

No. 725,355.

PATENTED APR. 14, 1903.

E. F. NORTHRUP.
RESISTANCE COIL.

APPLICATION FILED FEB. 4, 1903.

NO MODEL.

FIG. 1.

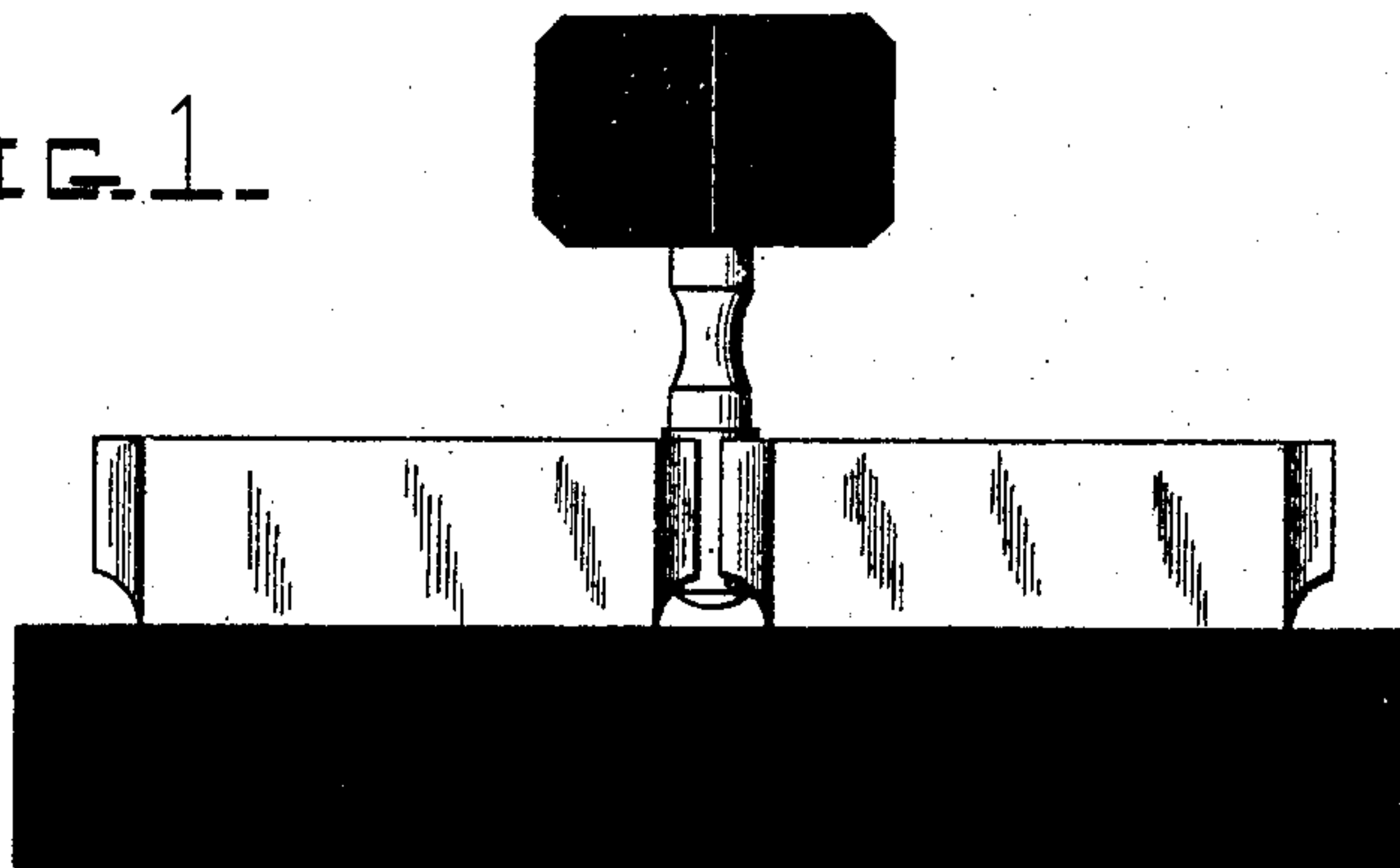


FIG. 2.

