

No. 728,564.

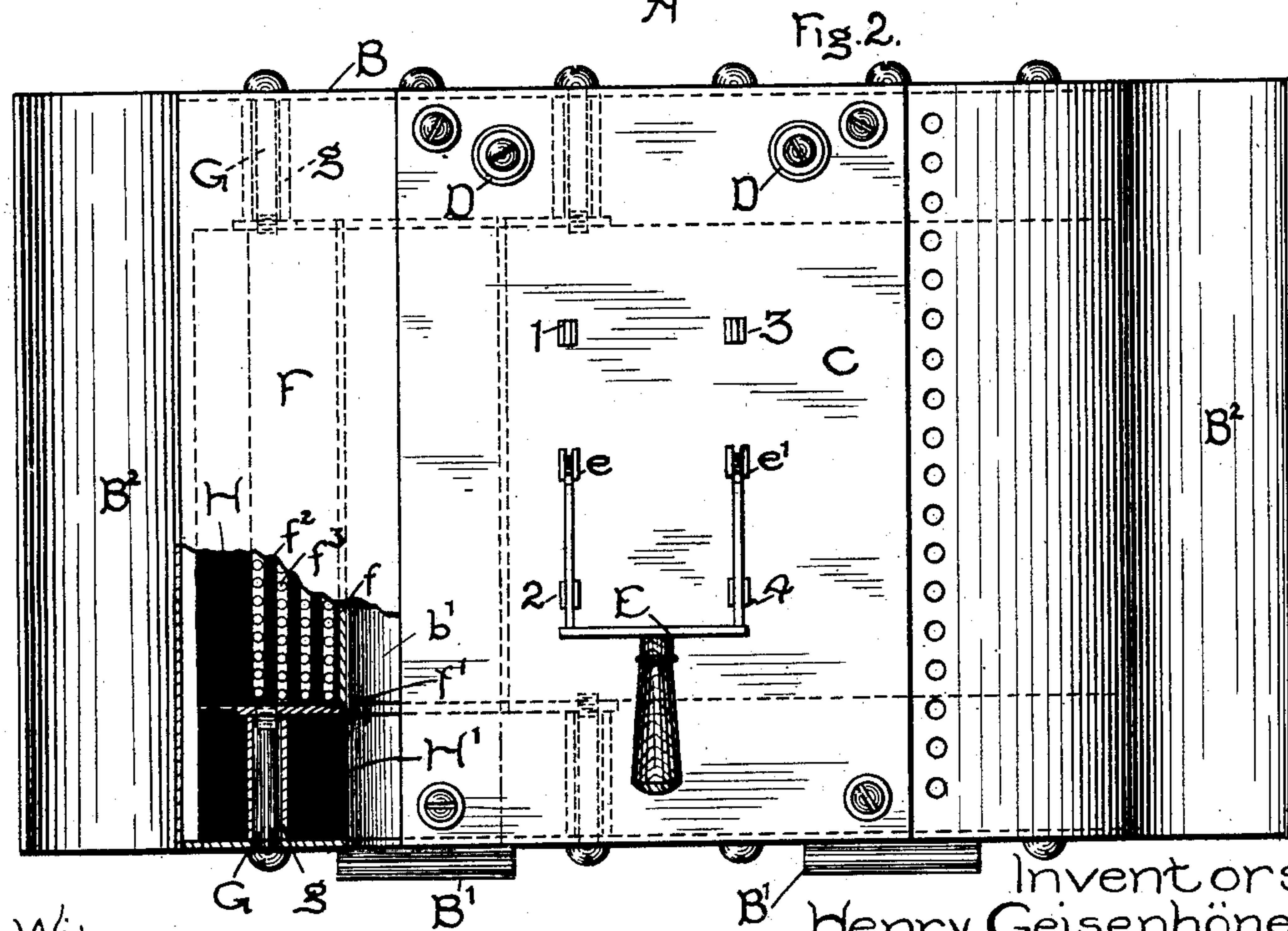
