

(No Model.)

C. F. GOODRICH.
INSULATOR.

No. 474,319.

Patented May 3, 1892.

Fig. 1,

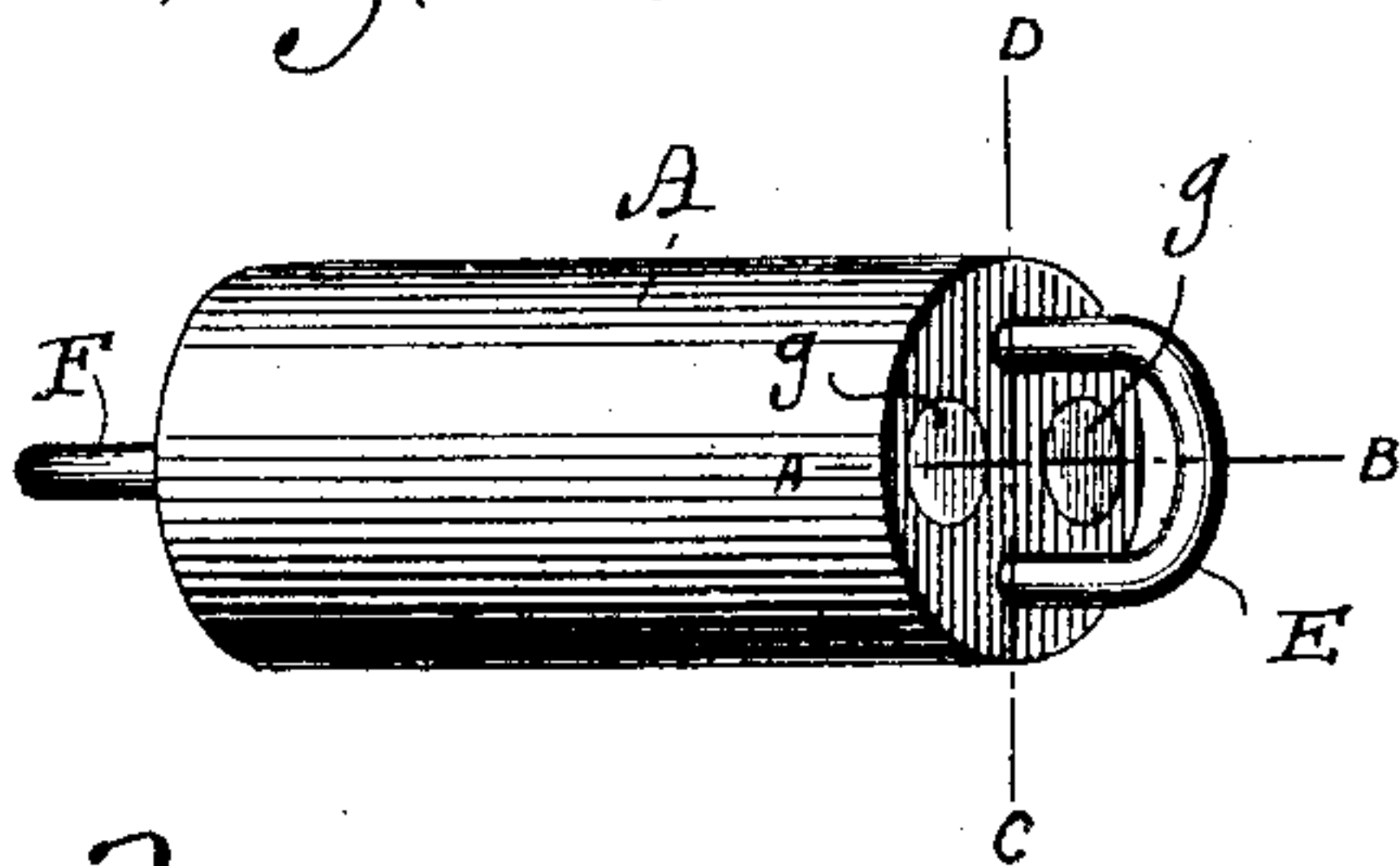


Fig. 2,

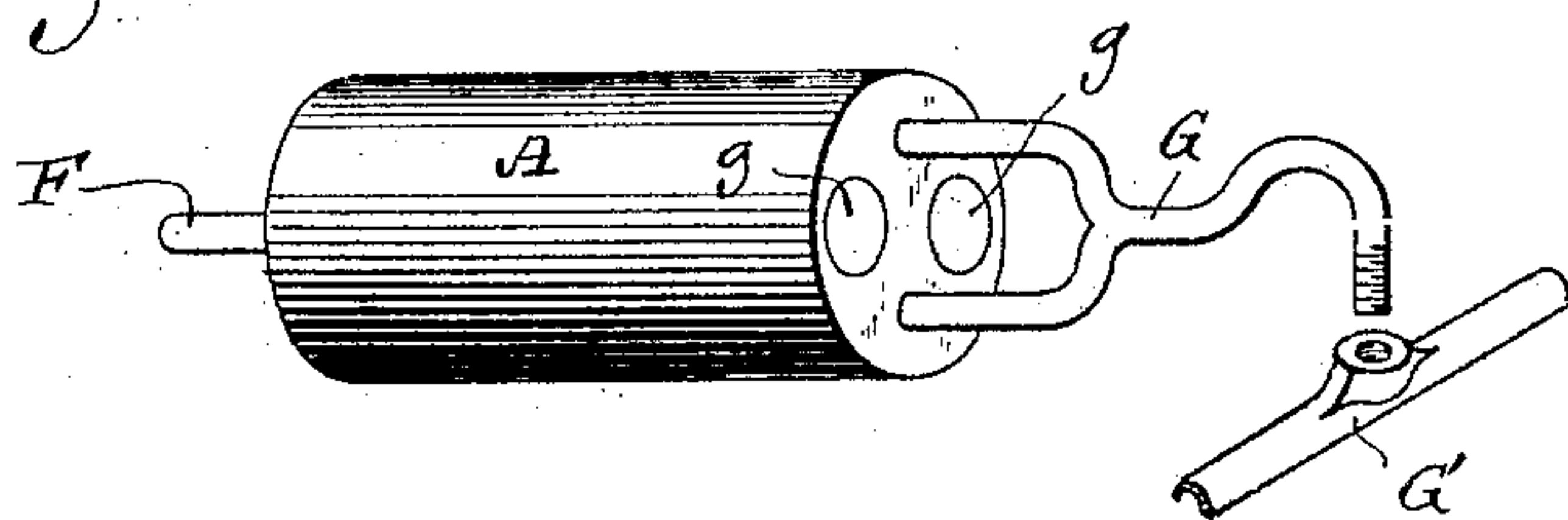


