

(No Model.)

F. B. WOOD.  
ELECTRIC BELL.

No. 381,314.

Patented Apr. 17, 1888.

FIG. 1.

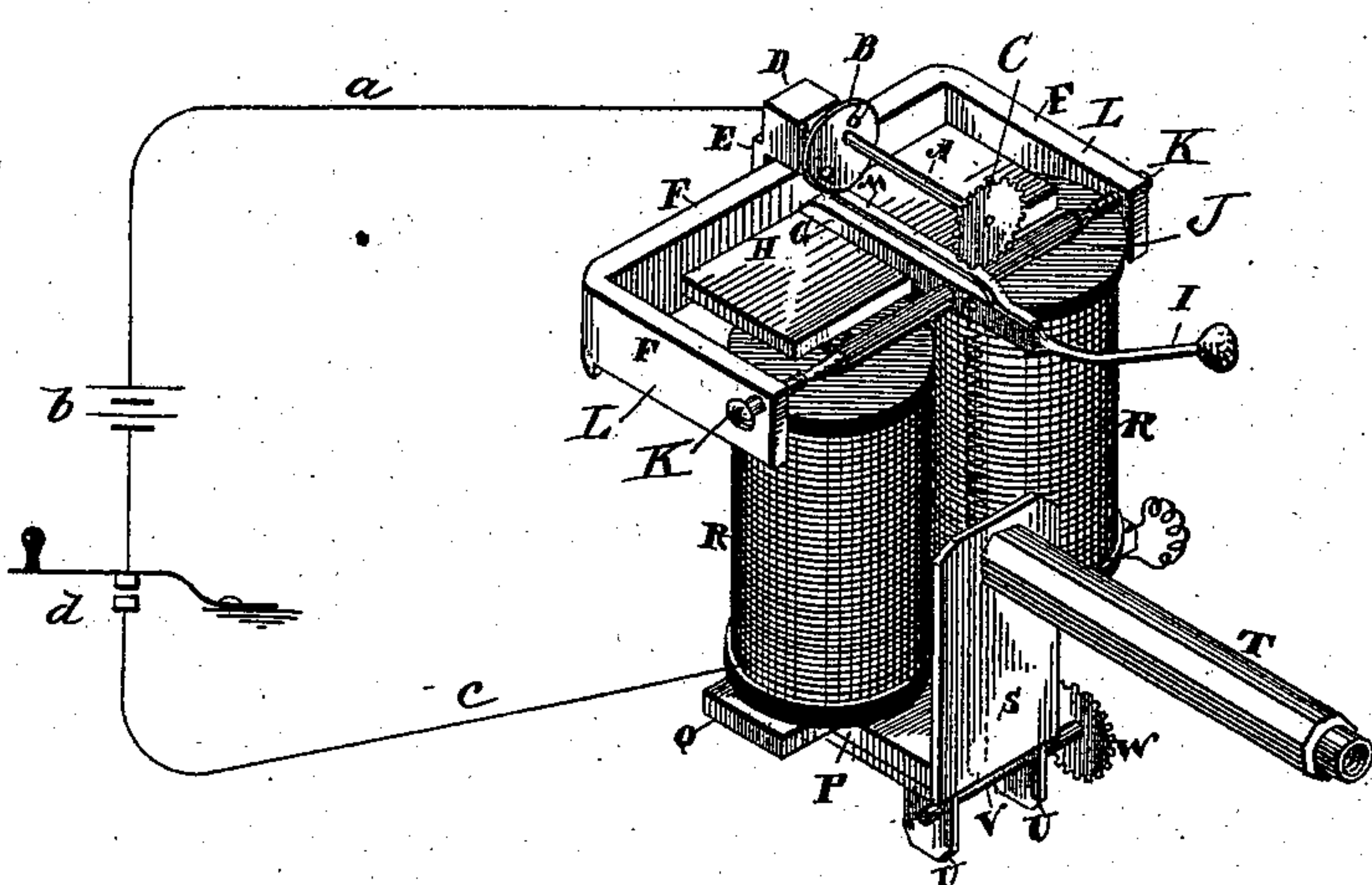


FIG. 2.