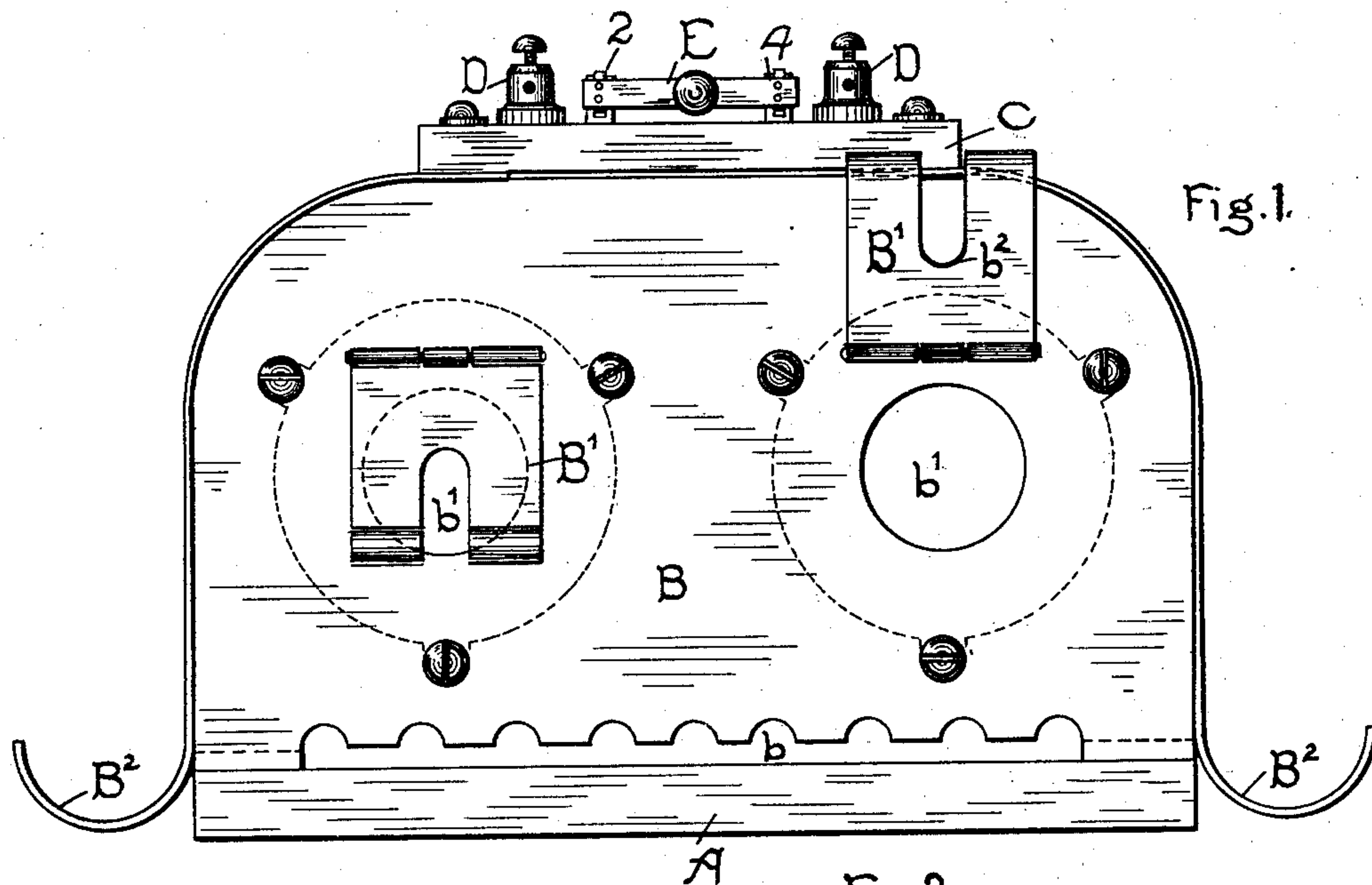
PATENTED MAY 19, 1903.

