

(No Model.)

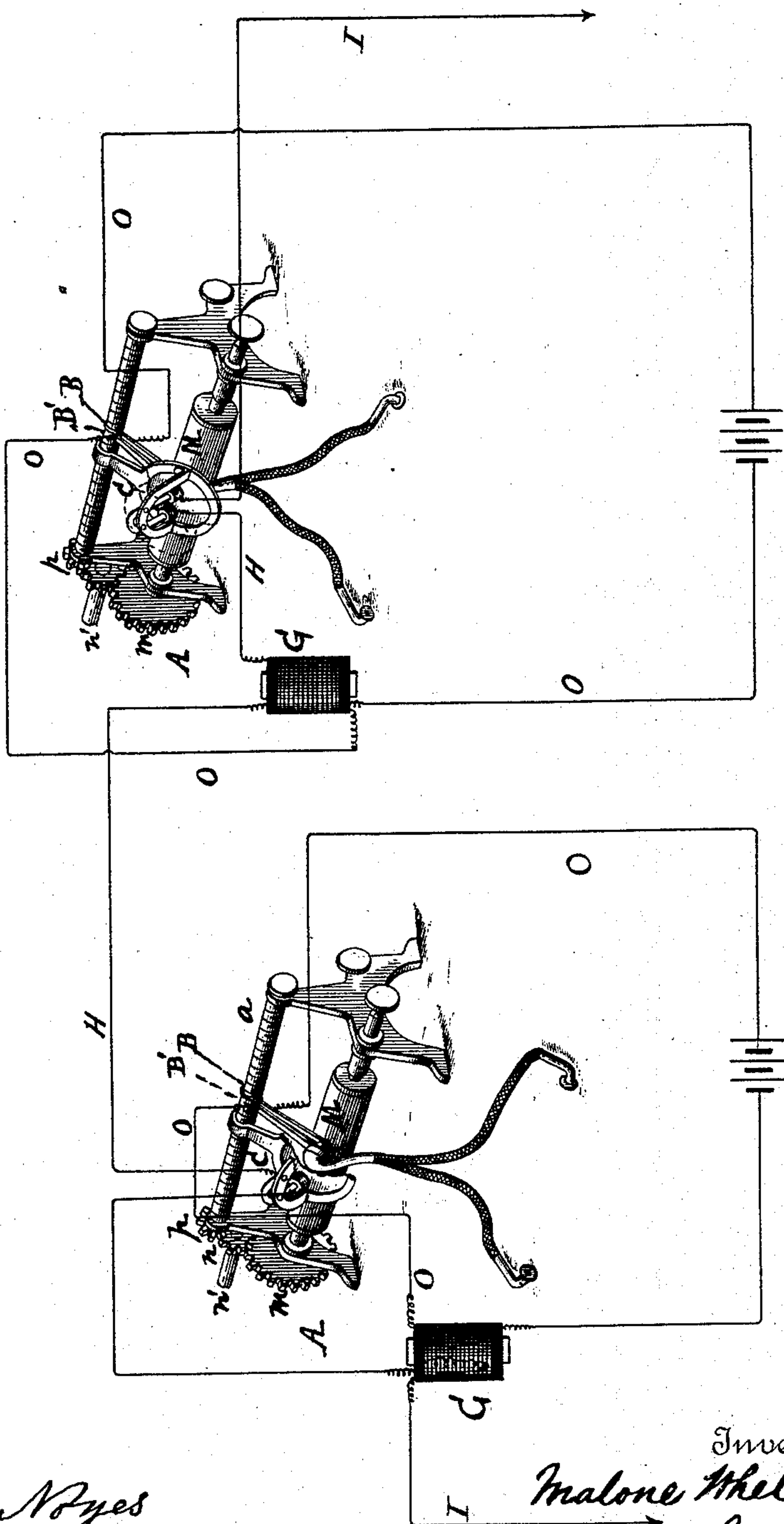
2 Sheets—Sheet 1.

M. WHELESS.  
TELEGRAPHOPHONE.

No. 410,305.

Patented Sept. 3, 1889.

Fig 1.



