No. 657,574. Patented Sept. 11, 1900.

A. SINDING-LARSEN.

HIGH VOLTAGE INSULATOR.

(Application filed Dec. 11, 1899.)

(No Model.)

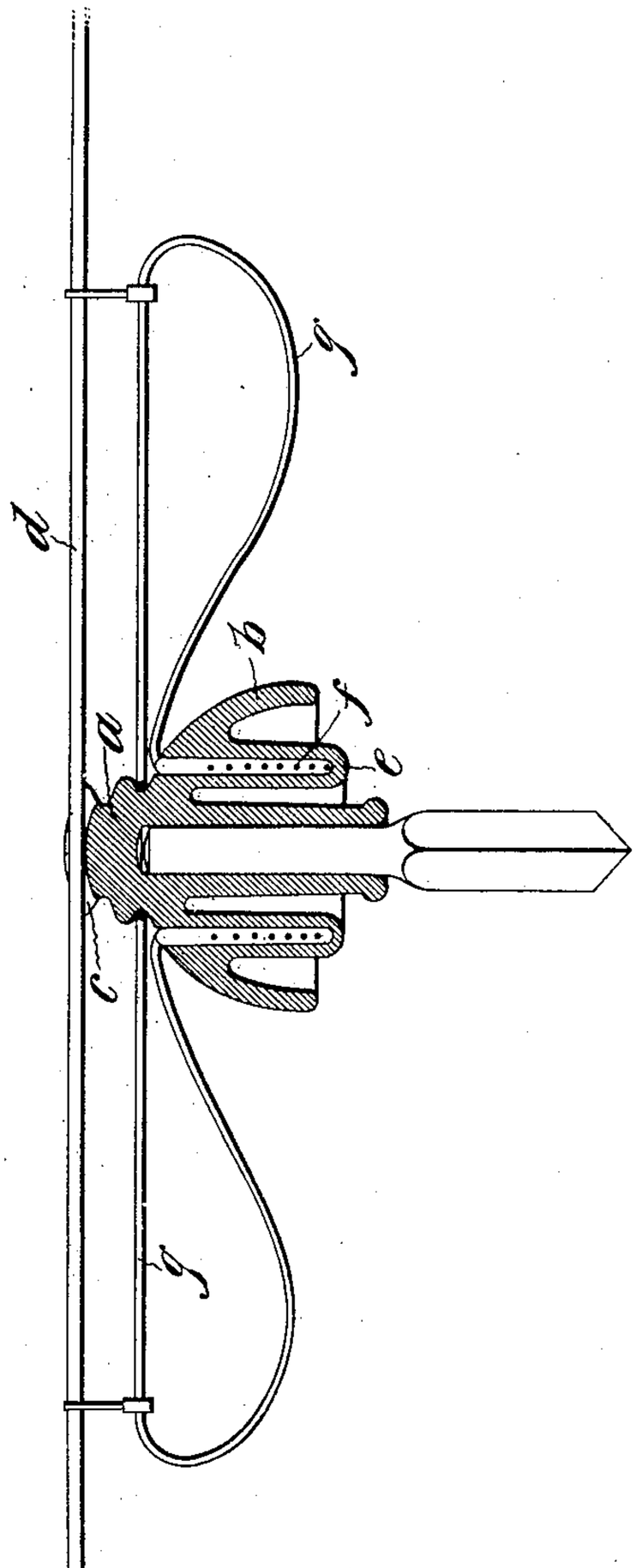

Fig. 1.

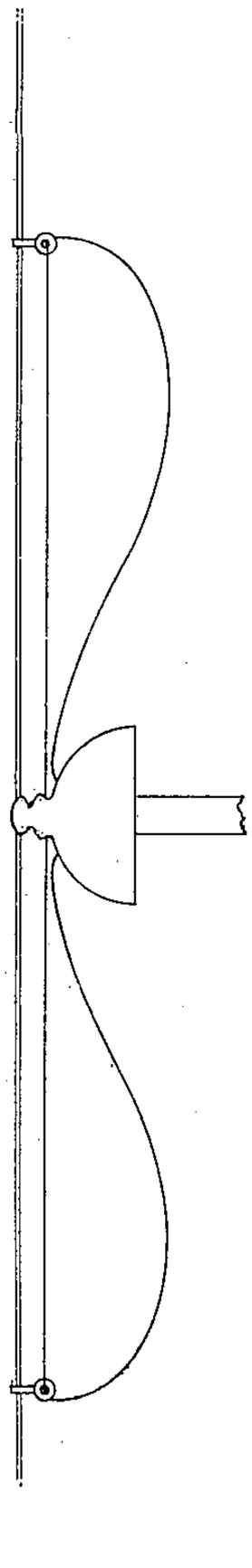

Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

ALF SINDING-LARSEN, OF FREDERIKSVAERN, NORWAY.

