

(No Model.)

C. SELDEN.
MECHANICAL TELEPHONE.

No. 281,406.

Patented July 17, 1883.

Fig. 1.

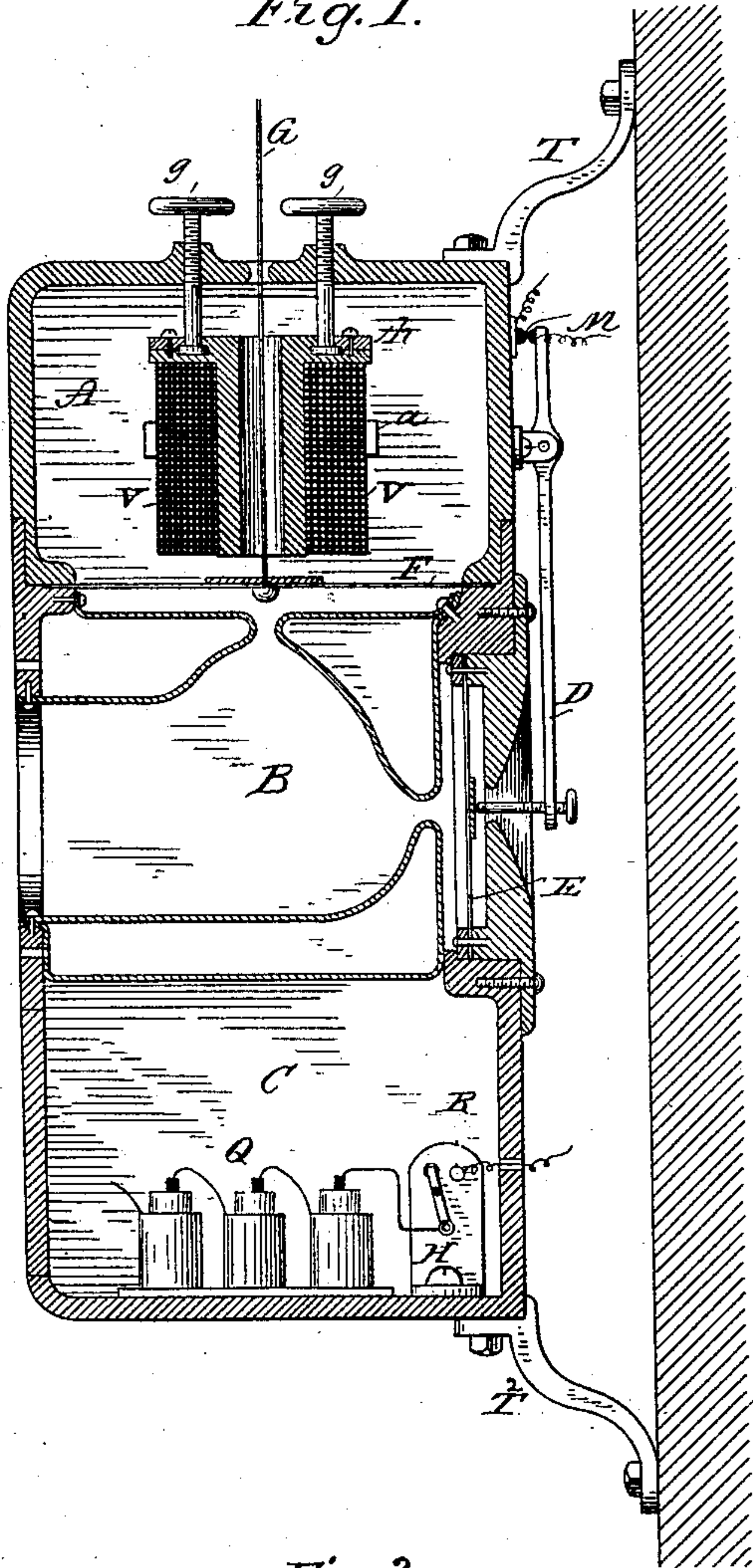


Fig. 2.

