

No. 791,277.

PATENTED MAY 30, 1905.

J. C. F. MALTHANER.

RINGING GENERATOR.

APPLICATION FILED JULY 20, 1904.

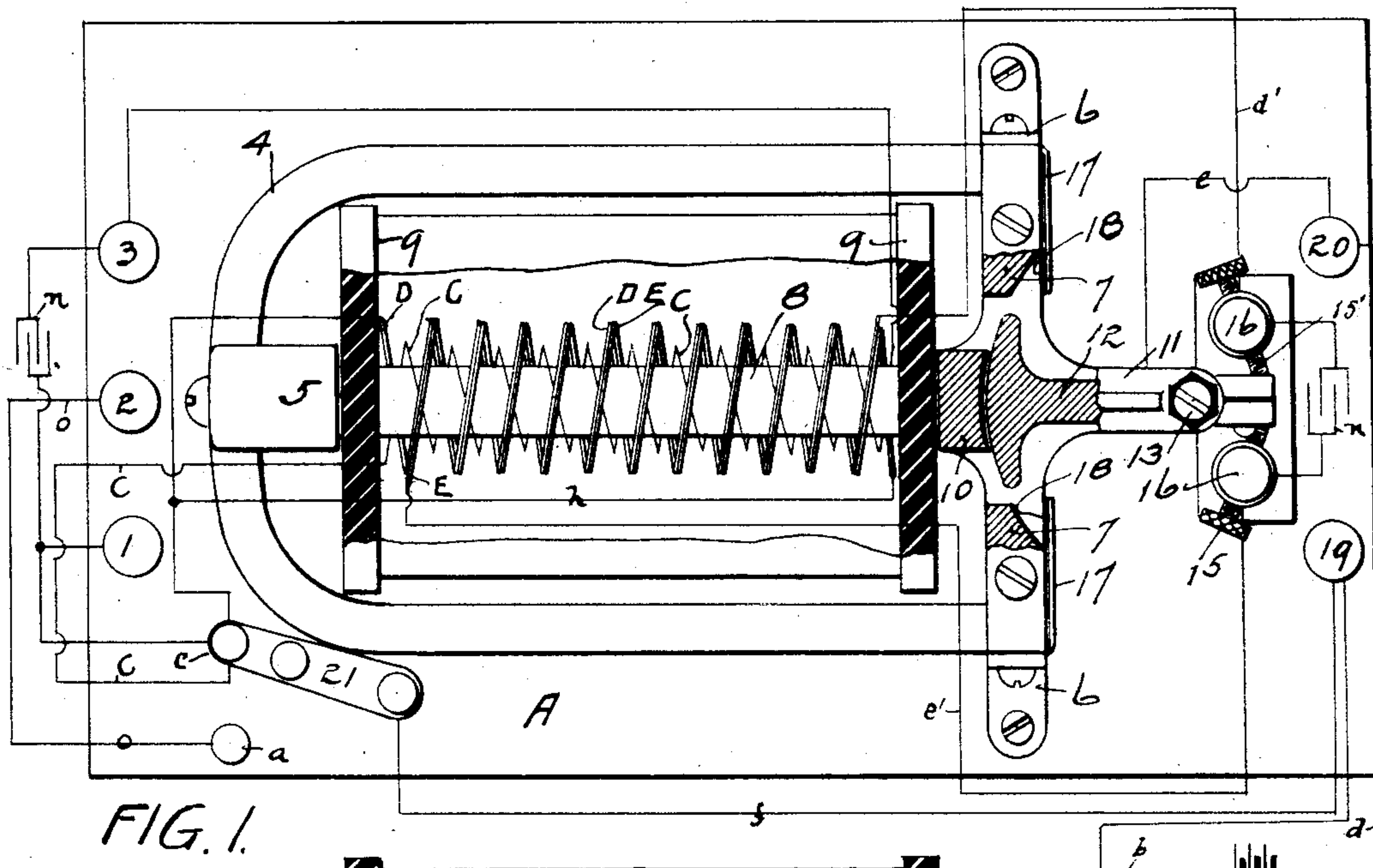


FIG. 1.

