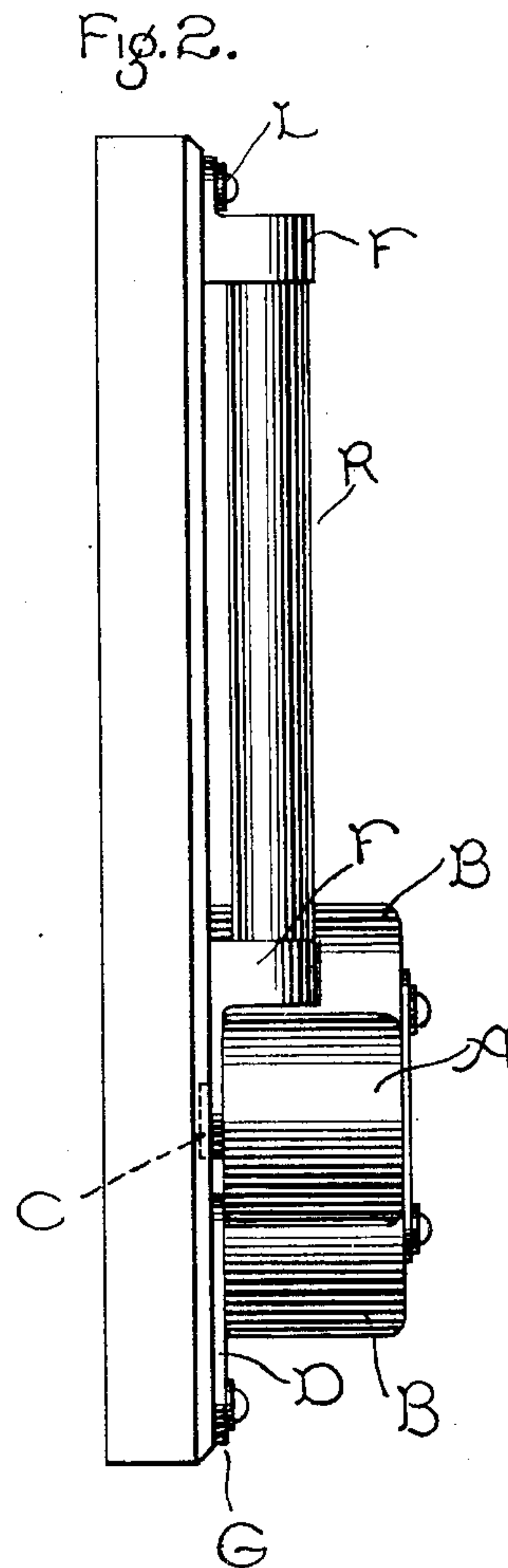
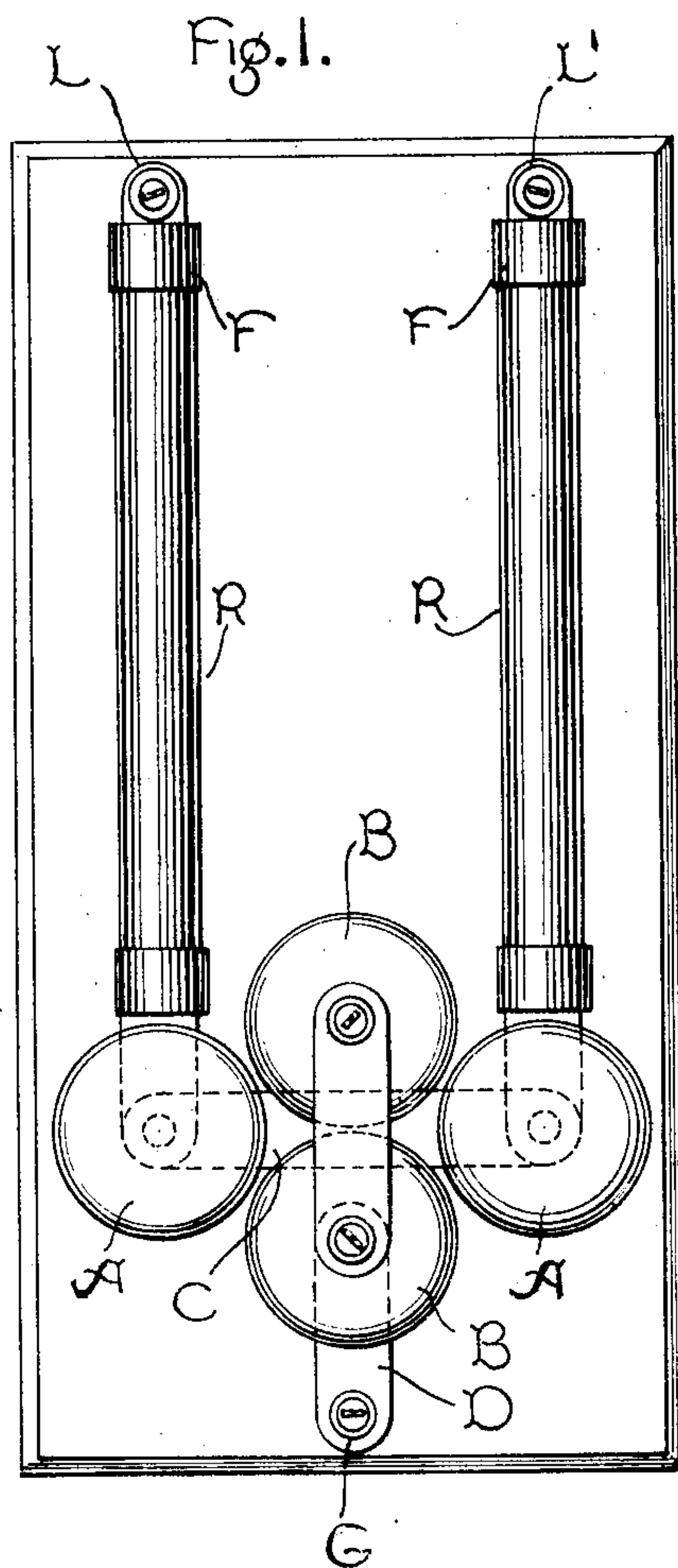


No. 744,106.

