

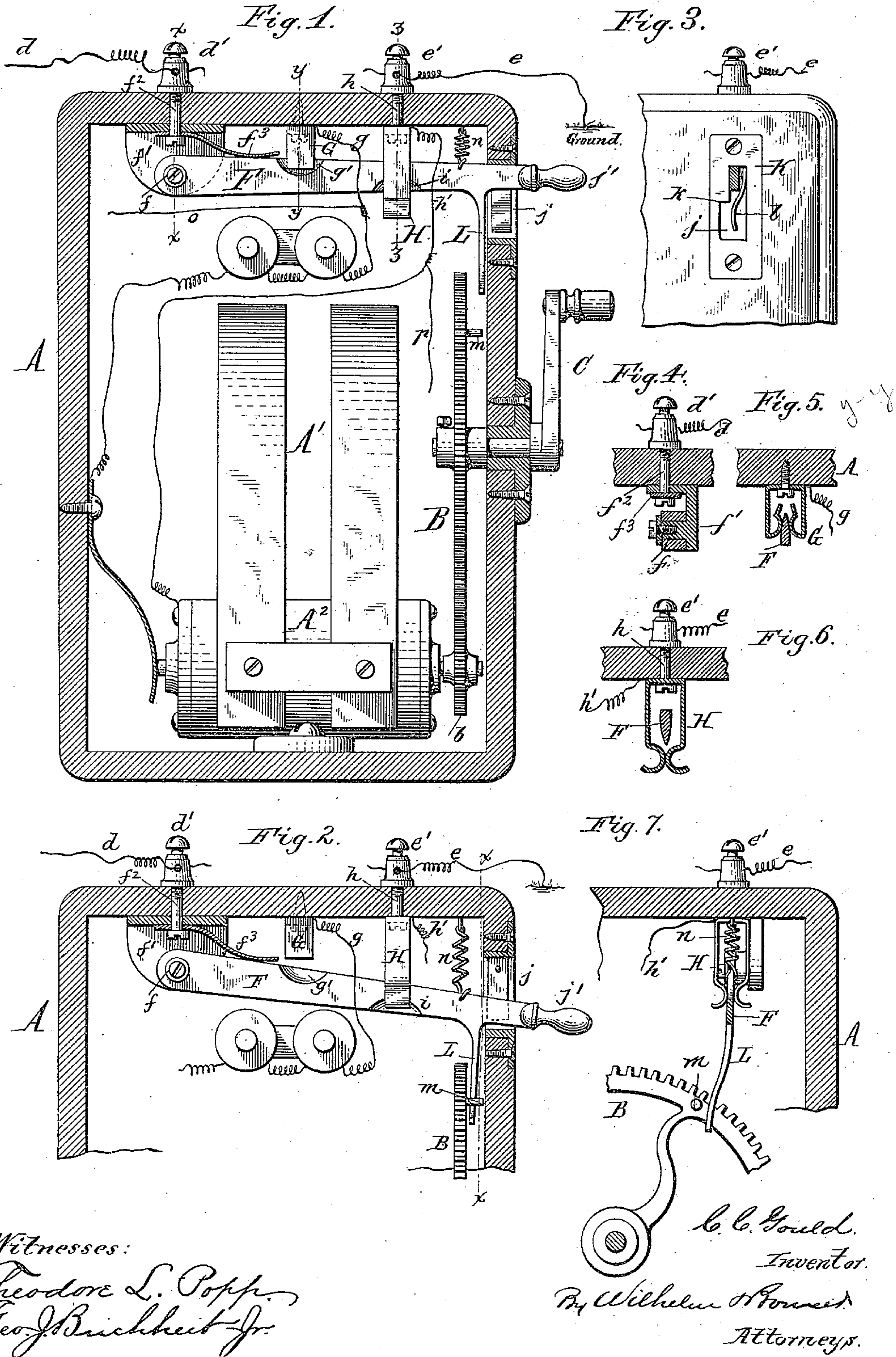
(No Model.)

C. C. GOULD.

GROUNDING SWITCH FOR TELEPHONE INSTRUMENTS.

No. 356,038.