H. GEISENHÖNER & T. VAN ALLER.
ELECTRIC RESISTANCE STRUCTURE.

APPLICATION FILED NOV. 10, 1900.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
A. F. Jones
Alex. F. Macdonald

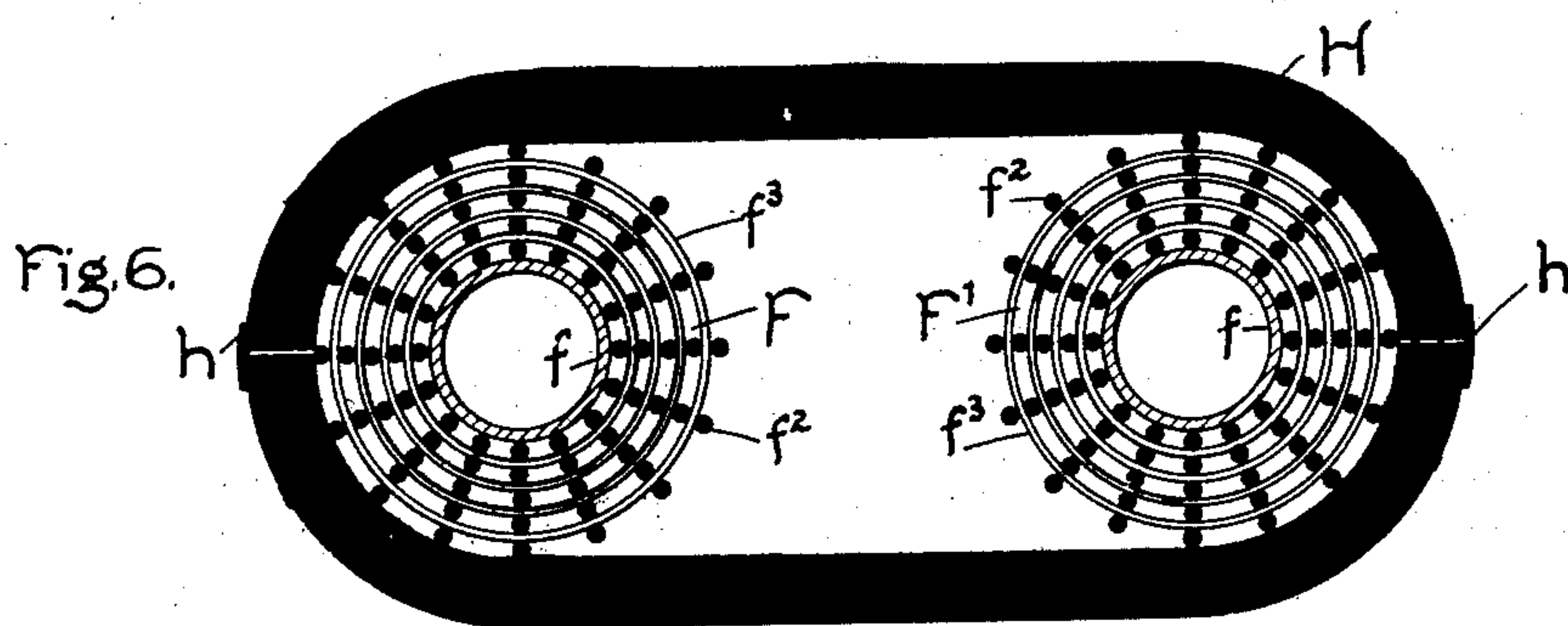
