

(No Model.)

3 Sheets—Sheet 1.

C. L. COFFIN.

METHOD OF HEATING, WELDING, OR WORKING METALS ELECTRICALLY.

No. 520,300.

Patented May 22, 1894.

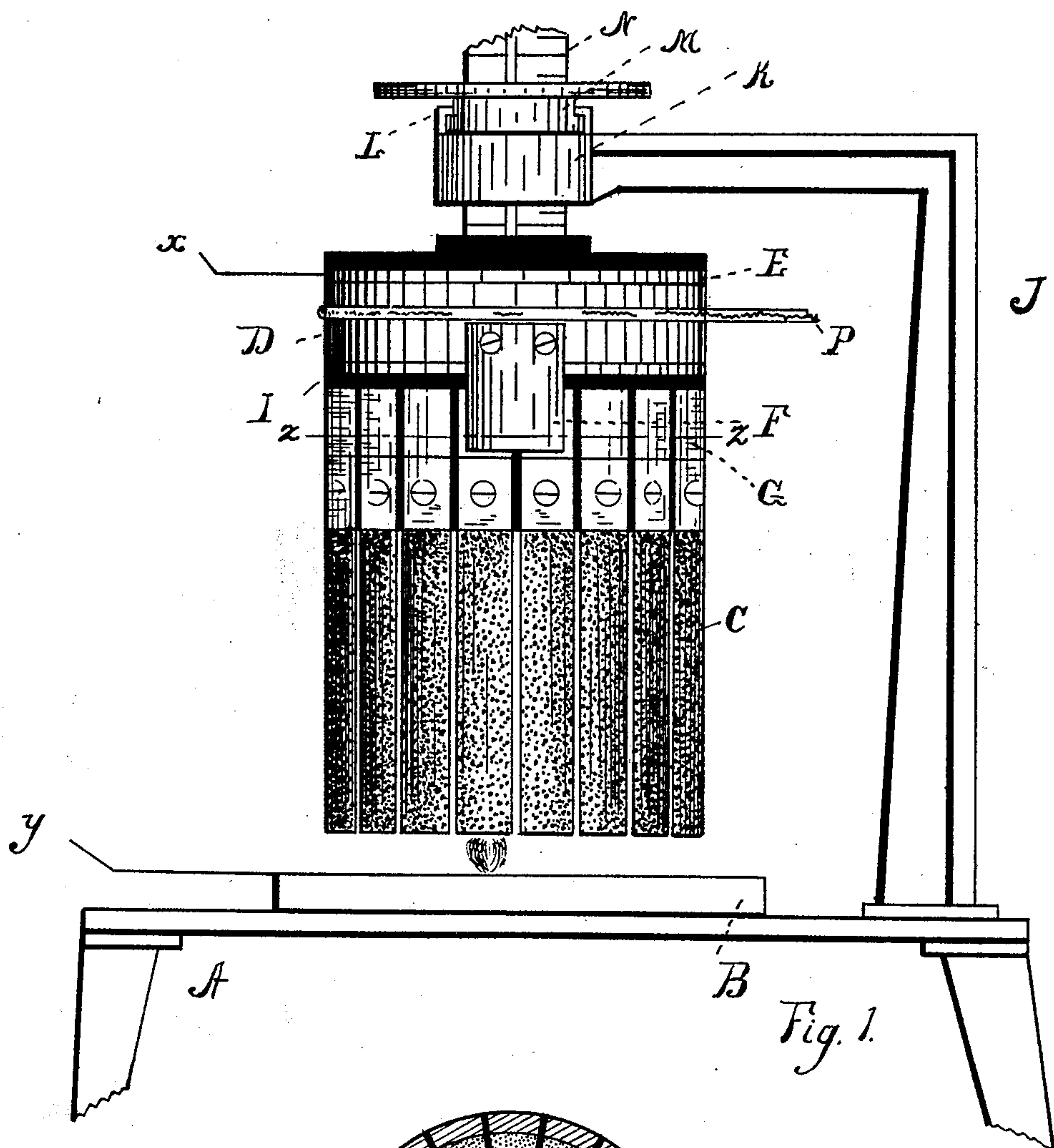


Fig. 1.