Witnesses

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Inventor

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Attorney

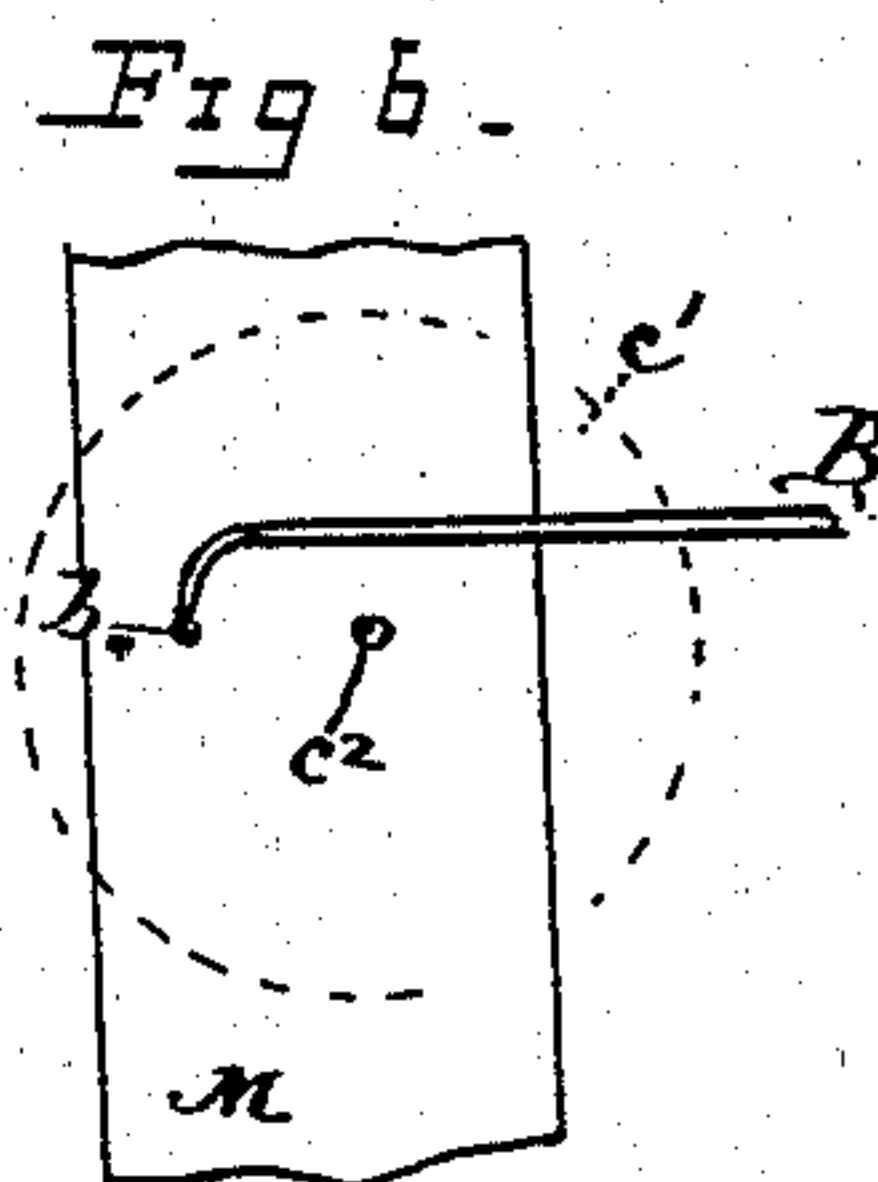
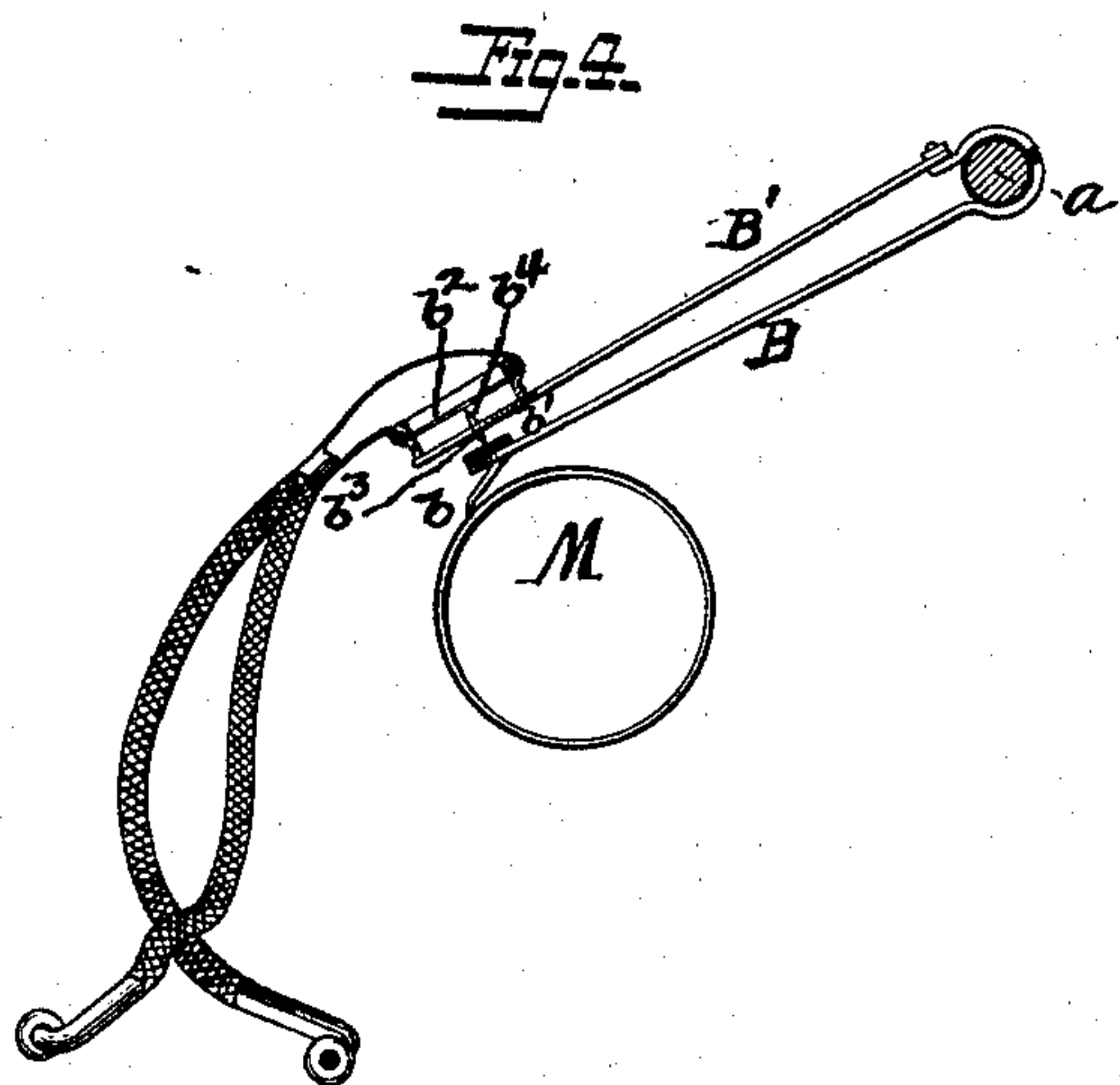