Fig. 5,

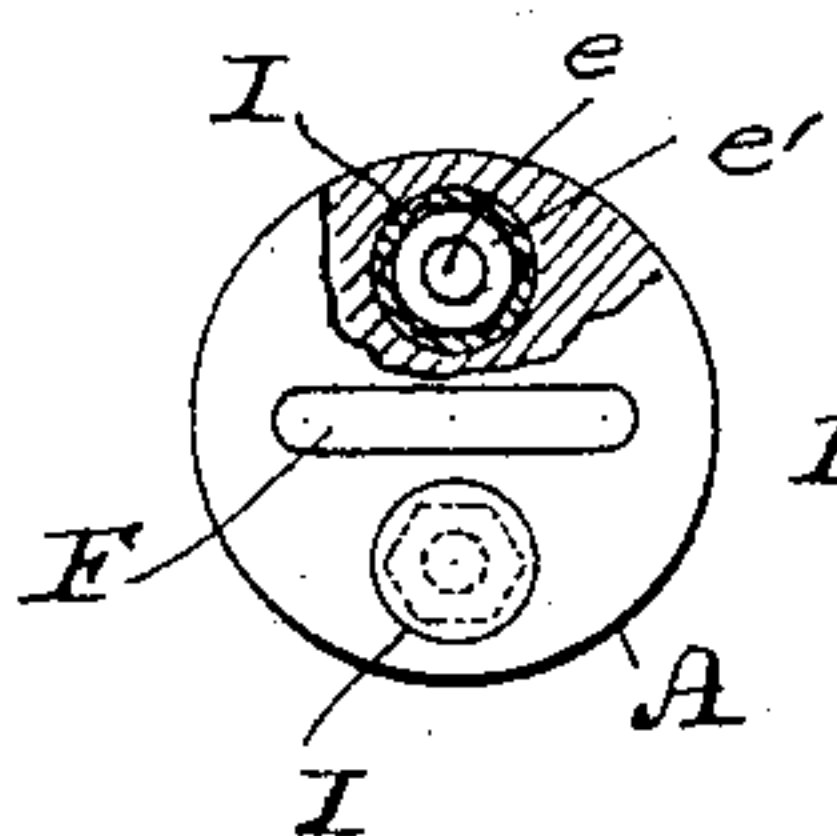


Fig. 3,

