No. 638,050. Patented Nov. 28, 1899.

E. E. GOLD.

ELECTRIC HEATER.

(Application filed Feb. 18, 1898.)

(No Model.)

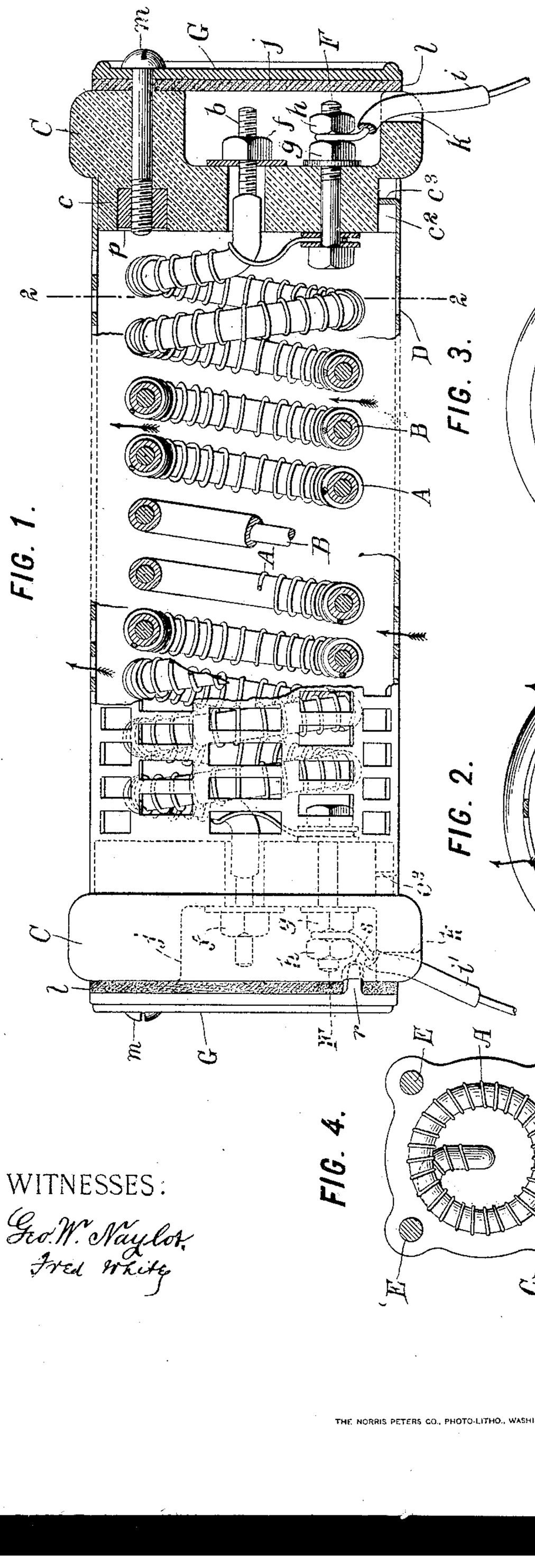

FIG. 1.

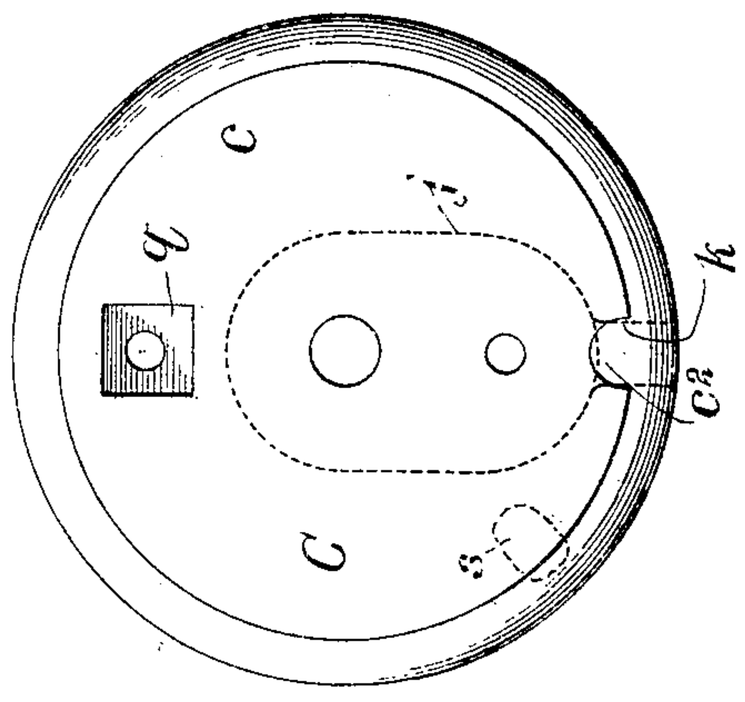

FIG. 3.