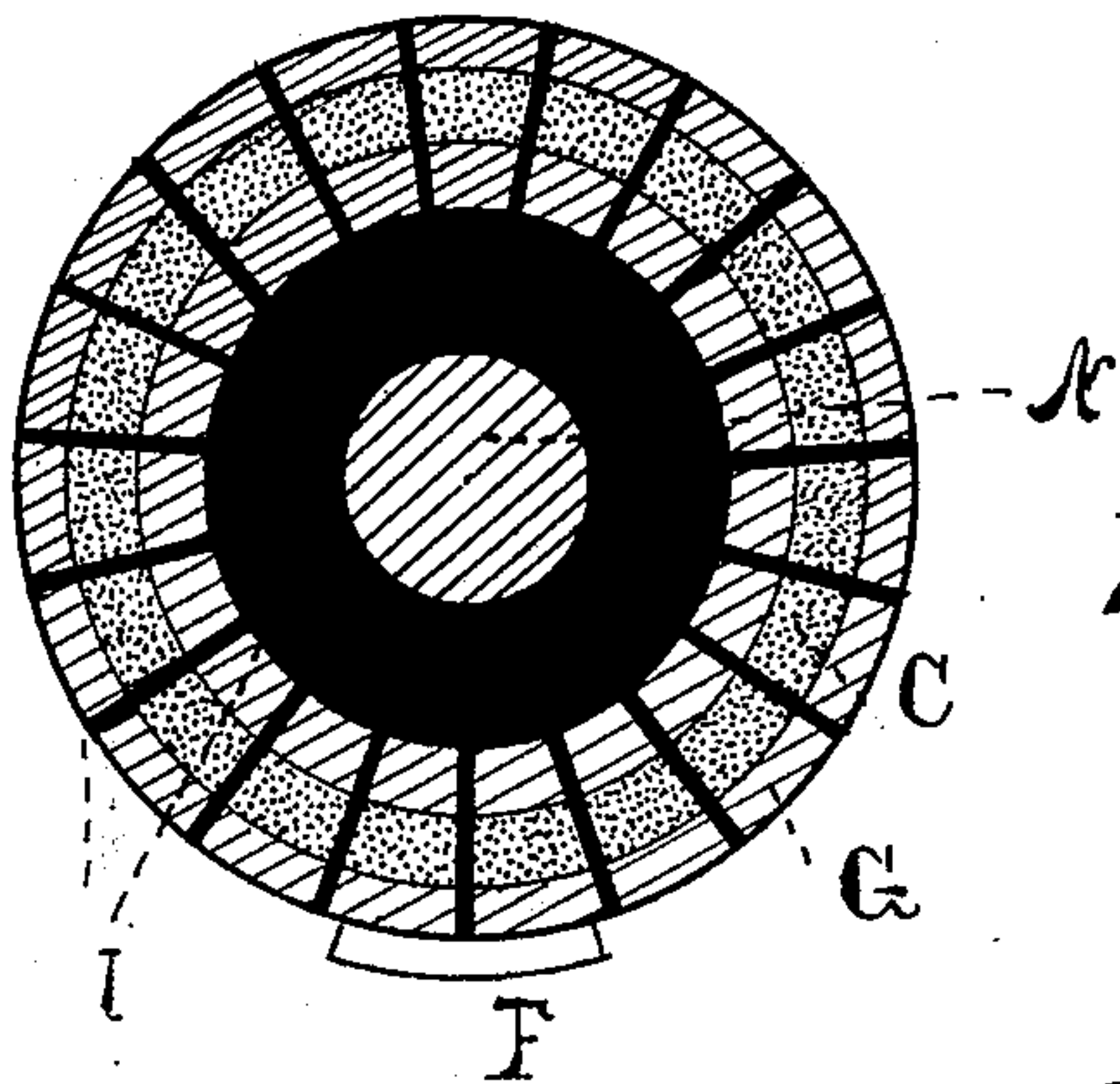


Fig. 2.