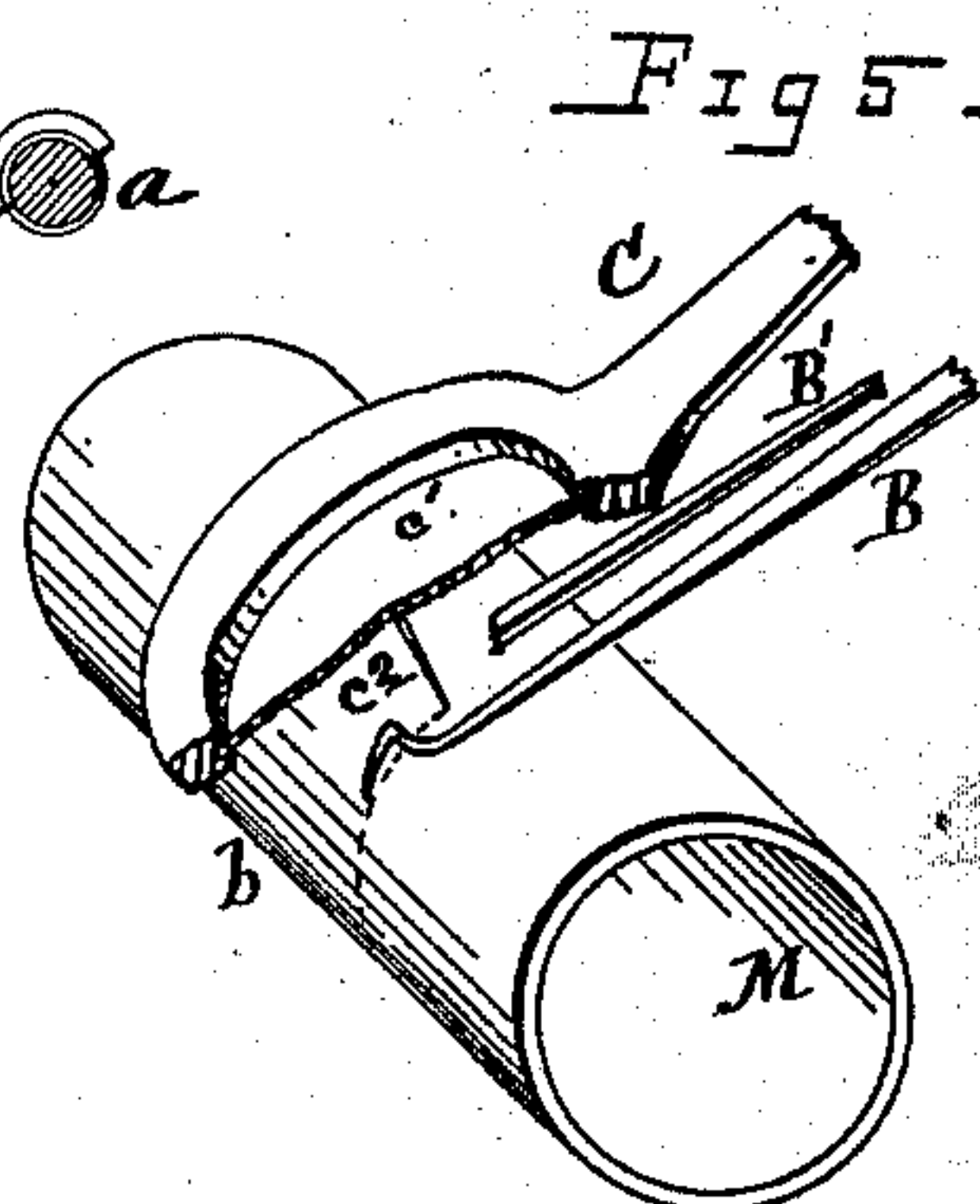
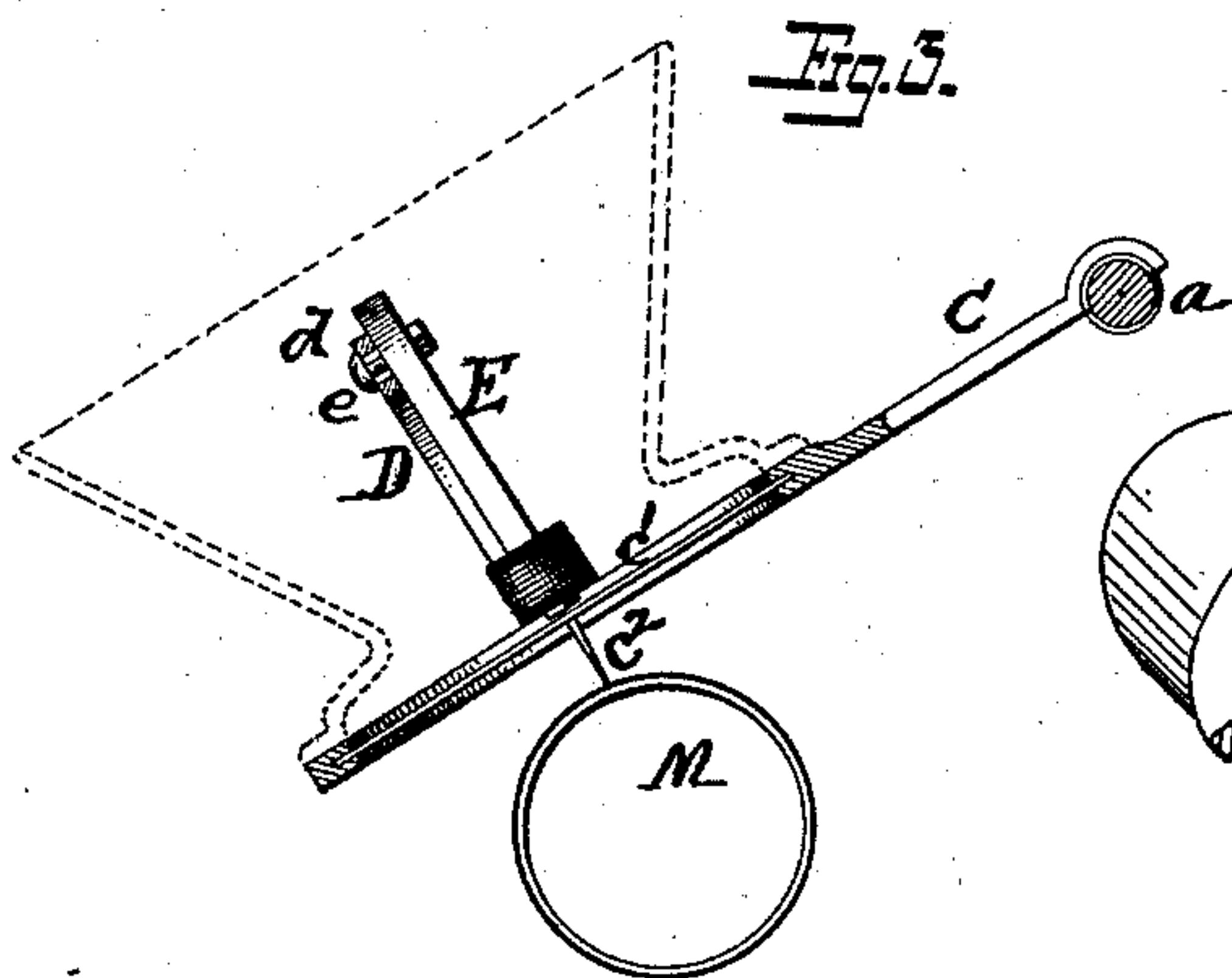