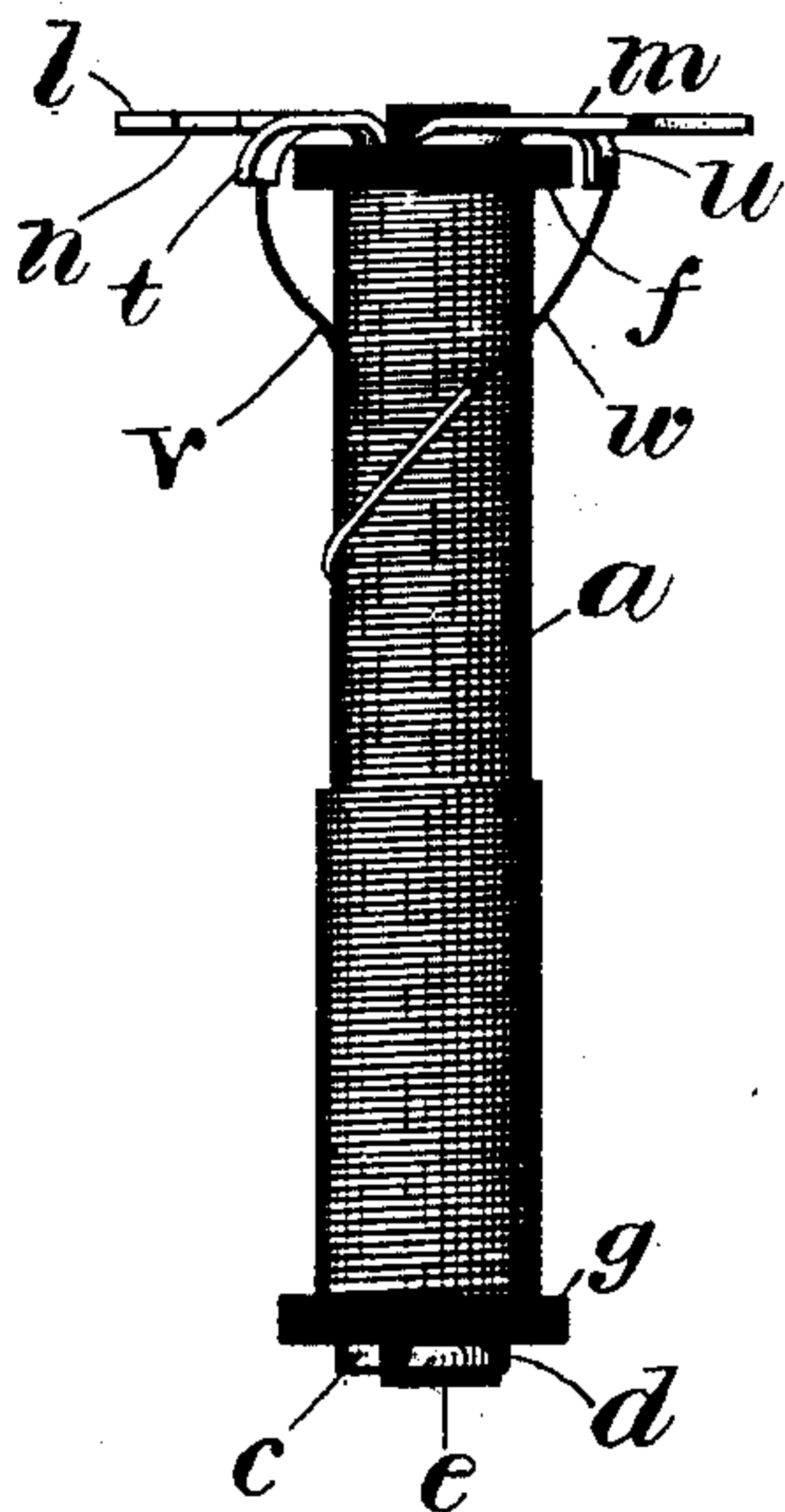


FIG. 3.