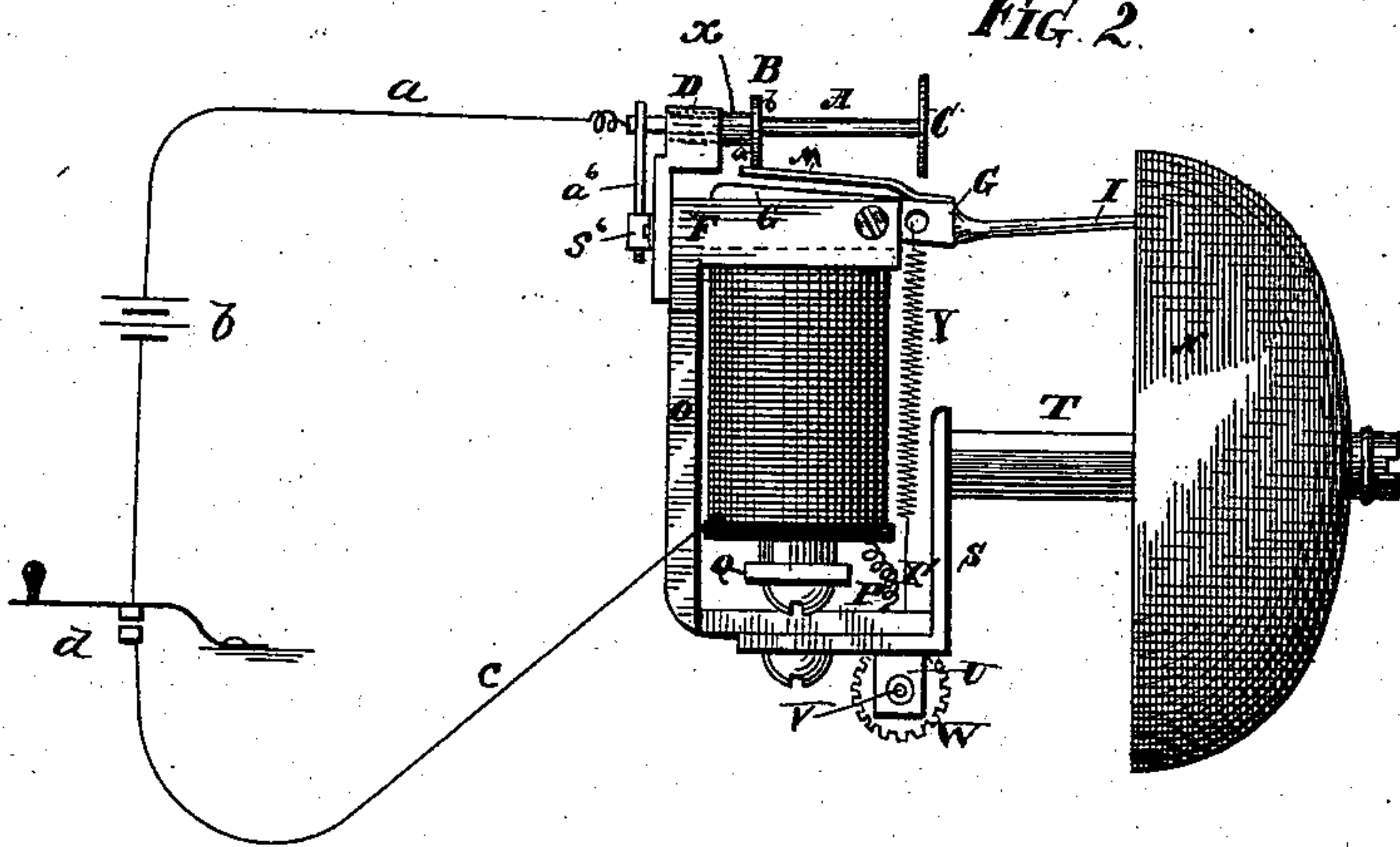
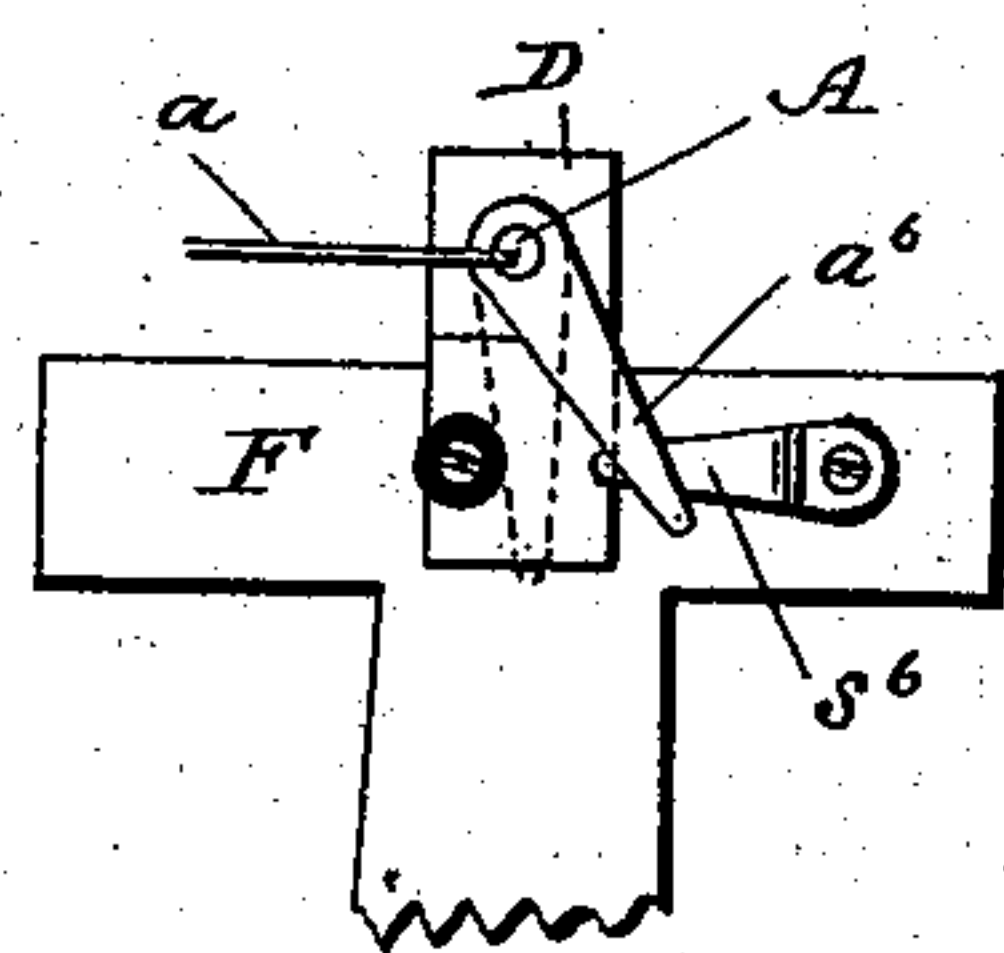