WITNESSES

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Amelia Williams

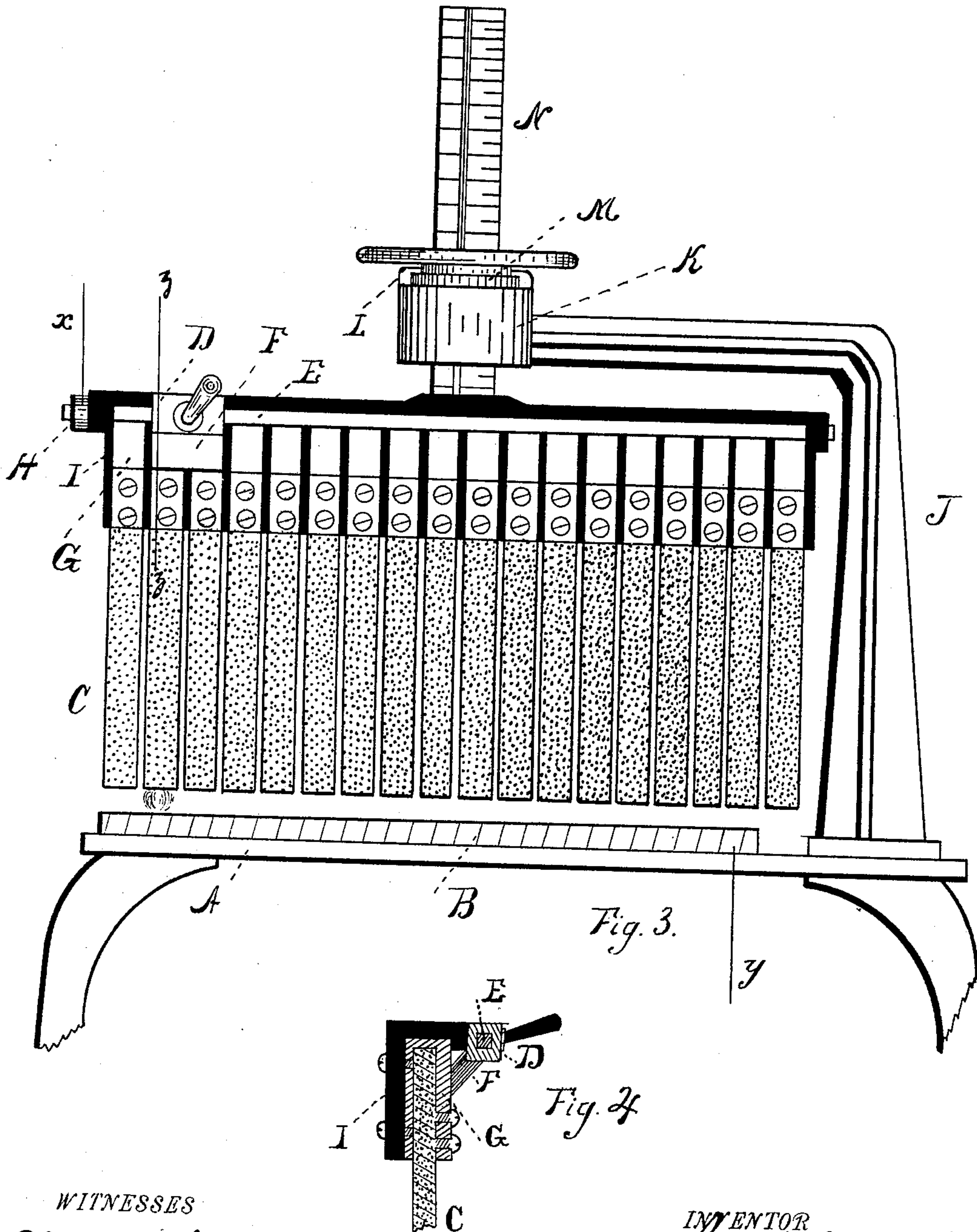
INVENTOR

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3 Sheets—Sheet 2.