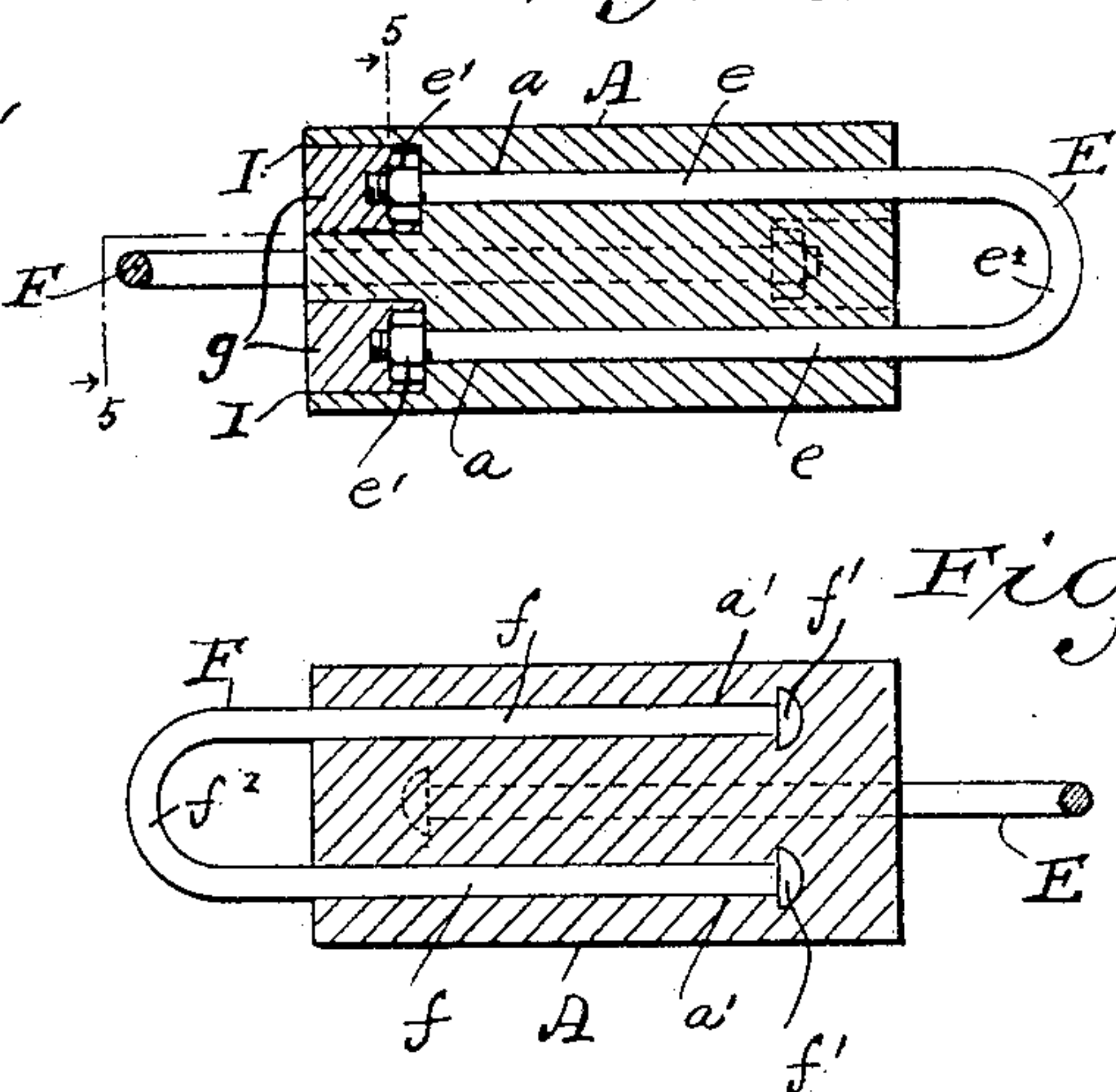
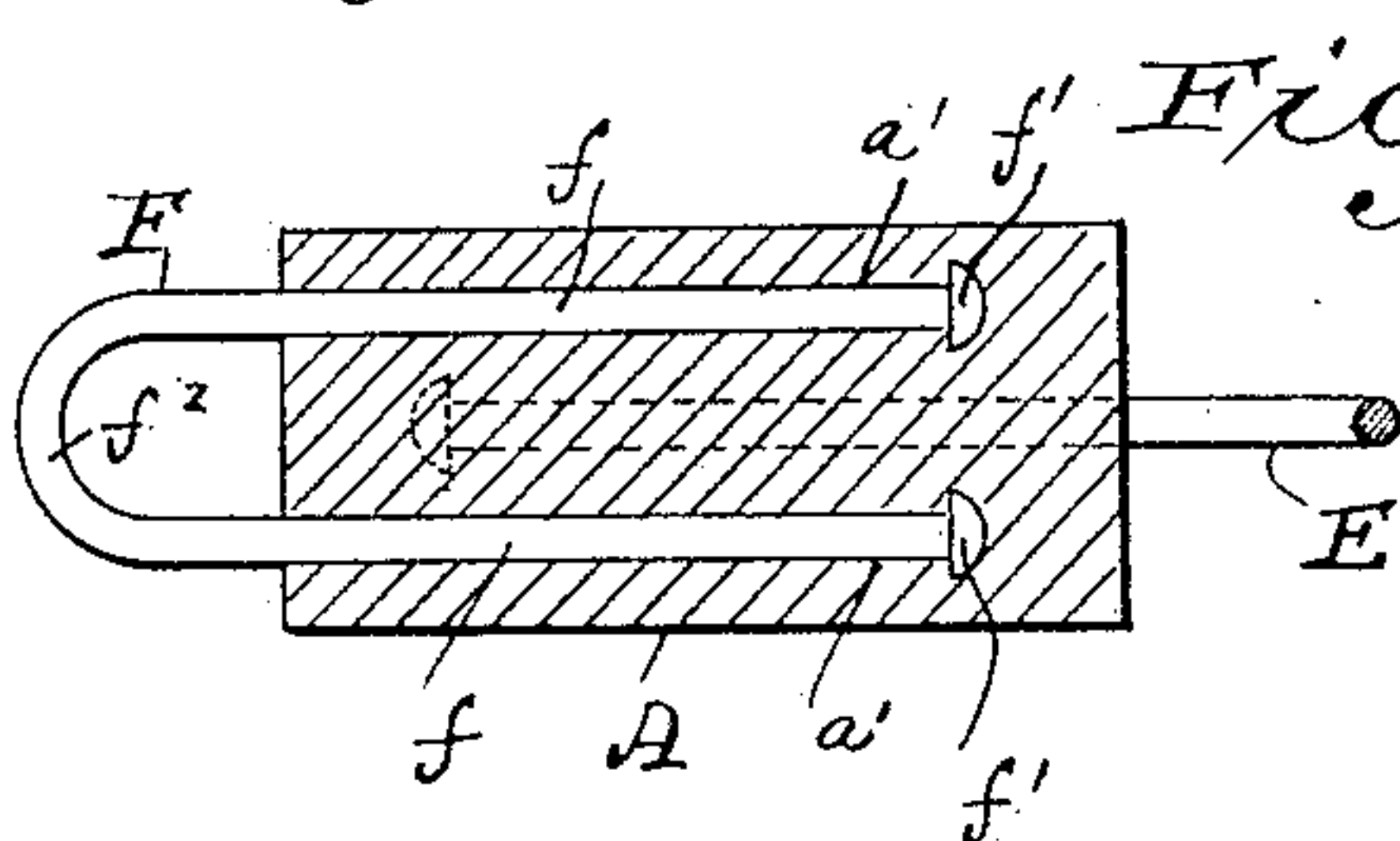


