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J. A. LIEB.

CIRCUIT CONTROLLING DEVICE FOR TELEGRAPHONES.

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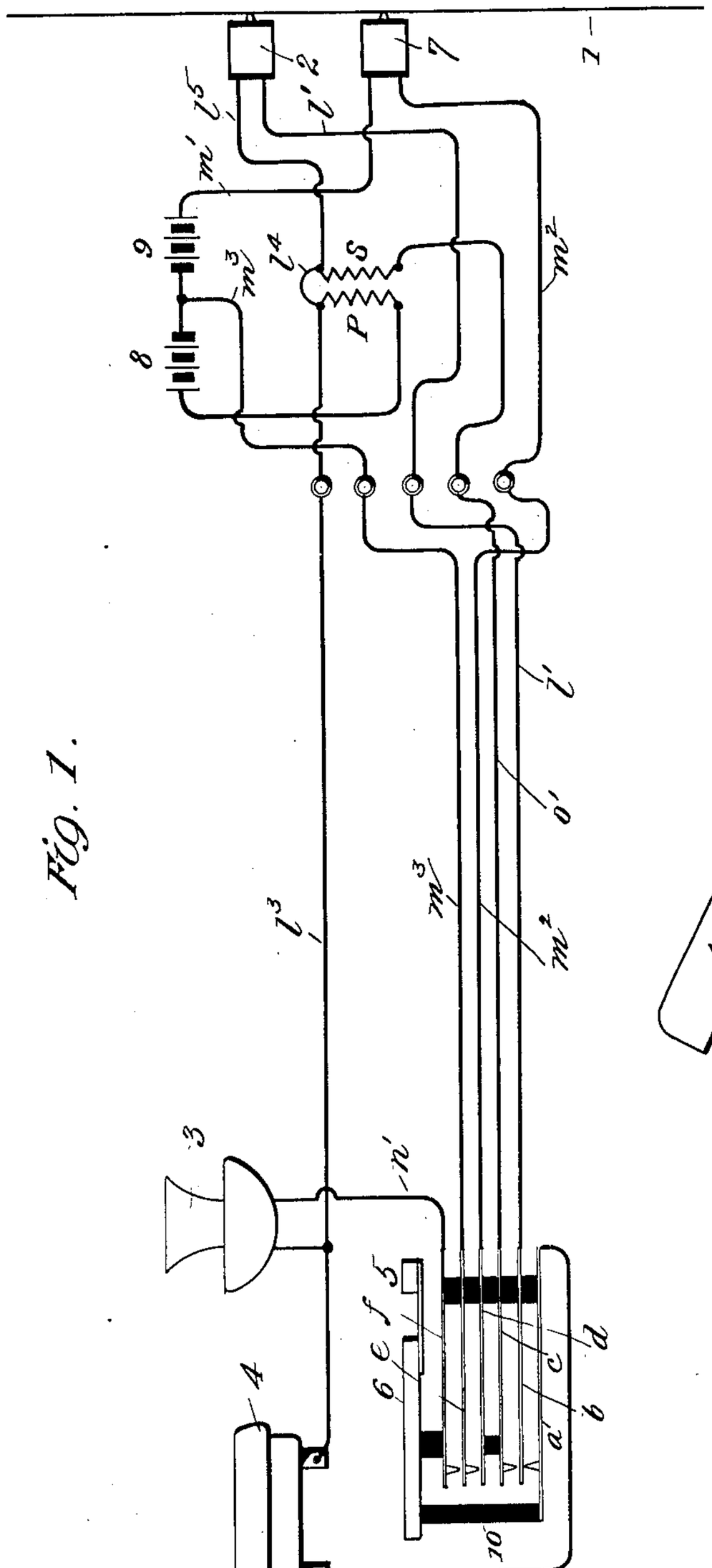

Fig. 1.