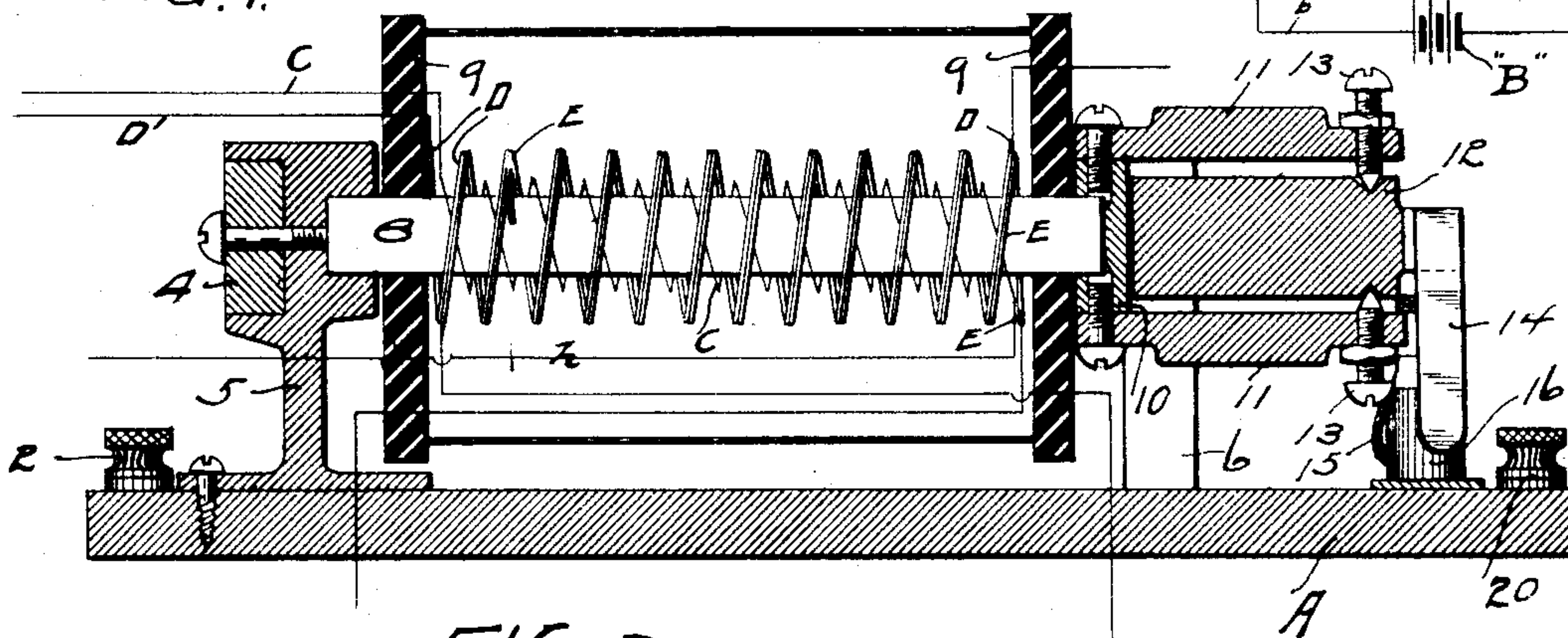


FIG. 2.