FIG. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 381,314, dated April 17, 1888.

Application filed April 29, 1886. Serial No. 200,530. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK B. WOOD, residing at New York, in the county of New York and State of New York, have invented certain  
5 new and useful Improvements in Electric Bells; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

10 My invention relates to an improvement in electric bells, the object being to produce an instrument convertible for vibratory or single-stroke action, which shall be of simple, compact, and inexpensive construction and durable and efficient in use.

15 With these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

20 In the accompanying drawings, Figure 1 is a view in perspective showing my improved instrument converted for vibratory action and with the bell removed. Fig. 2 is a view thereof in side elevation, showing the mechanism in  
25 the same adjustment and with the bell in place; and Fig. 3 is a rear elevation of the cut-out devices.

A horizontal shaft, A, provided with an eccentric or cam, B, and with a notched disk, C, for turning it, is mounted so as to turn  
30 freely in a sleeve, X, of hard rubber or equivalent insulating material, such sleeve being mounted in an arm, E D, located in the center of and extending above the yoke F of the frame of the instrument. The said insulated  
35 shaft is situated directly above and parallel with a bar, G, carrying upon its inner end the armature H, and provided at its outer end with the bell-hammer I, and secured to and midway the length of an arbor, J, mounted in adjustable centers K K, located in the arms L  
40 L of the yoke aforesaid. A light contact-spring, M, formed of a strip of thin metal, is secured to the upper face of the said bar G and extends rearwardly under the eccentric or  
45 cam, with which it engages. The frame of the instrument is made in one piece, and consists of the yoke F, with its arms L L, an upright, O, and a foot, P, the latter having secured to it the cross-piece Q, supporting the coils R R  
50 of the magnet. An angle-plate, S, also se-

