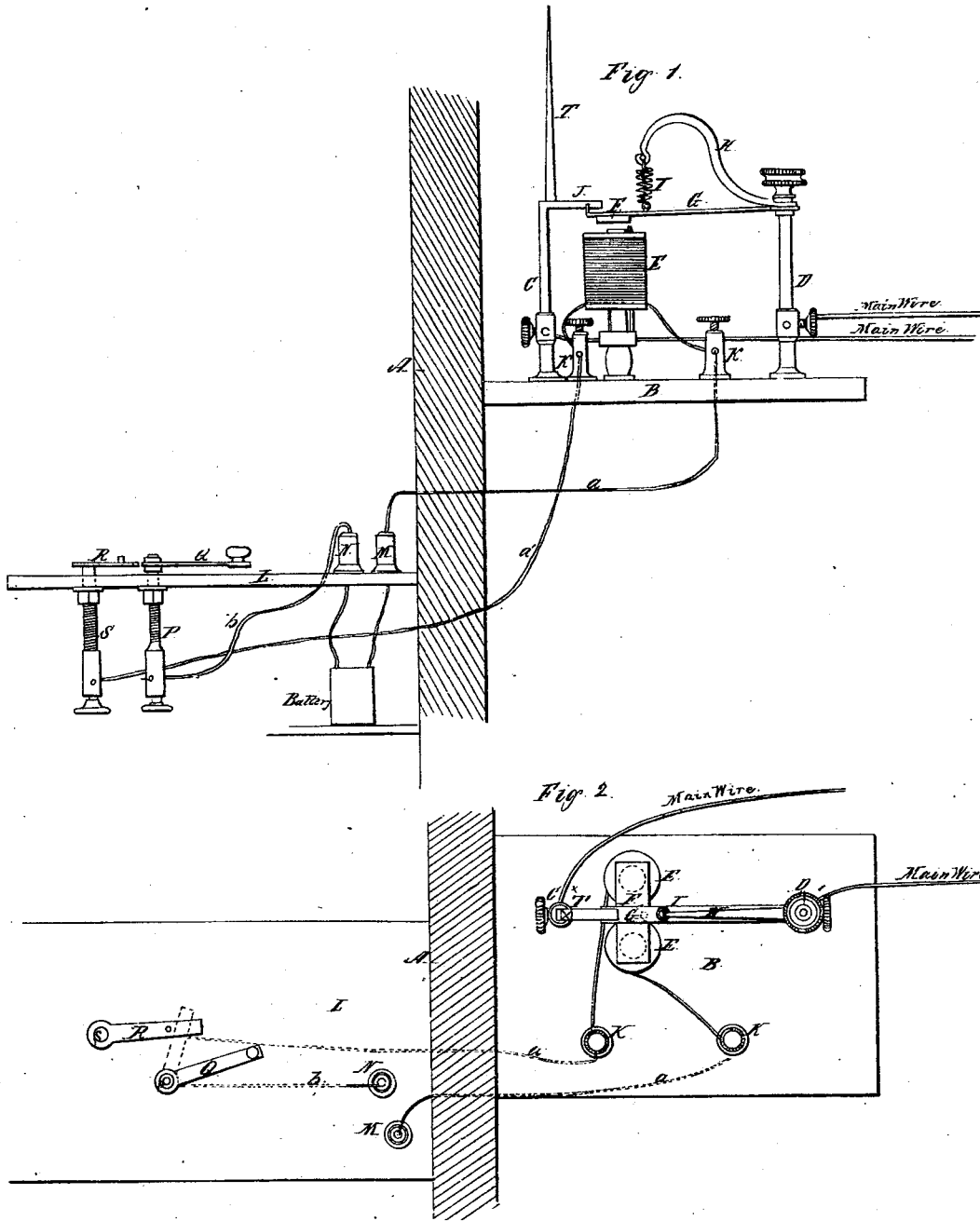


D. F. S. WAYS.  
 LIGHTNING ARRESTER FOR TELEGRAPHS.

No. 29,533.

Patented Aug. 7, 1860.



Witnesses:  
 A. S. Spencer  
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 by *[Signature]*  
 Atty.

# UNITED STATES PATENT OFFICE.

DAVID F. S. WAYS, OF BALTIMORE, MARYLAND.

## IMPROVED LIGHTNING-ARRESTER FOR TELEGRAPHS.

Specification forming part of Letters Patent No. 29,533, dated August 7, 1860.

*To all whom it may concern:*

Be it known that I, DAVID F. S. WAYS, of Baltimore, in the county of Baltimore and State of Maryland, have invented a new means of preventing injury in electric-telegraph offices by lightning; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of the apparatus I employ, which I call a "lightning-arrester." Fig. 2 is a plan of the same.