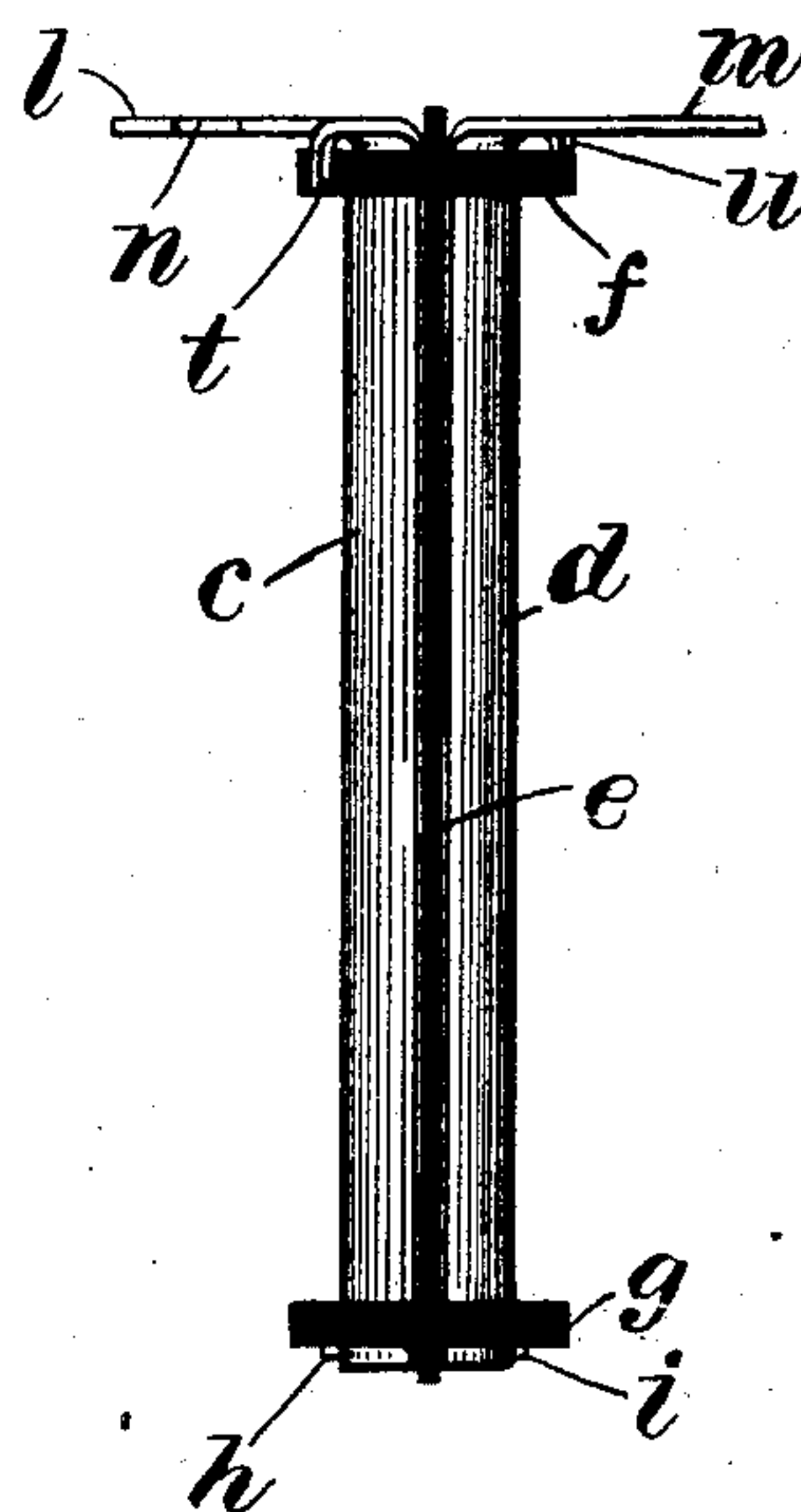


FIG. 4.