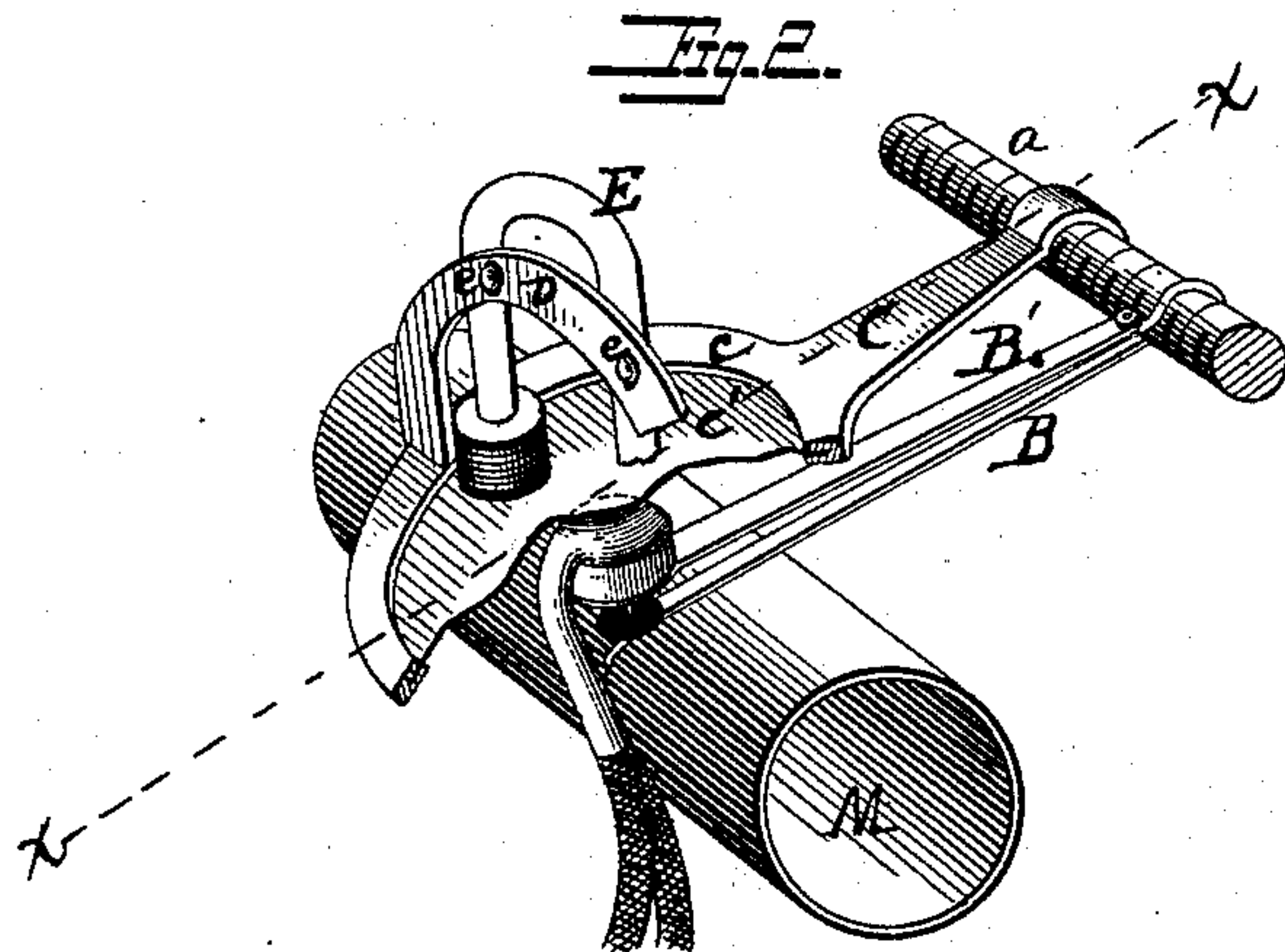
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# UNITED STATES PATENT OFFICE.