PATENTED NOV. 17, 1903.

H. E. RAYMOND.
LIGHTNING ARRESTER.
APPLICATION FILED JULY 22, 1899.

NO MODEL.



Witnesses.

Edward Williams, Jr.

Benjamin B. Hull

Inventor.

Henry E. Raymond,

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Atty.

UNITED STATES PATENT OFFICE.

HENRY E. RAYMOND, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 744,106, dated November 17, 1903.

Application filed July 22, 1899. Serial No. 724,771. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. RAYMOND, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Lightning-Arresters, of which the following is a specification.

This invention relates to lightning-arresters and is an application of my discovery that the tendency of a lightning charge to jump an air-gap is increased by an increase in the extent of the surfaces of the electrode-dischargers which are exposed to each other. The increased surfaces of such dischargers also serve to quickly convey the heat generated by a lightning charge away from the dischargers and the included air-gaps.

Figures 1 and 2 of the drawings are a plan and elevation, respectively, of one form of arrester embodying my invention, which invention may be embodied in various structures without varying the essential features of the same. I prefer, however, to embody the invention in the standard form of arrester with a non-inductive resistance in series with the air-gap to prevent the line-current from continuing the arc formed by the lightning-discharge.

The binding-posts to which connections are made from the line are represented by L and L'. Metallic dischargers A of cylindrical or other suitable form are mounted upon and in electrical connection with a conducting-strip C, and non-inductive resistances R are placed in series with the line and dischargers and are supported in suitable clips or brackets F.

A second set of dischargers B, located in proximity to the dischargers A, is mounted upon and electrically connected with a second conducting-strip D, from which connection is made with the ground at G.

It is clear that but one side of the line might be connected to the first set of dischargers at either of the dischargers A. It is also obvious that the connections of the line to A A and of B B to ground need not be limited to the series arrangement shown, but may be extended to any other desired.

The operation of the device is very simple. If a charge strikes through L, it will flow

along the strip C and will then have four contemporaneous paths between the dischargers A A and B B. All the dischargers may be made rotatable about their axes if it is desired, and the number of dischargers is not limited to four, as similar arrangements embodying the essential features of my invention may be made with an increased number of dischargers. The peculiar arrangement of the dischargers provides a very large effective area of spark-gap, and I believe that a capacity or resonant effect is thereby created which serves to assist the discharge.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination in a lightning-arrester, of a plurality of independent dischargers connected to line, each arranged to form air-gaps in multiple between itself and a plurality of independent dischargers connected to ground.

2. The combination in a lightning-arrester, of independent dischargers electrically connected in series to line, each discharger being arranged to form air-gaps in multiple between itself and two common dischargers connected to ground.

3. The combination in a lightning-arrester, with two electrically-connected cylindrical dischargers, of a third discharger arranged in such relation to said dischargers that a large area of discharge-surface will be established between each of the connected dischargers and the third discharger.

4. The combination in a lightning-arrester, with two independent electrically-connected dischargers having discharge and radiating surfaces of large extent, of a third discharger also having discharge and radiating surface of large extent arranged to establish sparking distances of large area between each of said dischargers and itself, and a non-inductive resistance in series between the line and the discharge-surfaces connected therewith.

5. A lightning-arrester, which comprises a set of dischargers electrically connected to each other and to line, and a second set of dischargers electrically connected to each other and to ground, each discharger connected to line being arranged in proximity to every discharger connected to ground.

6. A lightning-arrester, which comprises a

set of dischargers connected to line, and a second set of dischargers connected to ground, each discharger connected to line being arranged in proximity to every discharger connected to ground.

7. A lightning-arrester which comprises a set of dischargers connected to line, and a second set of dischargers connected to ground, each discharger connected to ground being arranged in proximity to every discharger connected to line.

8. A lightning-arrester, comprising a set of dischargers connected to line, and a second set of dischargers connected to ground, each discharger connected to line being arranged in proximity to every discharger connected to ground, and each discharger connected to ground being arranged in proximity to every discharger connected to line.

9. A lightning-arrester which comprises dischargers connected in series to line, and dis-

chargers connecting in series to ground, said dischargers being so arranged that each discharger connected to line together with each discharger connected to ground include an air-gap, all the air-gaps thus formed being in multiple between the line and ground.

10. A lightning-arrester which comprises a plurality of dischargers, each connected to line through a non-inductive resistance, a conductor connecting said dischargers together, and a plurality of dischargers connected to ground, each of which latter dischargers is separated by a short air-gap from each of the dischargers connected to line.

In witness whereof I have hereunto set my hand this 20th day of July, 1899.

HENRY E. RAYMOND.

Witnesses:

BENJAMIN B. HULL,
CAROLYN L. HAYNES.