cured to the foot P of the frame, carries the spindle T, to which the bell N is secured. Lugs U U, depending from the said angle-plate, afford bearing for a shaft, V, provided  
55 with a disk, W, for turning it, and having attached to and wound upon it a fine cord, X', connected with a spiral spring, Y, attached to the bar G, and regulated in tension according to the strength of the current operating the  
60 instrument. One wire, a, leads from the battery b to the insulated shaft A, and the other wire, c, to one of the magnet-coils R, thence to the other coil, and then to the frame. A key, d, represents one mode of making the circuit, which is normally open.

For the single-stroke action of the instrument the cam or eccentric B and the contact-spring M are cut out of circuit. This is done  
70 by any well-known means, such as an arm, a<sup>6</sup>, located on the shaft A and engaged to cut out the cam and spring, with a conducting-stop, s<sup>6</sup>, located on the frame of the instrument.

To convert the instrument for vibratory action, the shaft A is turned to engage the eccentric with the contact-spring. Then when the  
75 circuit is closed by the operator at d, or at a point corresponding thereto, the current will pass through the insulated shaft, thence to the eccentric, thence to the contact-spring, the bar  
80 carrying the same, the arbor, the frame, the magnet-coils, and the battery, thus completing the circuit. The magnet, being energized, attracts the armature, which is drawn to it, breaking the connection between the eccentric  
85 and contact-spring, and hence the circuit through the magnet, which, being then demagnetized, releases the armature, which is at once lifted by the spiral spring and the circuit closed again by the contact of the eccentric  
90 and spring. The armature is again attracted and the circuit broken to be made again by its consequent release. A rapid making and breaking of the circuit in the instrument is thus secured and maintained so long as the circuit is kept closed by the operator, and the  
95 bell-hammer, being connected with the armature, partakes of its movements and strikes rapid blows upon the bell.

To convert the armature for single-stroke action, the spring and cam are cut out of circuit by turning the shaft to engage the arm a<sup>6</sup>



with the stop  $s^6$  on the frame, the cam being at the same time disengaged from the contact-spring. Then when the operator closes the circuit, as at  $d$ , the current passes through said arm, stop, and the frame, thence through the magnet-coils and to the battery, attracting the armature and effecting a single stroke upon the bell. The circuit being broken at the key, the spiral spring lifts the armature; but the eccentric being cut out of circuit and turned so as to clear the contact-spring, the lifting of the armature leaves the circuit still open, so that only one stroke is secured for each manual closing of the circuit. It will thus be seen that when the instrument is converted for vibratory action the circuit is automatically made and broken with great rapidity, and that when converted for single-stroke action the circuit is controlled entirely by the operator, who momentarily closes the circuit which is broken in the apparatus, and so remains until closed again outside of it or by the operator.

I would have it understood that I do not limit myself to the exact construction and combination of parts herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric bell, the combination, with a magnet, of an armature therefor, a hammer

connected with and actuated thereby, an adjustable stop in the path of a part moved by the armature, an electric conducting-circuit from said magnet passing through said stop and part and adapted to be made or broken by the movement of the latter, a short circuit adapted to cut out said stop and part, and a switch connected with the stop and operated by the latter's adjustment to complete the short circuit, substantially as set forth.

2. In an electric bell, the combination, with a magnet, of an armature, a bell-hammer controlled by the latter, a contact-spring carried by the armature, and a cam arranged to be set for contact with such spring to escape the same and to be cut in and out of the circuit of the instrument, substantially as set forth.

3. In an electric bell, the combination, with a magnet, of an armature, a bell-hammer controlled by the latter, a contact-spring carried by the armature, an insulated rotary shaft, and a cam located upon such shaft, which is turned to engage the cam with the said spring and to disengage it therefrom, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANK B. WOOD.

Witnesses:

J. GILLET NOYES,  
JAMES F. DOYLE.