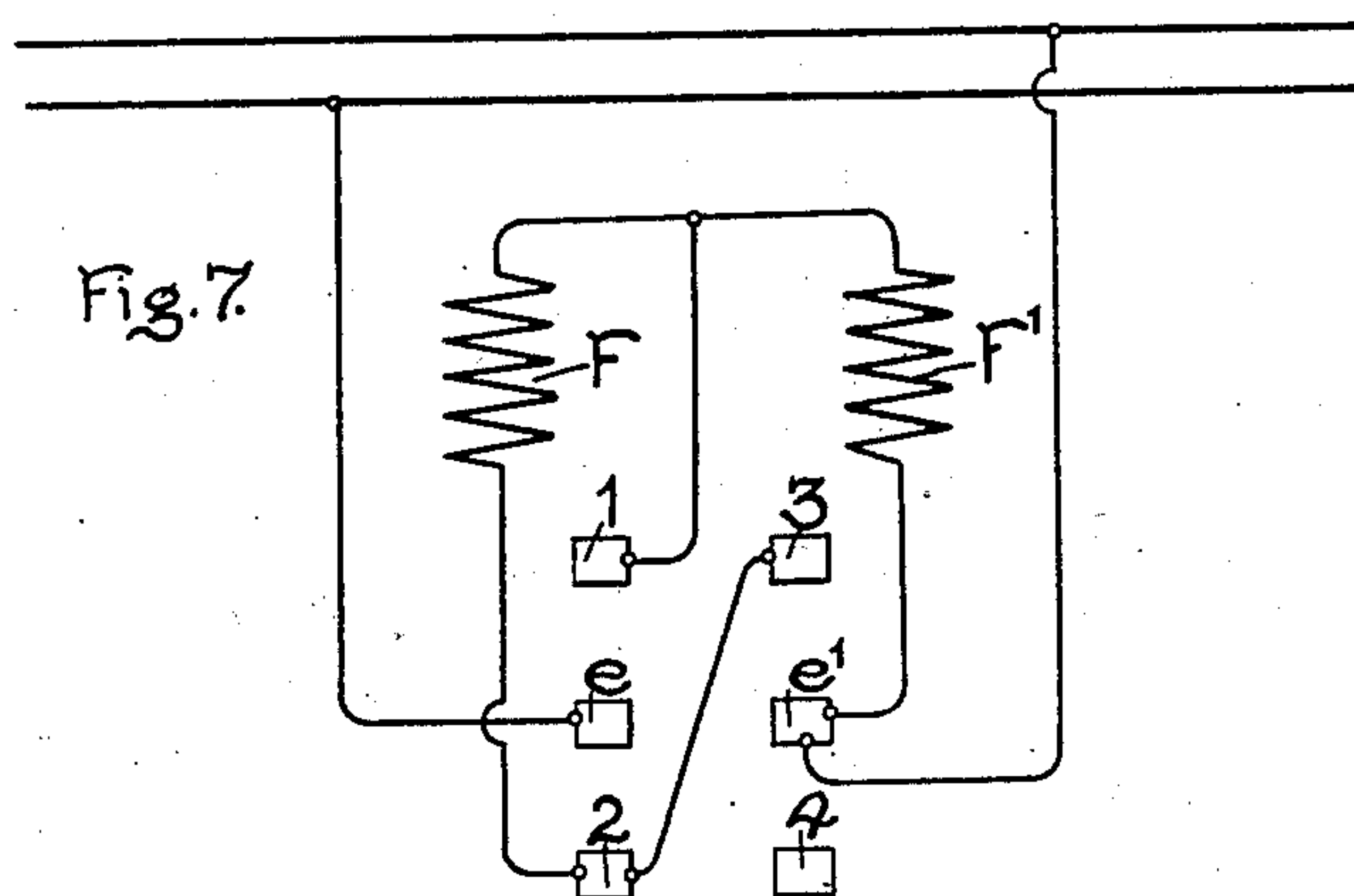
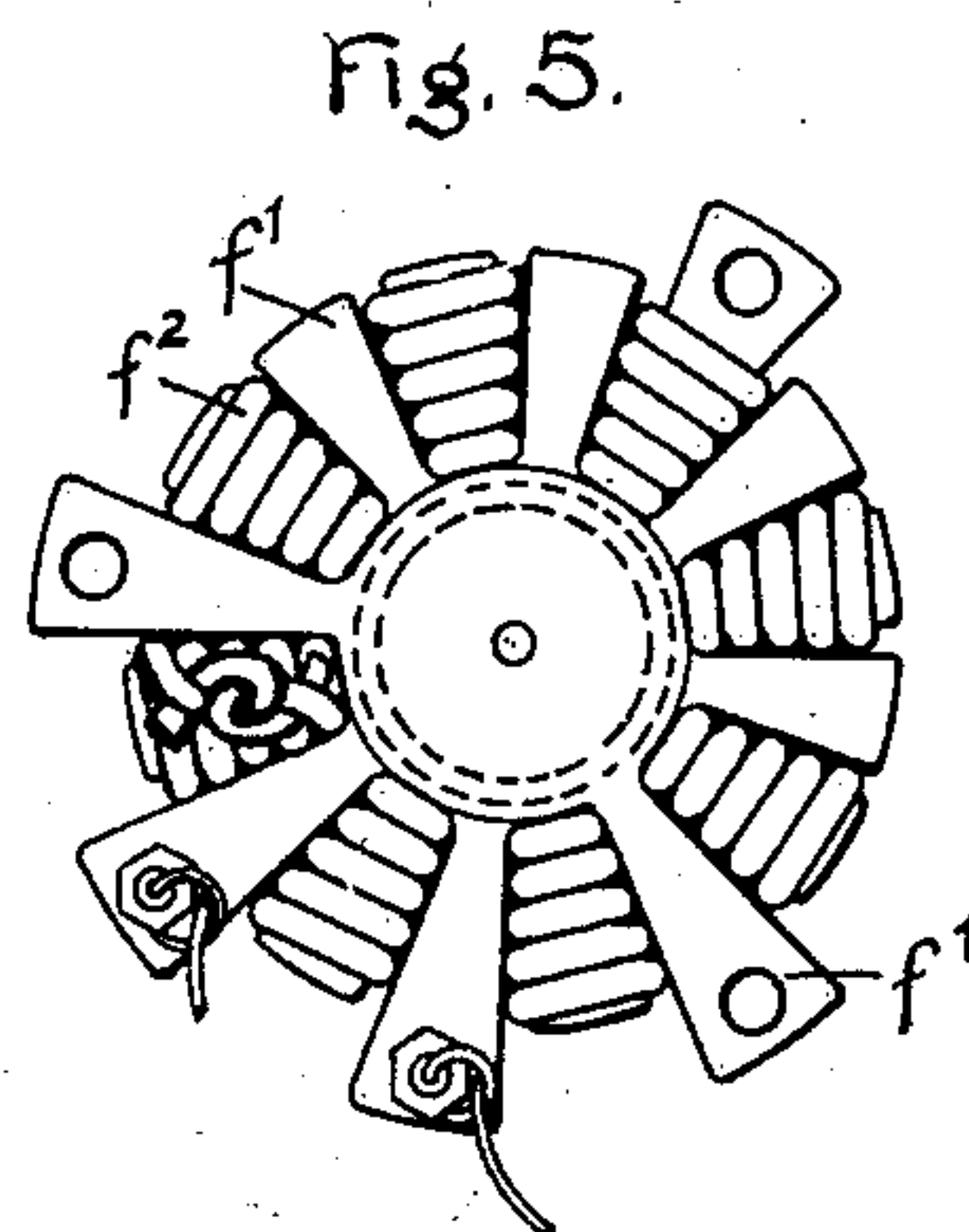
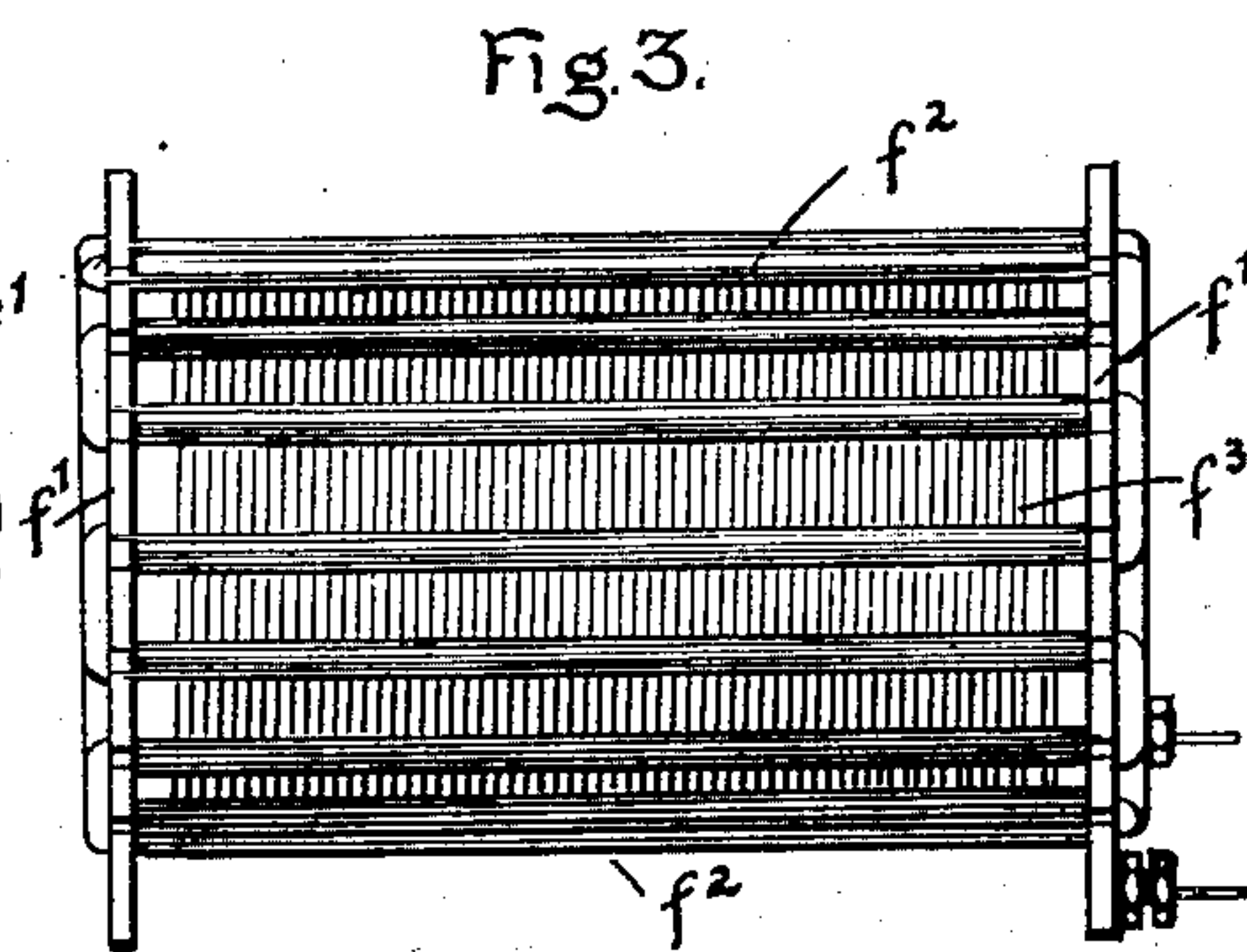