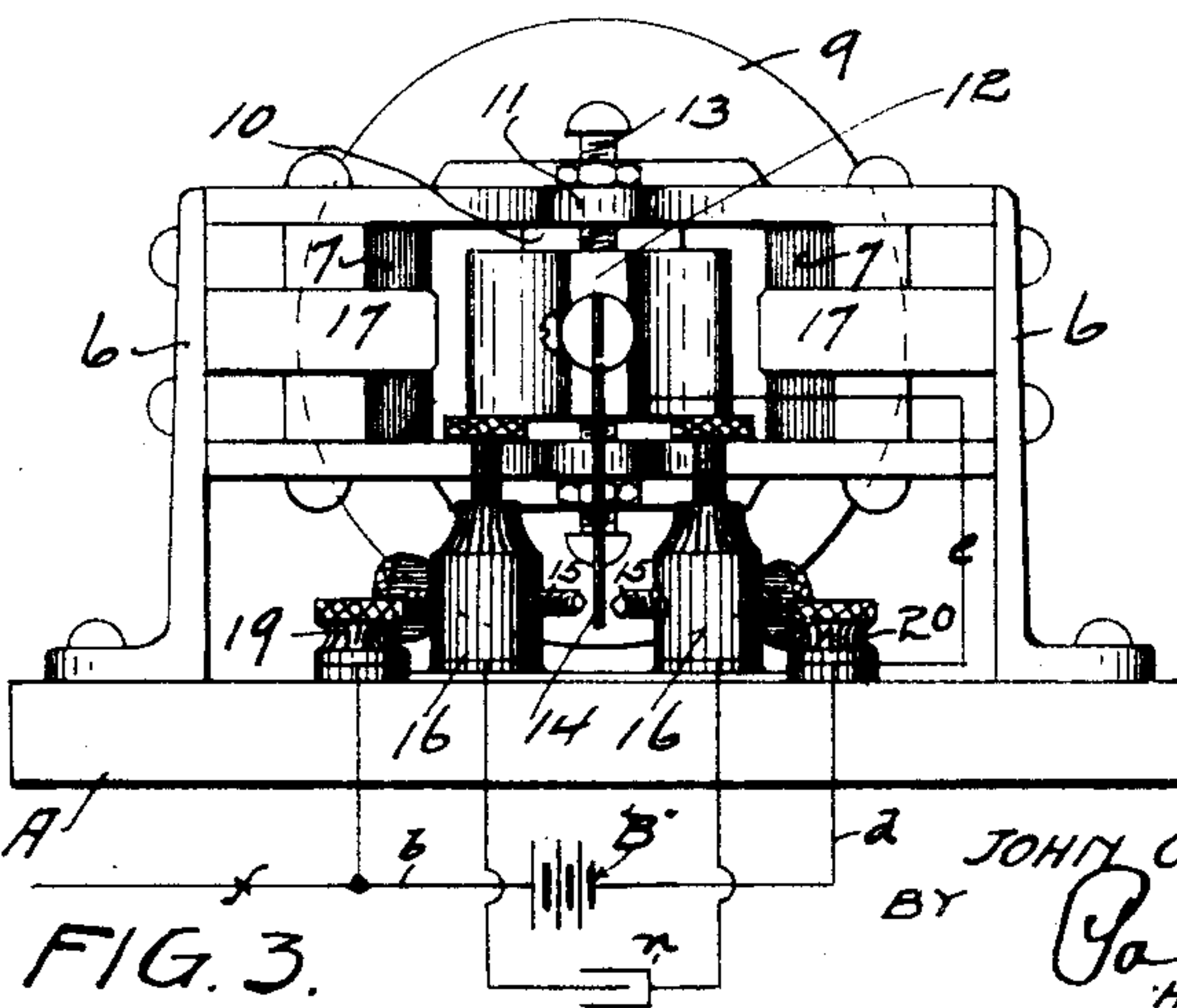


FIG. 3.

WITNESSES
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UNITED STATES PATENT OFFICE.

JOHN C. F. MALTHANER, OF MINNEAPOLIS, MINNESOTA.

RINGING-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 791,277, dated May 30, 1905.

Application filed July 20, 1904. Serial No. 217,327.

To all whom it may concern:

Be it known that I, JOHN C. F. MALTHANER, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Ringing-Generators, of which the following is a specification.

This invention relates to improvements in magneto-electric generators designed especially for use in connection with telephone systems for ringing the call-bells employed therein; and the object of my invention is to provide an improvement over the generator for the same purpose shown and described in Letters Patent of the United States issued to me February 17, 1903, No. 720,595.

The invention consists generally in providing a fixed core having a secondary winding and differential primary windings and an oscillating armature near the pole-piece of said core and arranged to be vibrated through the reversal in polarity of said core.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a generator embodying my invention, the core and armature being shown in section to illustrate more clearly the windings and the position of the armature with respect to the core pole-piece. Fig. 2 is a vertical section through the core or bobbin and the oscillating armature. Fig. 3 is an end elevation of the device.

In the drawings, A represents a suitable base whereon the operating mechanism is mounted. 1, 2, and 3 are binding-posts mounted on said base and to which the bell-circuit is connected. This circuit is of the ordinary type, and to permit the other parts to be shown more clearly I have omitted its illustration in this case.

4 is a permanent magnet mounted on brackets 5 and 6 and provided at its open end with pole-pieces 7.

A core 8, having heads or ends 9, is mounted on the bracket 5 centrally with respect to the permanent magnet. This core and its heads form a spool or bobbin similar to the

one shown and described in my Letters Patent above referred to, except that it is fixed instead of oscillating, as in said patent. A pole-piece 10 is provided at the end of the core 8 opposite from the bracket 5, and plates 11 are mounted on said pole-piece, between which an oscillating armature 12 is supported on pivot-pins 13. This armature is preferably T-shaped, having its inner end near the pole-piece 10 and provided at its outer end with a contact-plate 14, suspended between contact-screws 15 and 15' in binding-posts 16. Springs 17, having insulated faces 18 in the path of the oscillating armature, are mounted on the bracket 6. These springs serve as yielding stops to limit the reciprocating movement of the armature.