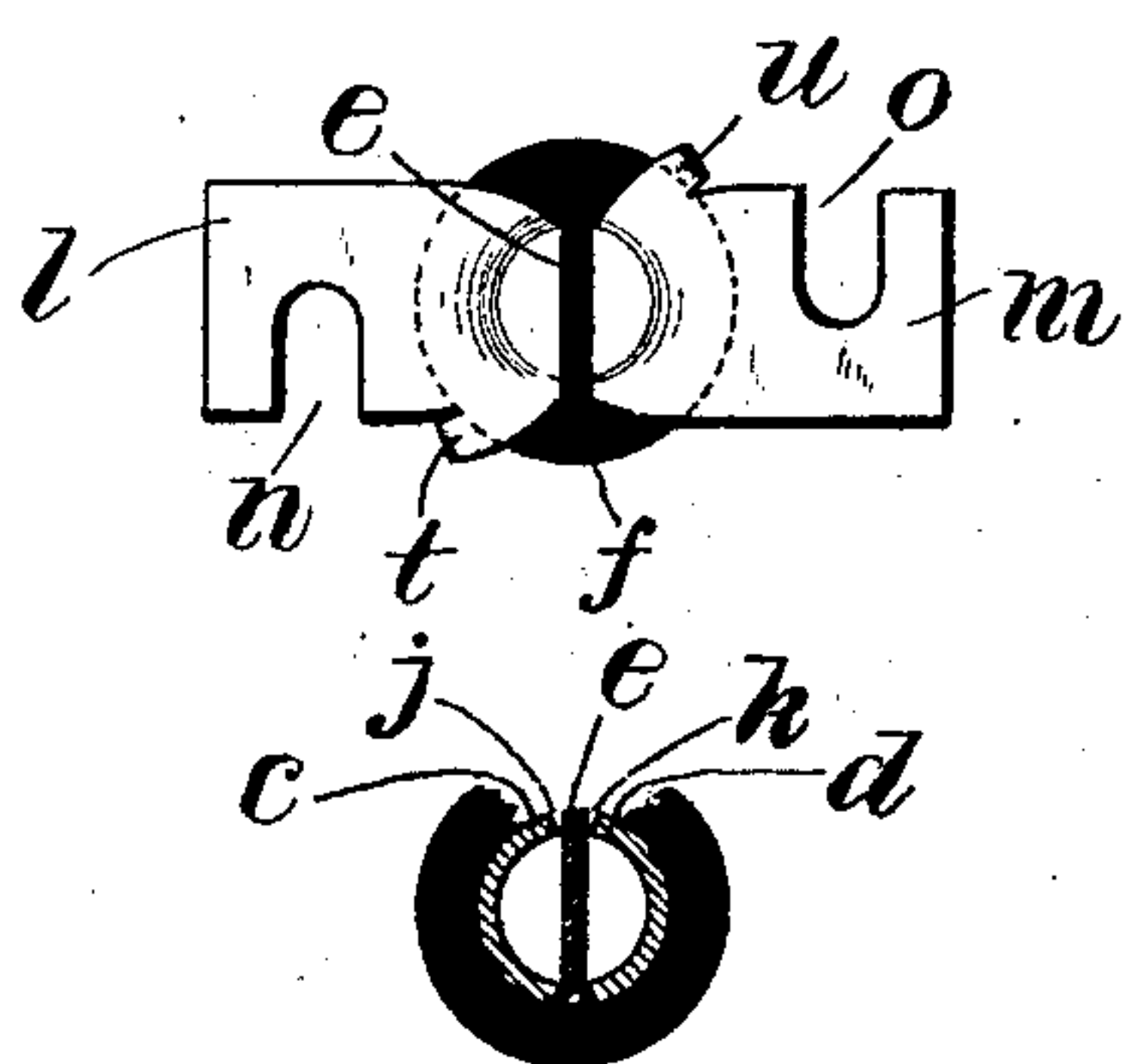


FIG. 5.