Similar letters of reference indicate corresponding parts in both figures.

The only means hitherto commonly employed on electric-telegraph lines for the protection of the operators and instruments from injury during thunder-storms has been either to disconnect the main wires from the binding-screws on the magnet-block or to open the main circuit within the office by means of a cut-off; but neither of these means effect more than the prevention of the destruction of the magnet, as they do not prevent the entrance into the office of the atmospheric electricity, and the operator is exposed to great danger in their use from contact with the wires and other conductors.

The object of this invention is to enable the operator within any office on an electric line, without touching any portion of the main circuit, to suspend and renew electrical communication between the main wires and the interior of office or of the building in which the office is situated; and the invention consists in effecting such object by the use of an electric current independent of the main line, substantially as hereinafter described.

To enable others skilled in the art to apply my invention to use, I will proceed to describe it with reference to the drawings, in which I have exhibited such an arrangement of the apparatus for an office as is best adapted to show the whole at one view without so much regard to practical convenience; but it will be readily understood that the arrangement may be varied.

A represents the wall of a building, in which the telegraph-office is situated. All the parts to the right-hand of this wall are supposed to

be outside of the building and all the parts to the left to be within the office.

B represents a base, to which all the parts outside of the building are attached.

C D are two upright brass columns, erected upon the base B at a few inches apart, and serving to connect the ends of the main wires with the wires which complete the main circuit through the office. As the arrangement of these wires and of the telegraph-instruments may be the same as now used, and are supposed to be well understood, I have omitted them from the drawings to avoid confusion of parts.

E is an electro-magnet attached to the base between the columns C D. F is the armature of the said electro-magnet, attached to a brass lever, G, which is attached to the column D, with which the negative pole of the main wire is connected.

H is a fixed arm attached to column D for the attachment of a spring, I, which is connected with the armature-lever G for the purpose of drawing the said lever into contact with an arm, J, which projects from and forms part of the column C with which the positive pole of the main wire is connected, whenever there is no current, through helices of the electro-magnet.

K K are two screw-cups secured to the base B, for the attachment of the wires of the helices of the electro-magnet to wires *a a'*, which pass through the wall A to the battery which is employed within the building or office to operate the electro-magnet.

The parts of the apparatus outside of the building should be covered in such a manner as to afford them protection from the weather.

L represents part of the operating-table or of a separate table or base within the office.

M N are screw-cups secured to the table L and connecting with the battery which works the electro-magnet. The screw-cup M has connected with it the wire *a a*, and the other cup is connected by a wire, *b*, with the brass post P, which is secured to the table L, for the purpose of carrying the movable slide or plate Q of the cut-off Q R, the fixed portion of which is carried by a similar post, S, connected with the wire *a'*.

To place the office in connection with the main wires, the slide Q is closed and the cir-

cuit from the battery through the helices of the magnet E closed. The magnet then attracts the armature F and keeps the lever G out of contact with the arm J of the column C, thus preventing any direct communication between the columns C and D, and causing the currents of the main wires to pass through the office. When it is desired to disconnect the office from the main line the slide Q is opened, and, as the magnet E then becomes inoperative, the armature-lever G is drawn up by the spring I into contact with the arm J of the column C, and, as the said lever is much shorter than the office-connections between the said columns, the electricity passes from C to D along the said lever without entering the office or the building in which it is situated, and hence the possibility of injury to the instruments or operators by lightning following the wires into the office is prevented.

As the circuit of the electro-magnet E is entirely independent of the main circuit there can be no danger to the operator in opening the slide Q, and he may stand with the slide in his hand watching the progress of a storm and closing or opening the said slide to enable telegraphing to be resumed and left off as the storm passes over or approaches the office.

To provide for the escape and dispersion of any excess of atmospheric electricity passing over the main line, I attach to the column C a sharp-pointed piece of steel, T.

The battery represented in the drawings is supposed to be a battery of a single cell, used only for the purpose of operating the magnet E; but on telegraph-lines on which local batteries are used the said magnet may be worked by the local battery at the office, though I prefer to use the separate battery for the purpose of generating an entirely independent current of electricity by which to work the magnet E.

I do not confine myself to any particular construction of the apparatus employed; but

What I claim as my invention, and desire to secure by Letters Patent, is—

Effecting the suspension and renewal of electrical communication between the main wires and the interior of a telegraph-office or building in which such office is placed, by the use of an electric current independent of the main line, substantially as herein described.

D. F. S. WAYS.

Witnesses:

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