

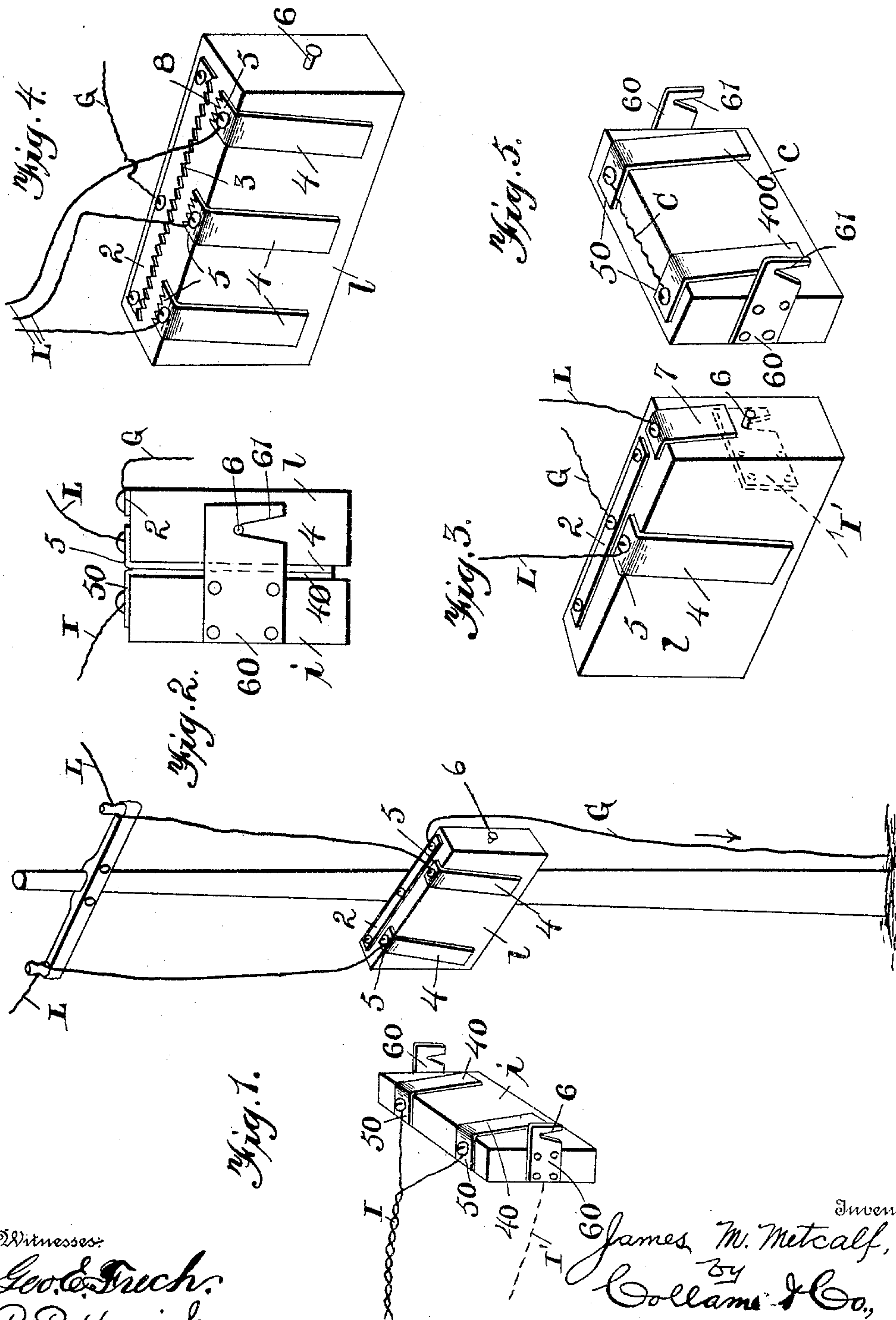
No. 640,478.

Patented Jan. 2, 1900.