Witnesses

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EDWIN F. NORTHRUP, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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A FIRM.

RESISTANCE-COIL.

SPECIFICATION forming part of Letters Patent No. 725,355, dated April 14, 1903.

Application filed February 4, 1903. Serial No. 141,909. (No model.)

To all whom it may concern:

Be it known that I, EDWIN F. NORTHRUP, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Resistance-Coils, of which the following is a specification.

My present invention relates to improvements in resistance-coils, and has to do more especially with the construction of the bobbin and terminals of such coils as are usually employed in resistance-boxes and electrical testing sets, and, indeed, electrical coils of any nature which may be wound on a bobbin of the character embodying my invention; and the principal objects of this invention are to improve the construction of these parts in such manner as to render more electrically perfect the terminal connections; to provide means whereby the coils may be more readily connected and disconnected from the fixed contacts to which such coils are usually connected, as well as to improve the general mechanical construction of the bobbin and terminals.

To these ends my said invention consists in the novel combination and arrangement of parts herein described, and more particularly pointed out in the accompanying claims.

Referring to the accompanying drawings, which illustrate a specific embodiment of my invention, Figure 1 represents a resistance-coil in side elevation and also a portion of a resistance-box to which the said coil is connected; Fig. 2, a side elevation of the coil removed from the box and turned so as to show more clearly the terminal connections; Fig. 3, a side elevation of the bobbin with the coil removed; Fig. 4, a top plan view of the same; and Fig. 5, a transverse cross-section through the body of the bobbin, Fig. 3, and looking toward the lower end.

Similar letters refer to the same parts throughout the several views, wherein—

a represents the resistance-coil, and *b* the bobbin. This bobbin consists of a metal tube, preferably of brass, split in two sections *c d* and separated throughout their entire length by a strip of insulation *e*, which may be of vulcanite fiber or other suitable material. Over the ends of the tube are slipped two in-

ulating-collars *f g*, which fit the tube snugly, holding the sections *c d* tight against the strip of insulation *e* and forming the bobbin ends for the coil. Spurs *h* and *i* are formed on the sections *c d* to prevent the collar *g* from slipping off the end of the core. The tube from which the sections *c d* are formed is split with an angular cutter, so that when the edges of the sections *c d* are brought against the strip *e* only the inner edges will make contact with said strip, leaving air-spaces *j k* between the strip and the outer edges of the sections *c d*. (See Fig. 5.) The object of this is to increase the efficiency of the inclination between the sections *c d* by creating a poorer path of leakage between the two sections. In case there are more than two terminals to a coil the tube forming the core may be split into a corresponding number of sections.

Upon the upper ends of the sections *c d* are formed the wings *l m*, preferably integral with the sections, though they may be secured thereto in any desired manner. These wings constitute the supporting-terminals of the coil and are for this purpose provided with slots *n o*, opening, preferably, in opposite directions to engage the stationary binding posts or supports *p q* or other supporting means of the resistance-box *r* or other device with which the coil may be used. For the purpose of securing the wings *l m* the screws *p q* are preferably provided with annular recesses *s* near their ends. The wings *l m* are slit to form the lips *t u*, which are bent downward and soldered or otherwise properly secured to the terminal wires *v w* of the resistance-coil. Inasmuch as each half of the core-supporting terminals may be made in one piece this admits of their being shaped up in dies, and hence cheaply constructed.

In winding the coil a layer of insulation (in the form of coil shown) consisting, preferably, of silk is placed over the metal core, and the wires *v w* are wound upon this. These wires are in the coil illustrated wound non-inductively.