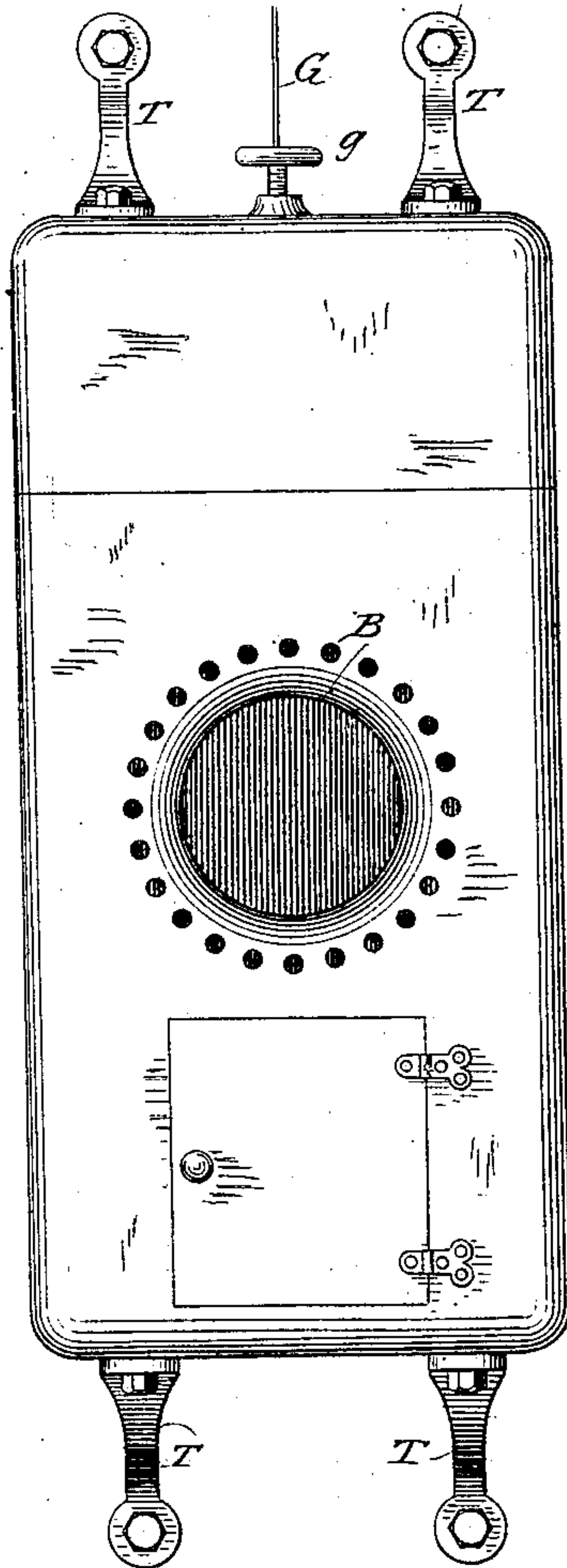
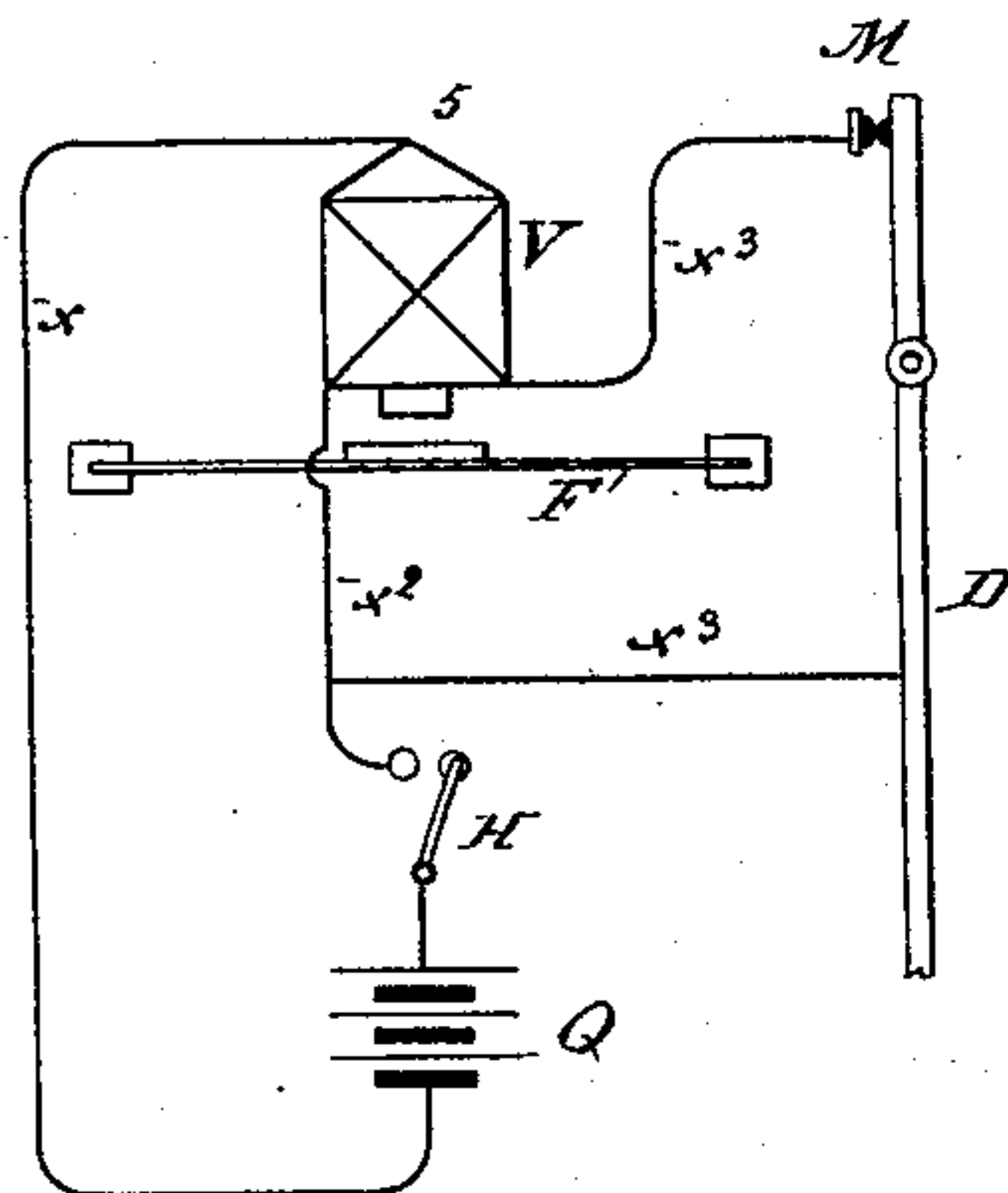