J. M. METCALF.  
LIGHTNING ARRESTER.

(Application filed Aug. 30, 1899.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 640,478, dated January 2, 1900.

Application filed August 30, 1899. Serial No. 728,981. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. METCALF, a citizen of the United States, and a resident of Glen Haven, Grant county, State of Wisconsin, have invented certain new and useful Improvements in Lightning-Arresters; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to electrical conductors, and more especially to lightning-arresters; and the object of the same is to produce a device for detachably-connecting the line wire or wires with a telephone or other electrical instrument in such manner that in times of storm the connection can be so completely broken that it will be utterly impossible for lightning which might strike the line-wire to pass to the instrument.

To this end the invention consists in the specific details of construction described below and illustrated in the drawings, together with several modifications which occur to me at this time.

In the said drawings, Figure 1 is a perspective view of the two members slightly separated, showing in diagram how one is supported on a pole and the other is adapted to be detached and carried into the house or office. Fig. 2 is an edge view of the two members connected. The remaining views show modifications. Fig. 3 shows how the line member may have contact-plates at either or both its ends. Fig. 4 shows the line member with three contact-plates serrated where they stand adjacent to the ground-plate. Fig. 5 shows a dummy or connecting member which may be attached to the line member when the instrument member is removed, whereby the circuit can be completed.

In the said drawings the letter I designates the wire which leads to the instrument, (not shown,) such as a telephone or the like. L is the line-wire, (illustrated in Fig. 1 as mounted on insulators on a pole,) and G is the ground-wire which is now understood as leading to a plate buried in the ground.

My improved device consists of the instrument member *i* and the line member *l*, each having a body of insulating material—such as wood, rubber, ebony, or the like—and being of

a suitable size and shape to carry the other parts described below. The line member *l* is mounted on a pole or other support within reach of a person standing on the ground, and upon its upper edge is secured a plate 2, from which the ground-wire *G* leads to the ground. This plate may be plain, as illustrated in most of the views, or may have a serrated edge 3, as seen in Fig. 4, and its size and shape are such as will be necessary.

4 designates contact-plates whose upper ends 5 are secured, as by screws, to the upper edge of the block *l* and connected with the line wire or wires *L*, whence the plates extend over the corner of the block and down over its face, as seen, their bodies standing normally slightly remote from such face, but adapted to spring toward or into contact therewith. 6 are pins projecting from the ends of the block for a purpose to appear below. In Fig. 3 a similar contact-plate 7 is secured upon the block and extends over its end, with its lower extremities standing near the pin 6. In Fig. 4 the extreme ends 8 of the plates are serrated, and in this and all other views the upper ends of such plates stand in close proximity to or out of contact with the ground-plate 2. In a similar manner is attached to the instrument-block *i* plates 40, whose upper ends 50 are turned over upon its upper edge and secured thereto, as by screws, where they connect with the wires *I*, leading to the telephone or other instrument. In Fig. 1 two such plates are shown, although it will be clear that any suitable number may be employed.

60 designates fastening-plates attached to the ends of the block *i* and projecting at right angles to and beyond its front face, where their lower edges are notched, as at 61, in such manner as to engage with the pins 6 of the block *l* when the two members are pressed together face to face, and the block *i* is then moved downward into the position seen in Fig. 2. In Fig. 3, where the line member *l* has a contact-plate 7 standing just above the pin 6 and connected with one line-wire, it will be clear that the fastening-plate 60 of Fig. 1 when its notch 61 engages said pin 6 will stand in frictional contact with the plate 7, and hence an instrument-wire *I'* may be led from said fastening-plate 60, as seen in dotted lines



in Fig. 1. In Fig. 5 is shown a connecting member or block, which may be provided with similar fastening-plates 60 at its extremities and whose contact-plates 400 are electrically  
5 connected by a wire or other means C, so that when the instrument-block *i* is removed from a line-block *l* having two contact-plates 4, as seen in Fig. 1, the connecting block or member *c* can be substituted to complete the cir-  
10 cuit along the line-wire L L.