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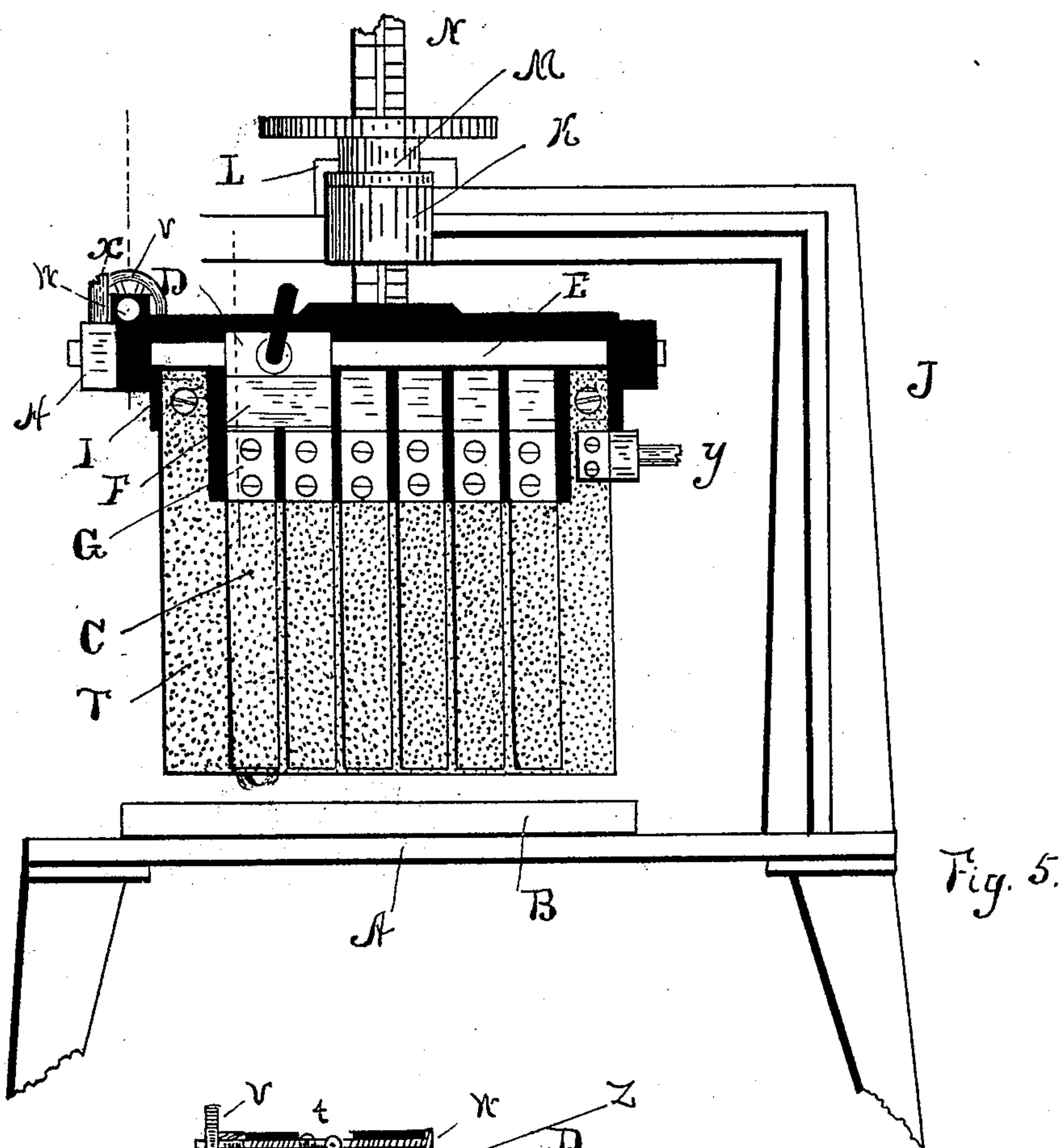


Fig. 5.