Fig. 3.



Witnesses:
Ernest Abshagen
Thos. Dorney

Inventor:
C. Selden
By his Attorney: H. C. Townsend

UNITED STATES PATENT OFFICE.

CHARLES SELDEN, OF ST. LOUIS, MISSOURI.

MECHANICAL TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 281,406, dated July 17, 1883.

Application filed April 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SELDEN, a citizen of the United States, and a resident of St. Louis, in the State of Missouri, have invented a certain new and useful Mechanical Telephone, of which the following is a specification.

The general object of my invention is to transmit sound and speech by means of vibrations sent over a wire, cord, or other conveyer of sound.

The object of my invention is more especially to combine for this purpose both electrical and mechanical means, and to increase very largely the amplitude or intensity of the sounds transmitted by the apparatus.

My invention consists in combining with a diaphragm provided with an attached sound-conveying cord, wire, or other medium an electro-magnet the attractive power of which upon said diaphragm is varied by any suitable means acting simultaneously with the sound waves or vibrations impinging upon said diaphragm directly.

My invention consists, further, in certain special combinations of apparatus that will be specified in the claims hereto annexed.

In the accompanying drawings, Figure 1 is a vertical central section of one form of apparatus embodying my invention, and termed by me a "vibraphone." Fig. 2 is a face view of the apparatus. Fig. 3 is a diagram of the electric circuits of the apparatus.

R indicates the box or casing of the apparatus, preferably made of cast-iron, although any other suitable material may be employed.

T T' are brackets by which the apparatus may be fastened to a wall or other support.

The box or casing is divided into three compartments, A B C, as shown, one of which, C, contains a galvanic battery or other suitable source of electricity, and an electric switch, H, controlling the circuit of said battery, as will be presently described. B is a sounding-chamber which receives the voice of the speaker, and is provided with two sound-openings, one of which directs the sound upon a diaphragm, F, and the other upon a diaphragm or other vibratory surface, E, which latter serves to impart movement, under the action of the voice, to a lever, D, bearing in its long arm an adjustable point that impinges against dia-