Although it may be elsewhere employed, this device is especially applicable to tele-  
phone-lines whereof the subscribers are farm-  
ers or others residing at remote distances from  
15 each other, as is common in the West, and the line with its block is usually constructed as seen in Fig. 1. Under ordinary circum-  
stances the instrument-block *i* is connected with the line-block *l*, (see Fig. 2,) and the  
20 circuit is complete from the line through the subscriber's instrument. In times of violent electrical storms and in order to provide per-  
fect safety and immunity from accidents the subscriber removes the block *i* from connec-  
25 tion with the line-block *l* and carries the former into the house. Agreement may have been formerly made that when he does so he is to close the circuit by substituting for the line-  
block *i* a connecting-block *c*; but at any rate  
30 it will be clear that as the terminals from the telephone are carried to a distance of from twenty to one hundred feet from the line-  
terminals on the block *l*, according to the lo-  
cation of the pole supporting said block *l*, he  
35 and his house and instrument are perfectly safe from lightning which may strike the line-wire. In such event a heavy charge of  
electricity will jump the space between the  
upper ends 5 of the plates 4 and the adjacent  
40 face 3 of the ground-plate 2 and will be con-  
ducted by the ground-wire G into the ground, and the absence of the connecting-block *c* will only more positively insure this action.

While some modifications of and additions  
45 to this idea are illustrated and described herein, there are many others which come within the spirit of my invention.

I do not limit myself to the sizes, shapes,  
proportions, materials, or exact construction  
50 of parts.

What is claimed as new is—

1. A circuit-closer consisting of two blocks  
or members one of which has alined pins in  
its ends and the other of which has on its  
55 ends fastening-plates projecting at right an-  
gles to its face and provided with notches  
adapted to engage said pins, contact-plates  
having their upper ends bent over and se-  
cured to the upper edges of said blocks and

their spring-bodies extending down over the  
meeting faces thereof, and wires leading re-  
spectively from said contact-plates, all as and  
for the purpose set forth.

2. A circuit-closer consisting of two blocks  
or members one of which has alined pins in  
its ends and the other of which has on its  
ends fastening-plates projecting at right an-  
gles to its face and provided with notches  
adapted to engage said pins, contact-plates  
having their upper ends bent over and se-  
cured to the upper edges of said blocks and  
their spring-bodies extending down over the  
meeting faces thereof, another contact-plate  
on one block whose upper end is secured to  
the upper edge of the block and whose body  
75 passes over its extremity and stands adja-  
cent one of said pins, and wires leading from  
each of said contact-plates and from the fas-  
tening-plates, as and for the purpose set  
forth.

3. In a lightning-arrester, the combination  
with a line-block having contact-plates con-  
nected with the line-wire and whose upper  
ends are turned over and secured to the up-  
per edge of said block, a ground-plate also  
85 secured to said upper edge in proximity to  
the extremities of the contact-plates, and a  
ground-wire leading from this plate; of an  
instrument-block having contact-plates con-  
nected with the instrument and adapted to  
90 make electrical contact with those on the line-  
block, and means for detachably connecting  
said blocks when the plates thereof are re-  
spectively in contact, substantially as de-  
scribed.

4. In a lightning-arrester, the combination  
with a line-block having contact-plates con-  
nected with the line-wire and whose upper  
ends are turned over and secured to the up-  
per edge of said block, a ground-plate also  
100 secured to said upper edge in proximity to  
the extremities of the contact-plates, and a  
ground-wire leading from this plate; of an  
instrument-block having contact-plates con-  
nected with the instrument and adapted to  
105 make electrical contact with those on the line-  
block, pins in the ends of one block, and fas-  
tening-plates projecting from the ends of the  
other block at right angles to its face and  
having notches adapted to removably engage  
110 said pins, as and for the purpose set forth.

In testimony whereof I have hereunto sub-  
scribed my signature this the 26th day of Au-  
gust, A. D. 1899.

JAMES M. METCALF.

Witnesses:

FRANKLIN KIDD,  
H. G. KUENSTER.