MALONE WHELESS, OF NASHVILLE, TENNESSEE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE WORLD TELEGRAPHONE COMPANY, OF WEST VIRGINIA.

## TELEGRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 410,305, dated September 3, 1889.

Application filed September 12, 1888. Serial No. 285,233. (No model.)

*To all whom it may concern:*

Be it known that I, MALONE WHELESS, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented a Telegraphophone; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of two graphophones in circuit. Fig. 2 is a perspective view, partly broken away, of the diaphragms and supporting-arms. Fig. 3 is a section in line  $xx$ , Fig. 2. Fig. 4 is a side view of the reproducing-stylus, partly in section. Figs. 5 and 6 are detail views of the transmitting-styli.

This invention relates to an improvement in electric methods whereby the indentations upon the cylinder of a graphophone can be reproduced upon another cylinder, and at the same time the vocal sounds represented by these indentations are rendered audible.

The invention consists in placing two graphophones in circuit, so that the vibrations produced at one graphophone by the recording-stylus moving over the cylinder shall be taken up by the reproducing-stylus and be reproduced at the other graphophone, and making identical indentations there at the same time be transferred into sound-waves.

In the use of the graphophone as it is now operated sound-waves are converted into indentations upon the surface of a cylinder and can be reproduced at pleasure, as is well known.

In telephoning as now practiced a serious defect in the system is, that when a subscriber is called up and there is no response the caller cannot use the instrument and must wait another opportunity, and by combining the principle involved in these two systems it is possible by the use of my invention to so connect up two graphophones on a telephone-circuit that not only will the message be audibly received at the receiver, but it will also be re-

produced upon a graphophone there. In case of the absence of the subscriber, he can on his return obtain the message; also, this becomes a record which can be filed away for future use.

In the drawings hereto annexed, the letters A A' indicate two graphophones in circuit. This circuit may be a primary or an induction circuit, the latter being preferable, as shown. The devices connected to these graphophones being identical—that is, all the graphophones being constructed alike—a description of one answers for all.