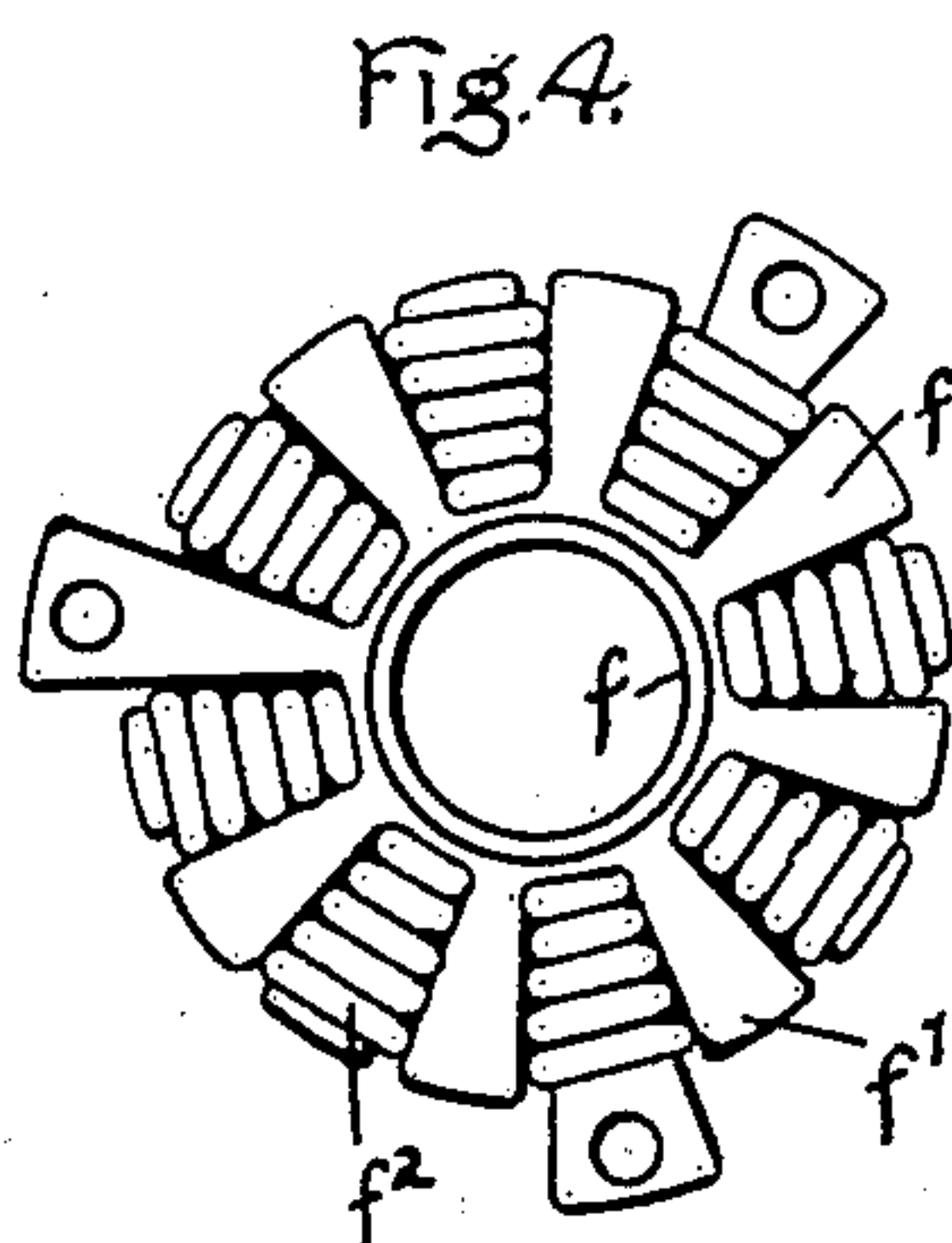
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ELECTRIC RESISTANCE STRUCTURE.