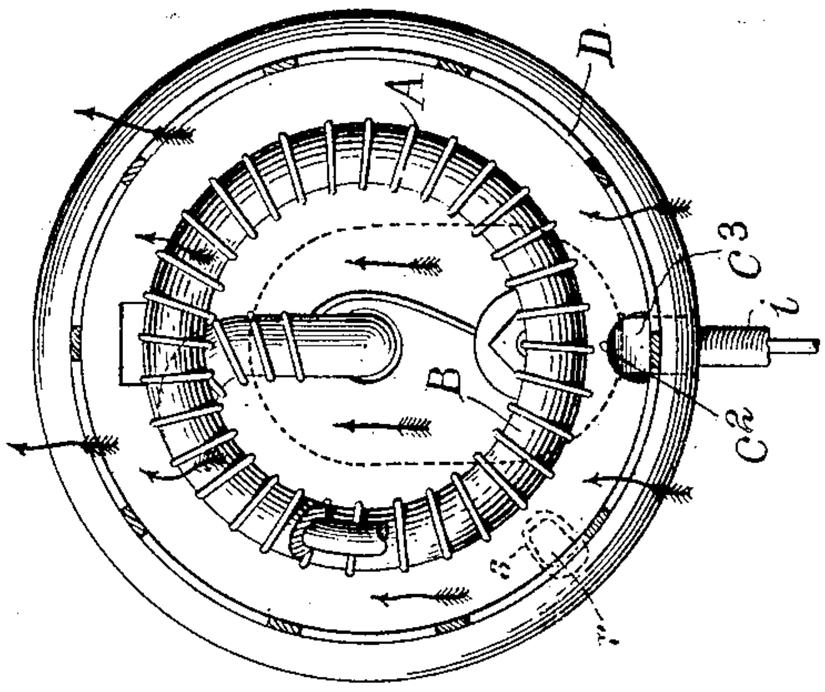

FIG. 2.

FIG. 4.

WITNESSES:

Geo. W. Naylor.
Fred White.

INVENTOR:
Edward E. Gold,
By his Attorneys,
Arthur G. Dixon & Co.

UNITED STATES PATENT OFFICE.

EDWARD E. GOLD, OF NEW YORK, N. Y.

ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 638,050, dated November 28, 1899.

Application filed February 18, 1898. Serial No. 670,724. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. GOLD, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

This invention provides certain improvements relating to electric heaters of that class wherein the heat is generated by passing an electric current through a coil or helix of resistant wire which is exposed to the air, by the circulation of which the generated heat is conducted away from the wire. The present invention relates chiefly to the means for supporting and inclosing such a heater and the terminal connections thereof.

In the accompanying drawings, Figure 1 is a sectional elevation of a heater constructed according to my invention, being partly dissected to show the construction in detail. Fig. 2 is a vertical transverse mid-section thereof. Fig. 3 is an elevation of one of the insulating end plates or heads. Fig. 4 is a transverse section of a modification.

In the drawings let A designate a helix of resistant wire, and let B designate a support therefor of insulating material. For the support B, I prefer to employ a wire or rod coiled into an open helix, with its ends being bent into line with its axis and the wire coated with vitreous enamel or other insulating material adapted to resist the heat. The resistant wire A may be coiled helically around the supporting-wire B in an open helix, as shown. The opposite ends of the support B are upheld by heads C C, preferably of porcelain.

When it is desired to inclose the heater, a perforated or open-work casing D is provided, made, preferably, of perforated sheet metal, as shown, and extending between the heads C C, which latter enter at *c* within the opposite ends of the casing, so as to center it and hold the helices centrally within it. The end portions *b* of the supporting-wire B are preferably naked and screw-threaded, and nuts *f* are screwed upon them, so that by tightening these nuts the heads C are held in firm contact with the ends of the casing D. When no casing is desired, the construction shown in Fig. 4 may be adopted, any suitable number of longitudinal rods or bars E E being extended between the opposite end plates or heads C C to hold them at fixed distances apart.