Where the resistance-wire is made of certain metals other than copper, it has been found that the action of solder used in making the joint of such wire is sufficient in the case of very low resistances to be taken ac-

count of, so that in such cases the ends of the resistance-coils are not connected to the lips *t* and *u* directly, but are brazed to pieces of copper wire, which are then soldered to the said lips. This may be done as a precaution on all of the coils, but forms no essential part of my present invention.

What I claim is—

1. In a resistance-coil, the combination with a bobbin having a metal core, of supporting-terminals formed upon one end of the said core, and an electrical conductor wound on said core and electrically connected to the said supporting-terminals.

2. In a resistance-coil, the combination with a bobbin having a metal core composed of sections separated by insulation, supporting-terminals forming each a continuation of a section of said core, and an electrical conductor wound on said bobbin and having its ends connected to said supporting-terminals.

3. In a resistance-coil, the combination with a bobbin having a core composed of a metal tube split longitudinally into sections, insulation separating said sections, of supporting-terminals, each forming a continuation of a section of said core, and an electrical conductor wound on said core and electrically connected to the said supporting-terminals.

4. In a resistance-coil, the combination with a bobbin having a core composed of a metal tube split longitudinally into sections, insulation separating said sections, of supporting-terminals, each forming a continuation of a section of said core, collars fitting over each end of the said core, and an electrical conductor wound on said core and electrically connected to the said supporting-terminals.

5. In a resistance-coil, a bobbin having a core consisting of a metal tube split longitudinally to form sections, insulation interposed between the sections, supporting-terminals consisting of flattened wings forming each a continuation of a section of the core, and a resistance-conductor wound on said bobbin and having its terminals electrically connected to the said wings.

6. In a resistance-coil, a bobbin having a core consisting of a metal tube split longitudinally to form two sections, insulation interposed between the sections, supporting-terminals consisting of flattened wings forming each a continuation of a section of the core, bent substantially at right angles thereto and

each provided with a slot adapted to engage the supports for said coil and each with a downwardly-turned integral lip, a resistance-conductor wound on said bobbin and having its terminals electrically connected respectively to the said lips on said wings.

7. In a resistance-coil, a bobbin having a core consisting of a metal tube split longitudinally to form two sections, insulation interposed between the sections, collars surrounding said sections at each end of said core, supporting-terminals consisting of flattened wings forming each a continuation of a section of the core, bent substantially at right angles thereto and each provided with a slot adapted to engage the supports for said coil, a resistance-conductor wound on said bobbin and having its terminals electrically connected respectively to the said wings.

8. In a resistance-coil, the combination with a bobbin having a core composed of a metal tube split longitudinally into sections, insulation interposed between said sections, said tube being split so that the inner edges only of said sections engage said insulation, whereby air-spaces are formed between the outer edges of said sections and said insulation, of supporting-terminals, each forming a continuation of a section of said core, and an electrical conductor wound on said core and electrically connected to the said supporting-terminals.

9. A bobbin for electrical conductors, having a metal core, supporting-terminals forming integral parts of said core, and an electrical conductor wound on said bobbin and electrically connected to said supporting-terminals.

10. A bobbin for electrical conductors, having a core consisting of a metal tube split longitudinally to form sections, insulation interposed between said sections, supporting-terminals consisting of wings forming each a continuation of a section of the core, and an electrical conductor wound on said bobbin and having its terminals electrically connected to the said wings.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN F. NORTHRUP.

Witnesses:

FRANK G. GRIER,
E. SCHMITZHE.

It is hereby certified that in Letters Patent No. 725,355, granted April 14, 1903, upon the application of Edwin F. Northrup, of Philadelphia, Pennsylvania, for an improvement in "Resistance-Coils," an error appears in the printed specification requiring correction, as follows: In line 65, page 1, the word "inclination" should read *insulation*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of July, A. D., 1903.

[SEAL.]

E. B. MOORE,
Acting Commissioner of Patents.