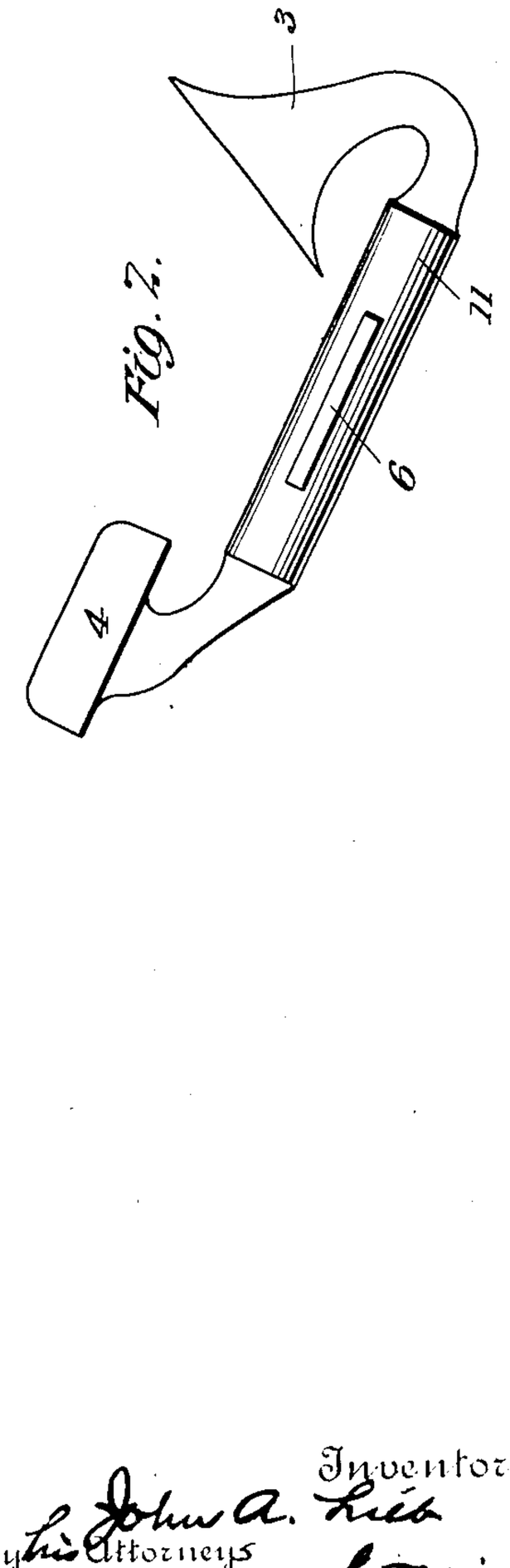

Fig. 2.

Witnesses:
Frank C. Ober
Chas. Hamilton

Inventor
John A. Lieb
By his Attorneys
Rosenbaum & Stockbridge

UNITED STATES PATENT OFFICE.

JOHN A. LIEB, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN TELEGRAPHONE COMPANY, A CORPORATION OF THE DISTRICT OF COLUMBIA.

CIRCUIT-CONTROLLING DEVICE FOR TELEGRAPHONES.

No. 882,327. Specification of Letters Patent. Patented March 17, 1908.

Application filed March 25, 1907. Serial No. 364,506.

To all whom it may concern:

Be it known that I, JOHN A. LIEB, a citizen of the United States, residing at the city of New York, in the borough of Brooklyn and State of New York, have invented certain new and useful Improvements in Circuit-Controlling Devices for Telegraphones, of which the following is a full, clear, and exact description.

My invention relates to an improvement in the electrical circuits and arrangements of parts of an apparatus for magnetically recording and reproducing sound. A practical machine of this nature is known as the telegraphone, and the present improvements are applicable thereto.

The telegraphone and similar apparatus is commonly used for the purpose of receiving dictation in lieu of a stenographer, the record being afterwards repeated to a type-writer operator. For the purposes of dictation it is quite necessary to have the sentences and statements repeated from time to time as desired, and it is further necessary to have erasures and changes easily and freely made at all times. It is therefore evident that sound reproducing devices in which the record cannot be gone over and modified and changed after it has once been made, are not suitable for general purposes. By the present invention it is made possible to have portions of the record repeated whenever and as often as desired, and to freely change any portion of the record which requires it. The circuits for this purpose are adapted to be controlled from a single switch or button conveniently located with respect to the operator. In practice I make use of a combination instrument in which a telephone transmitter and a telephone receiver are contained in a single frame or device. With such a combination transmitter and receiver it is merely necessary to have a button or switch in the handle or holding part which is operated by no other movement than a mere pressure of the fingers without changing the position of the hand in which the apparatus is held.