Fig. 4,



Witnesses
Geo W. Young.
John C. Wiles.

Inventor
Charles F. Goodrich
By H. G. Underwood
Attorney

UNITED STATES PATENT OFFICE.

CHARLES F. GOODRICH, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
JOHN G. THOMPSON, OF MILWAUKEE, WISCONSIN.

INSULATOR.

SPECIFICATION forming part of Letters Patent No. 474,319, dated May 3, 1892.

Application filed December 29, 1891. Serial No. 416,494. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. GOODRICH, a citizen of the United States, and a resident of Chicago, in the county of Cook, and in the State of Illinois, have invented certain new and useful Improvements in Insulators; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to certain new and useful improvements in the construction of insulators for electric wires; and it relates more particularly to that class of insulators which are used in connection with overhead electric-railway wires and other electric line-wires conveying high-tension currents.

The various features of my invention will be hereinafter described, and more particularly pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a perspective view of an insulator constructed in accordance with my invention. Fig. 2 is a similar view of one of my improved insulators provided with a different form of device for engaging with the wire. Fig. 3 is a vertical longitudinal section of the device, taken on line C D of Fig. 1. Fig. 4 is a horizontal longitudinal section taken on line A B of Fig. 1 and illustrates a somewhat different form of construction. Fig. 5 is a detail view of the end of the insulator in elevation and shows a portion of the same in section on line 5 5 of Fig. 3.

In said drawings, A indicates a cylindrical body of insulating material—such as hard rubber, porcelain, glass, or the like—provided with longitudinal passages or channels *a a* and *a' a'*.

E and F represent suitable staples having parallel arms *e e* and *f f*, respectively, said arms being arranged to extend lengthwise of the passages or channels *a a* and *a' a'* in the insulating-body A.

As illustrated in the drawings, these longitudinal passages are arranged in pairs diametrically opposite to each other, but those of one pair being arranged substantially at right angles to those of the other pair, so that the two staples E and F will occupy positions at substantially right angles to each other when they are in position within the body A. The

ends of the staples or loops E and F are provided with enlarged heads *e' f'* of greater diameter than the passages or channels *a a* and *a' a'*, and these enlarged heads may be either made integral with the said staples or may consist of nuts screwed upon the ends of said staples. The body A of insulating material may be molded about the staples E and F, so as to cause the heads *e' f'* to become embedded in said insulating-body, and the only portions of said staples that are exposed will then be the looped portions *e² f²*, which extend to the outside of said body; or, if desired, said body A may be formed with the longitudinal passages for the ends of the staples E F and with enlargements I I in the ends of said passages to receive the nuts which form the enlarged heads on the said ends of the staples E F. After the parts have been secured together, as shown, the ends of the longitudinal passages or channels *a a* and *a' a'* outside of the enlarged heads *e' f'* are filled with any suitable or desired insulating material, as indicated at *g g*, so as to thoroughly cover and protect the ends of the staples E F and the heads *e f*.

The particular form of my improved insulator illustrated in Fig. 1 of the drawings is designed for use upon "span-wires," or those which extend from one support to another, and from the central portion of which the line-wires are suspended. By the employment of this form of device the span-wires may be thoroughly insulated from the supports and all liability of grounding of the current avoided from the fact that the two staples or loops to which the wires are connected are thoroughly insulated from each other and the only portions of said staples or loops which are not covered by insulating material are the portions with which the wires are directly connected.

The form of device illustrated in Fig. 2 of the drawings is designed for use where the line-wire is carried around a curve, a bracket G, provided with a wire-clamp G', being provided upon the outer end of the staple or loop at one end of the insulator, the line-wire being secured within said clamp and the straining-wire being secured to the staple or loop at the other end of the insulator.

A disadvantage experienced in the use of

insulators of this nature as employed in connection with line-wires conveying high-tension currents has been that the metallic connections for the line-wires and the supporting-wires have not been entirely embedded within the insulating material, and are consequently but imperfectly insulated from each other, so that grounding of the current is very likely to occur.

By my improvement, however, the insulation of the line-wires from the supporting or straining wires is rendered perfect and all liability of grounding of the current is obviated.

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

1. An insulator for electric wires, comprising a body portion of insulating material and two staples or loops having their ends embedded within said insulating-body and their looped portions extending to the outside of the said body, substantially as described.

2. An insulator for electric wires, comprising a body portion of insulating material and two staples or loops having their ends embedded within said body and their looped portions extending to the outside of said body at op-

posite ends of the same, substantially as described.

3. An insulator for electric wires, comprising a body portion of insulating material and two metallic staples having their ends embedded within said body and their looped portions extending to the outside of said body at opposite ends, said staples being arranged in planes substantially at right angles to each other, substantially as described.

4. An insulator for electric wires, comprising a body portion of insulating material and two staples or loops having enlarged heads upon their ends and said ends embedded in said body portion and having their looped ends extending to the outside of the said insulating-body at opposite ends of the same and adapted for engagement with supporting or line wires, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand, at Chicago, in the county of Cook and State of Illinois, in the presence of two witnesses.

CHARLES F. GOODRICH.

Witnesses:

N. R. LEYDEN,

F. A. BRYAN.