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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses

W. H. Jones

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UNITED STATES PATENT OFFICE.

HENRY GEISENHÖNER AND TYCHO VAN ALLER, OF SCHENECTADY, NEW YORK, ASSIGNORS TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC RESISTANCE STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 728,564, dated May 19, 1903.

Application filed November 10, 1900. Serial No. 36,030. (No model.)

To all whom it may concern:

Be it known that we, HENRY GEISENHÖNER, a citizen of the United States, and TYCHO VAN ALLER, a subject of the King of Denmark, both residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Electric Resistance Structures, of which the following is a specification.

Our invention relates to electric heaters, and especially to furnaces for heating soldering-irons, melting solder, and the like.

The object of the construction is to afford a free circulation of the heated air among the coils, so that the interior chamber for the iron or metal or other object to be heated may receive the full benefit of all the heating-coils.

The several details of construction are fully set forth hereinafter and the novel features are particularly pointed out in the claims.

In the drawings, Figure 1 is an end elevation of a furnace for heating soldering-irons or the like. Fig. 2 is a plan of the same, partly broken away. Fig. 3 is a side view of one of the heating-coils. Figs. 4 and 5 are end views of the same. Fig. 6 is a cross-section of the heating-coils and jacket. Fig. 7 is a diagram of the circuits when two heating-coils are used.

The furnace consists of a suitable base A, of insulating material, upon which is a casing B, of sheet metal, provided with ventilating-openings b at the bottom. On the top of the casing is an insulating-plate C to support the binding-posts D, and a double-pole double-throw switch E, fulcrumed at e e' and adapted to make contact with either of two sets of contacts 1 2 3 4. In one end of the casing are holes b' , through which the article to be heated can be inserted. Each hole is provided with a door B' , containing a slot b^2 to accommodate the shank of a soldering-iron or other article. At the sides of the casing are ledges or troughs B^2 , on which to rest the iron or the like when it is not desired to place it in the furnace.