With these purposes and objects in view my invention consists in the features of construction and combination hereinafter set forth and claimed.

In the drawings: Figure 1 is a diagram showing an arrangement of circuits and parts embodying the principles of my invention; Fig. 2 is a perspective view of a hand microphone to which the invention is applied.

Referring to the drawings in which like parts are designated by the same reference sign, 1 indicates the recording and reproducing surface of a telegraphone or similar apparatus. 2 indicates an electromagnet which can be placed in a telephone circuit for the purposes of recording or reproducing the sound fluctuations in conjunction with the medium 1. 3 denotes a telephone transmitter, and 4 indicates a telephone receiver, which, as above stated, may be part of the same instrument if desired. 5 indicates generally a switch or key for controlling the circuits of the entire system. This switch has a lever 6, which is normally held raised by the resiliency of the switch elements, but which may be depressed by a simple pressure. There is also an additional magnet 7, which is situated directly in front of the magnet 2, along the path of movement of the medium 1. The magnet 7 is the erasing magnet, and is energized when desired to obliterate all previous records. These parts together with the batteries 8 and 9 respectively for the telephoning and erasing circuits, constitute substantially all of the important elements necessary when they are electrically connected by suitable circuits embodying the principles of my invention.

As long as the switch 6 is undepressed, the apparatus is in condition for repeating a message or record from the medium 1. The battery circuits of the magnets 2 and 7 are not completed so that there is no action to demagnetize or change the record of the medium 1 under these circumstances The magnet 2 acts, however, to generate an electric current on account of the changing magnetization of the core thereof under the influence of the magnetized medium 1. This current finds a path through the telephone receiver 4 as follows: from magnet 2, through wire l', blade spring b, to blade spring a, wire l^2, telephone receiver 4, wires l^3, l^4 and l^5, and back to the magnet 2. The operator therefore hears the record on the medium 1. Supposing now that he wishes to either go on with his dictation, or erase a part of the record and change it. In either case he presses the button 6. The effect of pressing the button 6 is to press all of the blade springs a, b, c, d, e and f downward, but the blade a is pressed downward more than b, so that the connection be-

tween these two blades is broken. This is because there is a direct mechanical connection 10, from the switch operating part to the blade *a*. The repeating circuit above described is therefore broken, but new circuits for erasing the old record and establishing a new one are formed as follows: the erasing or obliterating circuit is made from the battery 9 passing therefrom through wire *m'*, magnet 7, wire m^2, blade spring *d*, to blade spring *e*, wire m^3, back to battery 9. The energization of the magnet 7 in this way erases any previous record on the medium 1, and puts it in condition to receive a new record from the magnet 2. The latter circuit is as follows: from battery 8, through wire m^3, blade spring *e*, to spring *f*, wire *n'*, transmitter 3, wire l^3, primary P, of induction coil P, S, back to battery 8. A corresponding current is therefore induced in the secondary S, which flows through the wire l^5, magnet 2, wire *l'*, blade spring *b*, to spring *c*, wire *o'*, back to the secondary S. The voice current fluctuations are therefore impressed on the magnet 2 and producing record in the medium 1. It is to be noted that although a connection l^4 is permanently made between the primary and secondary of the induction coil P, S, this does not interfere with the above described action, because the blade springs *a* and *b* are separated at this time, and the secondary S and its magnet 2 are in an entirely isolated local circuit with one another. The erasing and obliterating and the recording circuits are therefore properly completed when the button 6 is depressed and a repeating circuit is established when the button 6 is undepressed.

The practical construction in which the transmitter 3, the receiver 4 and the switch 5 are embodied, is shown particularly in Fig. 2. The whole form a unitary, single device or structure in which the receiver is placed opposite the ear at the same time that the transmitter is in a position to receive dictation. The device is grasped at its middle portion 11, which constitutes a handle, and the switch button 6 is embodied in this handle so as to always be in a position to be engaged by a simple pressure of the hand or fingers. This combined transmitter, receiver and switch may, of course, be made of different forms and still secure the above functions, that is to say, having the transmitter and receiver properly positioned in use at the same time, and having the switch located where it is normally engaged by the hand in holding the instrument. With an apparatus of this form very practical results and advantages are obtained. For example, in using the telegraphone, suppose a mistake is made in the dictation. It is of extremely frequent occurrence in dictating that a wrong word or wrong data is given which has to be changed. The telegraphone would be operated by the usual motors, etc., to retrace or go over the path of the dictation last given. At the same time the button 6 is released so as to complete the repeating circuit. The operator listens, and when the word which has to be changed approaches, merely dictates the correction and presses the button 6 simultaneously, so that the incorrect word or words are erased and the new words substituted, all without stopping the machine. It is evident that this action has to be done promptly and cannot be accomplished except by an apparatus having the general characteristics of the present invention.