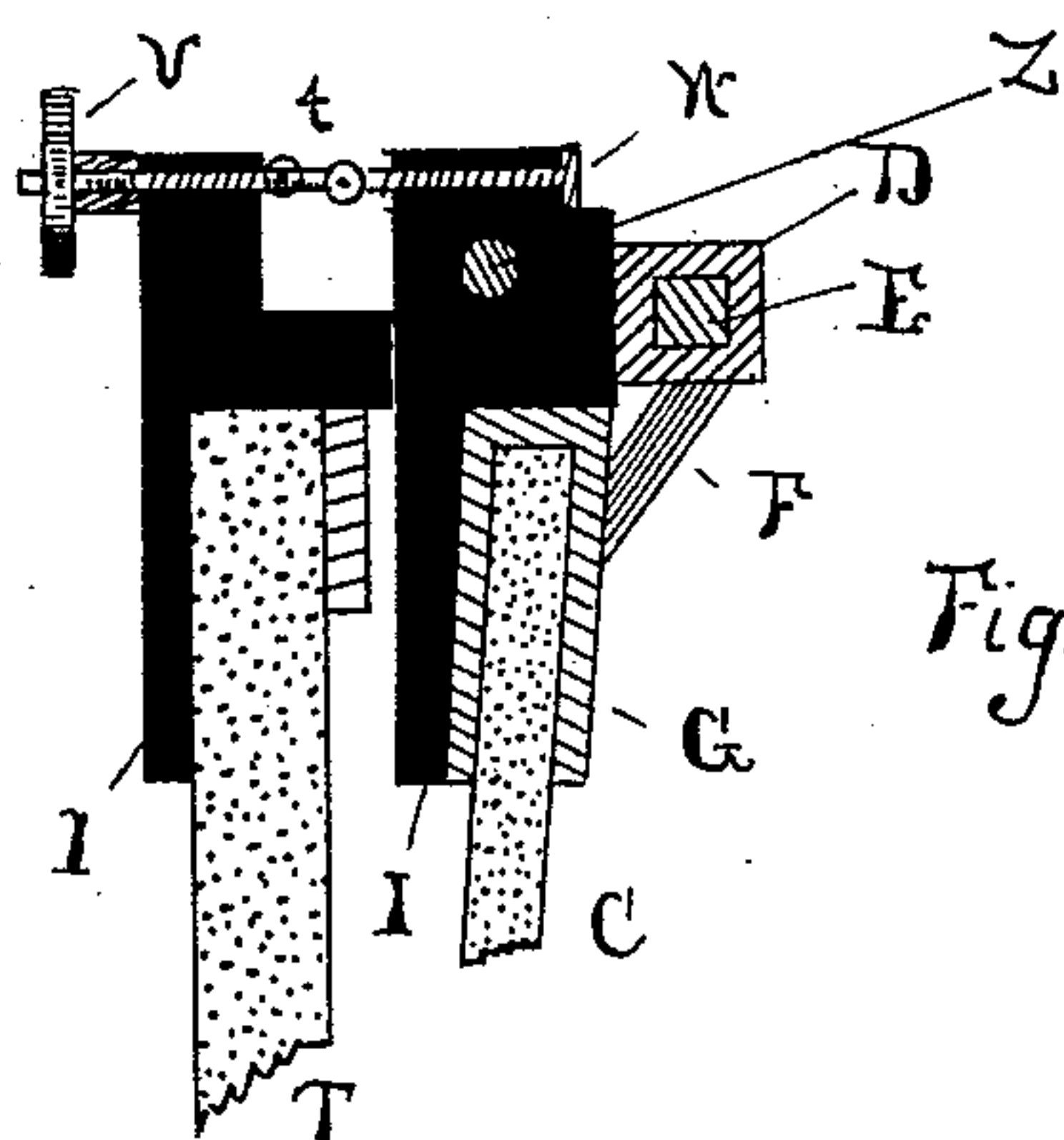


Fig. 6.

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INVENTOR

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UNITED STATES PATENT OFFICE.