Patented Jan. 11, 1887.





# UNITED STATES PATENT OFFICE.

CLAUDE C. GOULD, OF BATAVIA, NEW YORK, ASSIGNOR OF FIVE-EIGHTHS TO WALTON SMITH, OF SAME PLACE, AND PHILIP W. SCRIBNER, OF TONAWANDA, NEW YORK.

## GROUNDING-SWITCH FOR TELEPHONE-INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 356,038, dated January 11, 1887.

Application filed October 21, 1886. Serial No. 216,902. (No model.)

*To all whom it may concern:*

Be it known that I, CLAUDE C. GOULD, of Batavia, in the county Genesee and State of New York, have invented a new and useful  
5 Improvement in Grounding-Switches for Telephone-Instruments, of which the following is a specification.

This invention relates to lightning-arresters or grounding-switches for telephones, and has  
10 the object to break the connection with the instrument completely when protection against lightning is desired, and to restore the connection automatically when the instrument is required for use.

15 In lightning-arresters as now generally constructed the arrester establishes a short circuit with the ground; but when a heavy current of electricity passes through the line which cannot be completely carried off by the lightning-  
20 arrester the excess of the current passes through the instrument, and the latter is therefore liable to be injured, notwithstanding the presence of the lightning-arrester. It happens frequently that the plug of the lightning-arrester  
25 is inserted to protect the instrument, and left in this position by negligence or oversight or because the person who wishes to use the instrument is not familiar with the manner of manipulating the lightning-arrester. At-  
30 tempts to use the instrument in this condition often result in a complaint that the line is out of order, which necessitates an investigation before the cause of the trouble is ascertained.

My invention is designed to overcome these  
35 difficulties; and it consists of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of the call-bell mechanism of a telephone-instrument, showing the  
40 main line in connection with the instrument. Fig. 2 is a similar elevation of the upper portion of the instrument, showing the main line disconnected from the instrument and connected  
45 directly with the ground. Fig. 3 is a fragmentary end elevation of the upper portion of the instrument. Figs. 4, 5, and 6 are vertical cross-sections in lines *x x*, *y y*, and *z z*, Fig. 1, respectively. Fig. 7 is a cross-section in line  
50 *x x*, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A represents the case which contains the magnets A' and the rotary generator A<sup>2</sup> of the  
55 call-bell mechanism.

*b* represents the pinion, mounted on the shaft of the generator, and B the gear-wheel which  
60 meshes with the pinion *b* and is provided on the outside of the case with the usual hand-crank, C.

*d* represents the main line, and *d'* the post to which the main line is attached on the top  
of the case A.

*e* represents the ground-line, and *e'* the post  
65 to which it is attached.

F represents a lever or movable bar arranged  
in the case A, near the top thereof, and where-  
by the main line is placed in communication  
either with the instrument or with the ground.  
The lever F is pivoted on the horizontal stud  
70 *f* of a bearing, *f'*, which is attached to the under side of the top of the case by a vertical  
bolt, *f''*, connecting with the post *d'* of the  
main line, so that the current enters the lever  
F from the main line. The lever is fitted  
75 loosely on the stud *f*, so as to be capable of a slight lateral movement on the same. A light  
contact-spring, *f'''*, may be employed in order  
to maintain a reliable contact between the  
bolt *f''* and lever F.

G represents the instrument contact-spring  
secured to the underside of the top of the case  
above the lever F and connected with the in-  
strument by a wire, *g*. The lever F is provided  
85 with a tapered edge, *g'*, below the contact-  
spring G, to engage between the two arms of the  
latter when the lever is in its upper and nor-  
mal position, as represented in Figs. 1 and 5.