What I claim, is:—

1. In an apparatus for magnetically recording and reproducing sound, a recording magnet and an obliterating or erasing magnet, a switch having a plurality of contacts, and having two positions of throw, reproducing and recording or obliterating circuits, and means for establishing the reproducing circuit when said switch is in one position of its throw and the recording and obliterating circuits when the switch is in the other position of its throw.

2. In an apparatus for magnetically recording and reproducing sound, a recording medium and an erasing or obliterating magnet, and a transmitting and receiving instrument havng a key or switch therein, recording and obliterating circuits and a repeating circuit, and circuit connections for establishing the recording and obliterating circuits or the repeating circuit by the movements of said key or switch.

3. In an apparatus for magnetically recording and reproducing sound, a recording medium and an erasing or obliterating magnet, circuits therefor including separate batteries, and a switch adapted to complete recording and obliterating circuits for the respective magnets at one position of its throw, and a repeating circuit through the recording magnet at the other position of its throw.

4. In an apparatus for magnetically recording and reproducing sound, a recording magnet and an erasing or obliterating magnet, separate batteries therefor, a transmitter, receiver and an induction coil, a switch having two positions of throw, said switch completing primary and secondary voice current circuits through said coil at one position of its throw for the purpose of making a record, and establishing a continuous circuit through said receiver and recording magnet at the other position of its throw.

5. In an apparatus for magnetically recording and reproducing sound, a recording magnet and an erasing or obliterating magnet, separate batteries therefor, a transmitter, receiver and an induction coil, a switch having two positions of throw, said switch completing primary and secondary voice current circuits through said coil at one posi-

tion of its throw for the purpose of making a record, and establishing a continuous circuit through said receiver and recording magnet at the other position of its throw, said switch simultaneously completing a circuit through said erasing or obliterating magnet at the time when a record is being made.

6. In an apparatus for magnetically recording and reproducing sound, a recording magnet and an erasing or obliterating magnet, separate batteries therefor, a telephone receiver, means for establishing a second voice current circuit through the recording magnet or a continuous circuit from said magnet to said telephone receiver as desired.

7. In an apparatus for magnetically recording and reproducing sound, a recording magnet, a battery therefor, a transmitter, receiver and induction coil, means for completing a battery circuit through the primary of said coil, and the transmitter, and a second circuit through said coil and said magnet simultaneously, said means operating to establish a continuous circuit through said magnet and the receiver when desired.

8. In an apparatus for magnetically recording and reproducing sound, a recording magnet, a battery therefor, a transmitter, receiver, induction coil, a permanent connection between the primary and secondary of said coil, means for establishing a complete telephone circuit inductively through said coil, and including said magnet, and means for establishing a continuous metallic circuit from said magnet to the receiver when desired, said last named circuit including said permanent connection.

9. In an apparatus for magnetically recording and reproducing sound, means for making and repeating a record, and having circuits for obliterating said record, a combined transmitter and receiver, and a switch thereon for completing the repeating or the record making and obliterating circuits of said means.

10. In an apparatus for magnetically recording and reproducing sound, means for making and repeating a record, and having circuits for obliterating said record, a combined transmitter and receiver, and a switch normally completing the repeating circuits of said means and depressible to complete the record making and obliterating circuits thereof.

11. In an apparatus for magnetically recording and reproducing sound, circuits for making and repeating a record, and circuits for obliterating said record, a combined transmitter and receiver, and a switch thereon in position to be constantly engaged by the fingers of the hand holding said combined transmitter and receiver, for completing the repeating, or the record making and obliterating circuits.

In testimony whereof, I subscribe my signature, in the presence of two witnesses.

JOHN A. LIEB.

Witnesses:

WALDO M. CHAPIN,

MAY BIRD.