CHARLES L. COFFIN, OF DETROIT, MICHIGAN.

METHOD OF HEATING, WELDING, OR WORKING METALS ELECTRICALLY.

SPECIFICATION forming part of Letters Patent No. 520,300, dated May 22, 1894.

Application filed October 7, 1893. Serial No. 487,453. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES L. COFFIN, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful
5 Improvement in Methods of Heating, Welding, or Working Metals Electrically, of which the following is a specification.

My invention consists in an improvement in method of and apparatus for heating, welding, or working metals by electricity, herein-
10 after fully described and claimed.

Figures 1 and 3 are side elevations of apparatus which may be used to practice my invention. Figs. 2 and 4 are sections on line
15 $z-z$, Figs. 1 and 3 respectively. Fig. 5 is a side elevation showing a modified form of apparatus, and Fig. 6 is a section on line $z-z$, Fig. 5.

A represents a table or support, on which
20 is carried the material B to be heated, which may be insulated from table A.

J represents a goose-neck or standard rising from table A.

K represents a collar at the end of stand-
25 ard J.

N represents a rod which passes through collar K. For convenience in raising and lowering the electrodes, rod N may be screw threaded and engage with a threaded nut M
30 rotatably held on collar K by lugs L, but many other ways of raising and lowering the electrodes may be used.

I represents insulation.

C represents a series of electrodes, preferably carbon, supported by rod N but insulated therefrom. Electrodes C are insulated
35 from each other, and each carries a contact plate G.

In Figs. 1 and 2, electrodes C are grouped
40 in a circle, and in Figs. 3 and 4 they are arranged in line.

D represents a movable conductor, connected with one terminal of a generator of electricity, carrying a brush F adapted to
45 make contact with one of the contact plates G.

With the arrangement shown in Figs. 1 and 2, conductor D may be a pulley loosely mounted on rod N, but insulated therefrom and from the electrodes C, and in the electrical contact with an insulated contact plate
50 E, which is connected by conductor x with one terminal of the generator. With the arrangement of Figs. 3, 4, and 5, plate E is made in the form of a rod on which conductor D
55 slides, or with the arrangement of Fig. 5, con-

ductor D may be directly connected with the generator, contact E being omitted.

In using the mechanism of Figs. 1 and 3, the voltaic arc is formed between the electrodes C and the material B, while in using
60 the mechanism of Fig. 5, the material B is not in circuit.

The operation of my invention is as follows, having special reference to Figs. 1 and 3: Material B being placed in position the
65 electrodes C are lowered to make contact therewith, and current is turned on, the circuit being through conductor y , material B, one electrode C, brush F, conductor D, contact E, conductor x , and the generator. When
70 the circuit is established, the electrodes C are raised by nut M and collar N and a voltaic arc is formed between material B and one of the electrodes. Conductor D is now
75 moved, and by a band or belt P, Fig. 1, or by sliding it along rod E, Fig. 3, cutting the electrodes C in and out of circuit successively and causing the arc to shift its position from
80 the end of one electrode C to the end of the next electrode, thus causing the arc to travel a predetermined path, and rendering it easy
to heat a seam of considerable length with a very small power.

With the arrangement of Fig. 5, the electrode T, which is as wide as all the electrodes
85 C, is brought into contact with one of the electrodes C, by any convenient means, such as shaft t and screw nut V, and then separated, forming a voltaic arc, and then conductor D is moved causing the arc to shift
90 along electrode T as electrodes C are successively cut in and out of the circuit.

I do not herein claim the apparatus described and shown, as such constitutes the
95 subject-matter of my application for Letters Patent filed October 5, 1893, Serial No. 487,242.

What I claim as my invention, and desire to secure by Letters Patent, is—

The herein described method of heating
100 metal, consisting in subjecting the metal to the influence of a moving voltaic arc while simultaneously heated by radiation from incandescent electrodes in proximity to, but not in contact with the metal.

CHARLES L. COFFIN.

Witnesses:

CHARLES B. LOTHROP,
AMELIA WILLIAMS.