H represents the ground contact-spring se-  
cured to the under side of the top of the case  
90 and embracing the lever F, the contact-point  
of the two arms of the spring being arranged  
below the lever when the latter is in its upper  
and normal position, as represented in Fig. 6.  
The spring H is connected with the ground-  
95 post *e'* by a vertical bolt, *h*, and with the in-  
strument by a wire, *h'*. The lever F is provided  
opposite the spring H with a lower beveled  
edge, *i*, which engages between the two arms  
of the spring when the lever is depressed, as 100



represented in Figs. 2 and 7. The free end of the lever F extends through an opening, *j*, in the side of the case A, and is provided with a handle or knob, *j'*. The opening *j* is provided with a shoulder or stop, *k*, as represented in Fig. 3, under which the lever can be placed by a slight lateral movement on its pivot when depressed, thereby locking the lever in its depressed position. As shown in the drawings, this stop *k* is formed in an escutcheon-plate, K, in which the opening *j* is formed.

*l* represents a spring secured in the opening *j*, opposite the stop *k*, so as to press the lever toward the stop when the lever is depressed, thereby insuring the engagement of the lever against the under side of said stop.

When the lever F is in its upper and normal position, as represented in Figs. 1, 3, and 5, the current passes through the main line *d*, post *d'*, bolt *f*<sup>2</sup>, lever F, contact-spring G, and wire *g* to the instrument, which latter is connected with the ground-post *e'* by the wire *h'*, while the lever F is disconnected from the ground contact-spring H. When it is desired to protect the instrument against electrical disturbances, the lever F is depressed until it is locked against the stop *k*, whereby the lever is disconnected from the instrument contact-point G and connected with the ground contact-point H, as represented in Fig. 2. In this position of the lever an electrical current entering the lever from the main line cannot reach the instrument, but is conducted by the lever directly to the ground-point, thus rendering it impossible for any part of the current to reach and injure the instrument.

L represents an arm formed on or secured to the lever F in the case A and depending toward the gear-wheel B.

*m* represents one or more pins secured to the side of the gear-wheel B in the proper position to strike against the arm L when the lever F is depressed and move the lever laterally on its pivot in the proper direction to disengage it from the stop *k*, as represented in Fig. 2, but to clear the arm L when the lever is in its upper position, as represented in Fig. 1.

*n* represents a spring whereby the lever is connected to the top of the case A, and which raises the lever when it is released from the stop *k*.

When the lever has been depressed for protecting the instrument and is left in this position, it is automatically released by the pin *m* striking against the arm L upon turning the crank of the call-bell. In this manner the connection with the main line is automatically established upon operating the call mechanism,

and the annoyances resulting from neglected lightning-arresters are avoided.

*o* represents a wire whereby the wire *g* is connected with the receiving-telephone, and *p* is a wire which connects the wire *h'* with the transmitter.

Upon depressing the lever F and breaking the connection between the bell mechanism and the main line it is easy to discover short circuits in the bell mechanism, if such should exist.

I claim as my invention—

1. The combination, with the call-bell mechanism of a telephone-instrument, of a contact-point connected with the instrument, a contact-point connected with the ground, a movable bar connected with the main line and capable of being placed in contact with either of said contact-points, a call-bell-actuating mechanism and shifting mechanism connected therewith, whereby said movable bar is disconnected from the ground contact-point and connected with the instrument contact-point by operating the call-bell, substantially as set forth.

2. The combination, with the main line, the instrument contact-point G, and the ground contact-point H, of the pivoted lever F, provided with a spring, *n*, a stop, *k*, whereby the lever is locked in position, and a spring, *l*, whereby the lever is moved laterally toward the stop *k*, substantially as set forth.

3. The combination, with the main line, an instrument contact-point, G, and a ground contact-point, H, of a pivoted lever, F, a stop, *k*, whereby the lever is held against the ground contact-point, and a movable projection, *m*, attached to the call-bell mechanism, whereby the lever is disengaged from said stop, substantially as set forth.

4. The combination, with the main line, an instrument contact-point, G, and a ground contact-point, H, of a lever, F, connected with the main line and provided with an arm, L, a spring, *n*, whereby the lever is held against the instrument-contact G, a stop, *k*, whereby the lever is held against the ground-contact H and a wheel, B, of the call-bell mechanism provided with a projection, *m*, adapted to strike the arm L and disengage the lever from the stop *k*, substantially as set forth.

Witness my hand this 16th day of October, 1886.

CLAUDE C. GOULD.

Witnesses:

JNO. J. BONNER,  
CARL F. GEYER.