A battery B is provided, having its opposite poles connected by wires *b* and *d* with binding-posts 19 and 20. A wire *e* connects the post 20, which I have here shown in circuit with the minus side of the battery, with the armature 12, and a wire *f* leads from the post 19 to a switch 21, having points *a* and *c*.

By "automatic circuit" I mean in this case a special circuit used in connection with a switchboard and my invention.

A secondary coil C leads from the switch-point *c* and is coiled around the core 8 from one end to the other and connected to the binding-post 3. I have here shown this secondary winding inclosed by the primary windings; but their position may be reversed, if preferred. I have shown two primary windings D and E. These are coiled together around the secondary winding and core instead of having one wound upon the other, so that there will be an equal amount of wire in each winding and a corresponding resistance.

The primary coil D is connected at the end of the core opposite from the switch-point C, through a wire *d'*, with the contact-screw 15', and the end of the other primary coil, E, at the opposite end of the core is connected by wire *e'* with the other contact-screw, 15, and a wire *h* connects the end of the coil E contiguous to the armature with the end of the primary coil D at the other end of the core. The primary circuits will therefore be as follows:

from the battery, through wires *b* and *f*, to the switch 21, from thence, through wire *h*, to one end of primary coil E, through the coil, and from thence, through wire *e'*, to contact 15, through armature, wire *e*, post 20, and wire *d*, to the other side of the battery, assuming that the contact-spring between the points 15 and 15' is in contact with the former. When the armature-spring contacts with the other point, 15', the circuit will be from the battery, through wires *b* and *f*, switch 21, to primary D, through the primary to the wire *d'* to the point 15', thence through the armature, wire *e*, post 20, and wire *d* to the battery. The differential winding results in there being a south pole established at one end of one primary coil and a north pole at the corresponding end of the other coil, and a continuous reversal of polarity will take place in the core, causing the oscillating armature to be alternately attracted and repelled and the contact plate or spring carried thereby vibrated between the contact-screws 15 and 15', closing first one circuit and then the other through the primary coils.

A wire *o* connects the switch-point *a* with the binding-post 2, and condensers *n* are provided, bridging the binding-posts 1 and 3 and the post 16 to prevent or lessen sparking at the contact-points.

The reversals of the currents through the primary windings will generate an alternating current in the secondary winding, and by the use of a primary battery of low voltage a secondary current of high potential is secured. I do not limit myself to any particular ratio between the primary and secondary windings, as the same may be varied to obtain the desired voltage in the secondary circuit.

I claim as my invention—

1. The combination, in a generator of the class described, with the contact-points and a source of electrical energy, of a fixed bobbin provided with a secondary winding and with differential primary windings, and an oscillating armature.

2. The combination, in a generator of the class described, with a fixed core provided with a secondary winding and with primary windings, contact-points in circuit with said primary windings, one contact-point being connected to one primary winding at one end of the core and the other contact-point being connected to the other primary winding at the

other end of the core, a source of electrical energy, and an oscillating armature.

3. The combination, in a generator of the class described, with a permanent magnet, of a fixed core provided with a secondary winding and with differential primary windings, contact-points and a source of electrical energy, and an oscillating armature.

4. The combination, with a permanent magnet having pole-pieces, of a fixed core having a pole-piece between the pole-pieces of said magnet and provided with a secondary winding and differential primary windings, contact-points, a source of electrical energy, and a vibrating armature arranged between the magnet pole-pieces and having a contact-plate between said points, substantially as described.

5. The combination, in a generator of the class described, with a core having a secondary winding, two primary windings of substantially the same resistance inclosing said secondary winding, two contact-points and a source of electrical energy, one of said points being connected to the end of a primary winding at one end of said core and the other point being connected to the end of the other primary winding at the other end of the core, and an oscillating armature interposed between said points and core.

6. The combination, in a generator of the class described with a permanent magnet having pole-pieces, of a fixed core having a secondary winding and differential primary windings and a pole-piece between said magnet pole-pieces, contact-points, and a source of electrical energy, an oscillating armature between said points and said core pole-piece, and insulated stops arranged to limit the oscillation of said armature.

7. In a generator, a core provided with a secondary winding and with primary windings, contact-points in circuit with said primary windings, one contact-point being connected to one primary winding at one end of the core, and the other contact-point being connected to the other primary winding at the other end of the core, substantially as described and for the purpose specified.

In witness whereof I have hereunto set my hand this 6th day of June, 1904.

JOHN C. F. MALTHANER.

In presence of—

THEO. PAUL,

C. J. CEBROUSKY.