The heating-coils F F' are shown as two in number, suitably supported from the ends of the casing—as, for instance, by means of long

screws G, passing through spacing-sleeves g and entering the heads of the spools which carry the helices. Each coil is built up as follows: The core is a tube f , which forms the heating-chamber and carries at each end a head which is radially slotted to form a series of arms or spokes f' . Some of these arms are longer than the others to receive the screws G. A thick cord f^2 , of suitable refractory insulating material, such as asbestos, is laid along the tube f at the bottom of one opposite pair of slots. It is then carried across outside of one of the arms adjacent to said slot and back through the next slot and along the tube to the other end thereof. Here it is led out through the corresponding slot, carried across the next arm, and brought back along the tube again. This operation is repeated until the cord has been wrapped back and forth through the radial slots in the ends of the spool and lengthwise of the tube around its entire circumference. The lengths of cord are thus separated by spaces equaling the width of the arms. Bare wire f^3 , preferably of iron, is then wound helically upon the tube transverse to the parallel lengths of cord from one end of the spool to the other. The asbestos cord is yielding, so that the iron wire when wound upon it sinks into it and is thus firmly held against lateral displacement. The cord is then wound back and forth in the slots, as before, on the outside of the iron wire, and then another layer of wire is put on. This operation is repeated until the spool is full.

The two spools are inclosed in a jacket H, composed, preferably, of a composition of plaster-of-paris and asbestos mixed together. The top and bottom parts are molded in halves, the joint h being cemented with the same material. A flat slab H' of the same composition is placed against the ends of the top and bottom and the joints closely cemented. By having the jacket inclose both coils the heating effect is made more uniform.

The two coils of iron wire are connected at one end with a common contact 1. The other end of one coil is connected with the contact 2 and the other coil with the contact e' . The

contact 2 is connected with contact 3 and the contacts *e* and *e'* form the line-terminals. Contact 4 is a dummy. When the switch E is on contacts 1 3, the coils F and F' are in parallel circuit. When the switch is reversed to contacts 2 4, both coils are in series circuit.

By arranging the coils with their axes upright and closing the lower end of the tubular cores the latter will serve as pots in which to melt solder or other metal.

The entire device is exceedingly compact and very efficient, giving a uniform heat.

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

1. An electric furnace, comprising a hollow core surrounded by an open structure of alternate windings of resistance-wire and insulating-cord, a jacket of heat-insulating material for concentrating the heat upon the core, and a protecting-casing having an opening registering with the axis of the core to permit the insertion therein of articles to be heated.

2. An electric furnace, comprising a hollow core surrounded by alternate crossed windings of resistance-wire and insulating-cord, a heat-insulating jacket for concentrating the heat upon the core, and a protecting-casing having an opening registering with the axis of the core to permit the insertion therein of articles to be heated.

3. An electric furnace for heating purposes, comprising an insulating-base, a sheet-metal casing thereon, heating-coils in said furnace having tubular cores, holes in the end of the casing in line with said tubes, doors to close

said holes, and troughs on one or both sides of the casing.

4. In an electric heater, the combination with a spool having a tubular core with radial arms at each end, of a flexible cord of asbestos or the like wound back and forth over said arms, from one end of the tube to the other, and a helix of wire wound around and upon the lengths of cord.

5. In an electric heater, the combination with a spool having a tubular core and ends having radial slots, of a flexible cord of asbestos or the like wound back and forth in said slots and along the tube, and a layer of resistance-wire wound upon each longitudinal layer of cord.

6. An electric heater having a tubular core, a continuous asbestos cord running lengthwise of said core in concentric layers of parallel but separated lengths, and concentric helical layers of bare wire, each layer wound upon one of said layers of cord.

7. An electrical resistance structure, which comprises a hollow core having radial projections, a suitable cord wound around the projections lengthwise of the core in concentric layers, and resistance-wire wound helically in the spaces between such concentric layers.

In witness whereof we have hereunto set our hands this 8th day of November, 1900.

HENRY GEISENHÖNER.
TYCHO VAN ALLER.

Witnesses:

B. B. HULL,
M. E. WOOLLEY.