HIGH-VOLTAGE INSULATOR.

SPECIFICATION forming part of Letters Patent No. 657,574, dated September 11, 1900

Application filed December 11, 1899. Serial No. 739,996. (No model.)

To all whom it may concern:

Be it known that I, ALF SINDING-LARSEN, a citizen of Norway, and a resident of Frederiksvaern, Norway, have invented certain new and useful Improvements in High-Voltage Insulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to electric insulators, and especially to that kind of insulators which are used for high-tension conductors. The insulators for this purpose are generally made out of insulating material and formed with hoods or bell-shaped flanges, the purpose of which is to prevent moisture from forming a continuous conducting film or connection between the metallic conductor and the post or bracket carrying the insulator. It is known, however, that whatever form such insulator is given it is not possible to prevent the condensation of moisture unless special means are employed; and the object of my invention is to provide means for preventing such condensation on a part of the insulator to break the conducting surface or film.

My invention consists in combining with the insulator means for heating it so that a part of the insulator will always have a little higher temperature than the rest. The difference in temperature need not be very great, and only one degree centigrade proves to be sufficient, because the moisture in the air surrounding the insulator will always condense on that part of the insulator that has the lowest temperature, notwithstanding the fact that the heated part may have a temperature low enough to condense the moisture. The moisture, so to speak, avoids the warmer out of two cold surfaces and only the colder one acts as a condenser. This heating of a part of the insulator may be performed by means of an electric current passing through a resistance inclosed in the insulator. For this purpose a very weak current is sufficient, about one-tenth of a watt under ordinary circumstances.

In the accompanying drawings I show in Figure 1 one form of carrying out my invention, this figure showing a vertical central section through the insulator. Fig. 2 shows in elevation an insulator, the conductor, and means for obtaining a current from the same to heat the insulator.

Referring to Fig. 1, *a* is the body of the insulator, having, as usual, a hood *b* and a slotted top *c*, in which the conductor *d* rests and to which it may be tied.

e is an internal depending flange having an annular pocket in which a resistance-coil *f* is embedded in an insulating material. This resistance-coil or other resistance is connected to a separate conductor *g*, suspended, if desired, from the main line.

Instead of having a separate conductor along the line for the heating-circuit this latter may be arranged as a local induction-circuit at each insulation, taking current by induction from the main conductor, as illustrated, in which case the main line carries an alternating or pulsating current, or the heating-current may be taken from the main line in any other suitable manner. I do not, however, confine myself to any special manner or means for feeding the resistance inclosed in the insulator, as this is a matter of construction and workmanship and will depend on circumstances. I have shown as an example of construction a local wire *g*, connected to the heater *f* in the insulator and suspended and insulated from the main conductor *d*, which carries the alternating or pulsating current. By this arrangement a current will be induced in the secondary local circuit of sufficient strength to heat the coil *f* on the insulator. By the means shown the inner flange *e* will be given a higher temperature than the hood *b*, and the former will therefore remain dry and free from moisture, forming in this manner an insulating zone between the hood and the supporting part of the insulator.

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

1. The combination with a main line conductor carrying alternating or pulsating current, and its insulating-supports; of a local

circuit at each support and means for heating said supports included in the local circuit, substantially as and for the purpose set forth.

2. An insulator for electric purposes having an outer hood and an inner hood, the latter being provided with an annular pocket for taking up electric resistance.

3. The combination with a main wire and a support therefor, a heater for said support, an auxiliary wire suspended from the main wire and adapted to heat the heater by induced current, substantially as set forth.

4. In combination with a main wire and its support, a heater for said support, a local wire suspended in proximity to, and insulated from the main wire, and in circuit with the heater, adapted to heat the latter by induced current, substantially as set forth.

5. The combination with a main line conductor carrying alternating or pulsating current, and its insulating-supports; of a secondary circuit and means for heating said supports included in the secondary circuit, substantially as and for the purpose set forth.

6. An insulator comprising a hollow stem, a hood therefor, a depending flange between said hood and stem and a heater carried by said flange, substantially as and for the purpose set forth.

7. An insulator, comprising a hollow stem, a hood therefor, a hollow depending flange between said hood and stem, and an electric heater carried in said flange, substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ALF SINDING-LARSEN.

Witnesses:

ALFRED J. BRYN,

O. MÜLLER.