phragm E, and provided at its shorter arm, at M, with contact-points, which, by compression or other action by the lever D, will vary the resistance to the passage of an electric current directed through them. In compartment A there is an adjustable electro-magnet, V, which is arranged to attract diaphragm F, the latter being for this purpose composed wholly or in part of a material susceptible to magnetic attraction, or attached to the movable core of the magnet, or otherwise magnetically arranged so as to move in response to a current flowing in the coils of V. The magnet V is mounted on a suitable support, h, that is adjustable by screws g g, and its core is by preference hollow, or otherwise formed so as to allow the passage of a cord, wire, or other sound-conveying medium, (shown here as a wire, G, attached to or mechanically connected with diaphragm F,) which wire or cord or other device is connected with a similar apparatus at a distant point, and serves to convey the vibrations of F to the distant apparatus.

Fig. 3 shows the connection of the battery, switch, magnet, &c.

Q indicates the battery, one pole of which is connected by a wire, X, with the coils of the magnet V, which coils are in two sets and wound differentially or oppositely in a well-known manner. Said coils branch from the point 5, and one of them is connected through wires X³, contacts at M, and lever D with the switch H, while the other is connected directly by wire X² with the switch H.

The switch H being closed, the action of the apparatus is as follows: By talking into chamber B the sound-waves mechanically operate the diaphragm F, and the vibrations so caused pass to the wire or cord G or other sound-conveying medium. At the same time the sound acts upon the diaphragm E, and thus affects lever D, and, by acting on its long arm, acts with augmented force on the contact-points M at the shorter end, thus varying the resistance of the points. As these points are in one of the circuits of the differentially-wound magnet V, the magnet attracts the diaphragm F simultaneously with the every forward movement thereof under the impulse of a sound-vibration, thus producing an increased amplitude of movement of said diaphragm, and as-

sisting the voice very materially in carrying the vibrations to the wire G or other sound-conveying medium.

Orifices may be placed around the sound-chamber B, as shown in Fig. 2, in order to emit sounds.

The contact-points at M may be made to increase or decrease the resistance by differences of pressure, as shown; or they may be made to slide by each other, so as to increase and decrease the amount of material within the circuit, thus affecting the differentially-wound magnet V by changing the resistance in one branch and transmitting vibrations to the line. The resistance-points M might be arranged in other connections between the battery and the magnet, so as to affect the power of the latter, and other mechanical devices or arrangements of said points might be employed, so that the vibrations of the diaphragm E will be imparted thereto. I do not limit myself in these respects, nor to the form of the diaphragms, which may be other kinds of vibratory surfaces without departing from the spirit of my invention.

What I claim as my invention is—

1. The combination, substantially as described, of two diaphragms or vibratory surfaces, one connected to a sound-conveying cord, wire, or other sound-conveying medium, and the other having connected with it contact-points, and an electric circuit for varying the attraction of a magnet acting upon the first diaphragm.

2. The combination of a diaphragm or vibratory surface having a line wire or cord connected therewith, an electro-magnet acting on said diaphragm, and a second diaphragm, and electrical contact-points for varying the attractive power of said magnet, so as to re-en-

force the action of sound-vibrations upon said diaphragm.

3. The combination of a diaphragm or sound-vibrating surface connected to a sound-conveying wire or cord, an electro-magnet acting on said diaphragm, and means for varying the attractive power of said magnet simultaneously with the sound-vibrations acting upon said diaphragm.

4. The combination of chamber B, diaphragms E and F, magnet V, cord or wire G, and points M, acted upon by diaphragm E and electrically connected with the magnet.

5. The combination of the diaphragms E and F, the common sound-chamber B, magnet V, a cord, wire, or other sound-conveying medium connected with diaphragm F, lever D, bearing with its long arm against E, and contact-points M, connected with the short arm of said lever and included in a circuit of the magnet.

6. The combination of the two diaphragms, the common sound-chamber, the differentially-wound magnet acting upon one of said diaphragms, and the resistance-points M, acted upon by the other diaphragm and electrically connected with one branch of the differentially-wound magnet.

7. The combination, with the diaphragm having the connected cord, of the magnet having a hollow or otherwise-formed core constituting a passage for said cord, and telephone-electrodes in a local circuit connected with said magnet, and acted upon by sound-vibrations simultaneously with the said diaphragm.

Signed at St. Louis, in the State of Missouri, this 21st day of March, A. D. 1883.

CHARLES SELDEN.

Witnesses:

FRANK CONROY,
JOS. H. HAMILL.