The opposite ends of the resistant wire A are connected to binding-posts F F, which pass through the porcelain heads C, being clamped firmly thereto by means of a nut *g* and by means of another nut *h* fastening thereto the circuit wires or leads *i i'*. I form each of the porcelain heads C with a recess *j* in its outer side, as shown in dotted lines in Fig. 3, in which recess the nuts *f g h* are located. I prefer to carry the wires *i* out through holes or notches *k*, communicating with the recesses *j*. To close these chambers *j* and inclose and protect the binding-posts and avoid all possibility of accidental contact therewith, I place a cap-plate G over each end of the heater, with an intervening plate *l* of asbestos or other insulating material, these being clamped against the heads C in any suitable manner, preferably by means of a screw *m*, passing through the head and screwing into a nut *p*, which is housed in a recess *q*, Fig. 3, in the head, whereby the screw and plate G are insulated. To get access to the binding-post, it is only necessary to loosen the screw *m*, which is preferably placed close to the upper side of the head, so that the plate G is thus fastened eccentrically, and then to swing the plate G upward, thereby uncovering the chamber *j*.

To prevent the cap-plate G being turned accidentally on its screw *m*, so as to displace it, I provide it with a projection *r*, as shown in Figs. 1 and 2, which enters into a recess or depression *s* in the earthenware head C. Hence in order to swing the cap G to one side, so as to expose the chamber *j*, it is only necessary to slacken the screw *m* sufficiently to permit the projection *r* to escape from the recess *s*.

When the casing D is used, some means should be provided for preventing turning of the heads C C relatively to the casing, and to this end I form the projecting boss *c* on each of the heads C, which enters within the casing, with an indentation c^2 at any suitable point, Fig. 3, and indent the metal of the casing into it at both ends, as shown at c^3 in Figs. 1 and 2, which may be done by turning in an

ear of metal, as indicated, or by crimping the metal in.

So far as concerns my present invention, the particular construction of resistant wire A and support B is immaterial. They may be of the construction shown and claimed in my application, Serial No. 666,024, filed January 8, 1898.

I claim as my invention the following-defined novel features, substantially as hereinbefore specified, namely:

1. In an electric heater, the combination with a resistant wire and a wire or rod forming a support therefor, of opposite end heads C C connected together, each head formed with a recess *j* in its outer side, the ends of said supporting-wire passing through the heads into said recesses, fastening-nuts applied on the ends of said wire in said recesses, binding-posts mounted in said recesses for connecting the external circuit-wires to the terminals of the resistant wire, and cap-plates G covering said recesses.

2. In an electric heater, the combination with a resistant wire and a wire or rod forming a support therefor, of opposite end heads C C connected together, said heads formed with recesses in their outer sides, the ends of said supporting-wire passing through the heads into said recesses, fastening-nuts applied on the ends of said wire in said recesses, binding-posts passing through said heads, connecting on the inner sides of the heads with the terminals of said resistant wire, and on the outer sides projecting into said recesses and there provided with nuts for clamping the external circuit-wires, cap-plates G covering said recesses, and a fastening-screw for each cap-plate.

3. In an electric heater, the combination with a resistant wire and a wire or rod forming a support therefor, of opposite end heads C C connected together, each head formed with a recess *j* in its outer side, the ends of said supporting-wire passing through the heads into said recesses, fastening-nuts applied on the ends of said wire in said recesses, binding-posts mounted in said recesses for connecting the external circuit-wires to the terminals of the resistant wire, cap-plates G covering said recesses, a fastening-screw for each cap-plate located eccentrically near one side so that by loosening said screw the plate can be turned to expose said recess, and means for normally preventing displacement of the cap-plate relatively to the head, consisting of a projection upon the one entering a recess in the other.

4. In an electric heater, the combination with insulating-heads C C, of intervening tubular casing D, and means for drawing the heads together against the casing, the heads formed with bosses *c* entering the ends of the casing, these bosses having recesses c^2, and the metal casing indented at c^3 into these recesses to prevent rotative displacement of the heads relatively to the casing.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWARD E. GOLD.

Witnesses:
ARTHUR C. FRASER,
GEORGE H. FRASER.