To the threaded bar  $a$  of the graphophone A are hinged the two metallic arms B B'—one above the other—insulated from the bar and each other. The under arm B has at its end on the under side a metal point or stylus  $b$  and on top a carbon contact  $b'$ . To the under side of the end of the upper bar B' is a metallic point  $b^3$ , which rests upon a carbon contact  $b'$ , and to the upper side of this bar B' is another metal point  $b^4$ , which rests against a diaphragm  $b^2$ , carried by this arm B', preferably of gold-beater's skin. To this diaphragm is secured a pipe with an ear-piece. To the threaded bar  $a$ , alongside of arms B B', is secured a stem C, carrying an annulus  $c$ , to which is secured a metal diaphragm  $c'$ . Sprung diametrically across and over the annulus and secured thereto is an arch D. Supported vertically at one side of this arch is the magnet E, held adjustably thereto by pins  $e e$  entering slots  $d d$ . On the under side of the diaphragm  $c'$  is secured a stylus  $c^2$ . The annulus  $c$ , with its diaphragm, is much larger than the diaphragm  $b^2$  and covers the latter. This relation brings the two styli  $b$  and  $c^2$  in almost the same plane and over the cylinder F of the graphophone. Upon the diaphragm  $c'$  is placed the usual mouth-piece. (Shown in dotted lines, Fig. 3.)

The letter M indicates the cylinder of the graphophone, and  $m n p$  the usual gear-wheels. At each graphophone is shown a closed primary circuit O. This circuit when not in use is kept open by a switch. The two arms B B' are in the circuit, as clearly shown in Fig. 1, and the circuit is closed at the metallic and carbon contacts. The primary circuits are



provided with the inductive coils G, which are connected by the usual line-wire H and have the grounds I I, the coils of the magnets E being in the inductive circuit. It is  
5 evident that the two graphophones must be kept in motion while the message is being transmitted.

To operate the invention the two graphophones are set in motion, the primary circuit  
10 at the sending-station being closed and the styli resting on the cylinders. The message is spoken through the mouth-piece against the diaphragm  $c'$  of the transmitter, and by means of the recording-stylus  $c^2$  the usual  
15 indentations are impressed upon the sending-cylinder M. As these indentations pass away from the stylus  $c^2$  they come in contact with the reproducing-stylus  $b$ . This stylus  
20  $b$  takes up the vibrations and transmits them to the carbon point  $b'$ , where the local circuit is closed and the induction-currents are sent out to the line equal in variation and  
25 tension to the primary disturbance. These currents passing over the line disturb the magnet at the receiving-station, thereby disturbing the diaphragm actuated by the magnet as well as the stylus, which is attached  
30 to the under side of it, and the cylinder is indented with indentations equal to the disturbance of the diaphragm. These indentations made upon the receiving-cylinder are identical with those made upon the sending-cylinder, one being a duplicate of the other.  
35 As the indentations upon the receiving-cylinder pass away from the stylus  $c^2$ , they pass under the stylus  $b$ , which disturbs the diaphragm  $b^2$ , and this disturbance makes the wave-sounds, which are articulate and audible.

40 I am aware that it has been proposed to connect a phonograph with an ordinary telephone-circuit, so that the messages received will be recorded as well as heard.

Having described my invention, what I claim  
45 is—

1. The combination of a graphophone with an additional stylus resting in the groove made by the graphophone-stylus and closely  
50 behind said stylus, and electric connections containing contacts varied by the additional stylus and extending to a suitable receiver.

2. In a combined telephone and graphophone, the combination of an impression-cyl-

inder with a diaphragm having a stylus arranged upon one side and an electro-magnet  
55 upon the other side arranged in circuit extending from the transmitter to a distant instrument, and an additional stylus controlling the contacts in a primary circuit, the secondary of which extends to the receiver of  
60 the distant instrument.

3. In a combined telephone and graphophone, the combination of a diaphragm, an impression-cylinder, and a stylus between the  
65 diaphragm and impression-cylinder, and an electro-magnet upon the other side of the diaphragm in a circuit with and controlled by the transmitter of the distant instrument, and an additional stylus varying the contact  
70 of the electrodes in a circuit extending to the receiver of the distant instrument.

4. In a combined graphophone and telephone instrument, the combination of an impression-cylinder and a suitable screw-shaft  
75 with suitable gearing for connecting said cylinder to the shaft with a diaphragm carrying one stylus and an additional stylus, both movable laterally by said screw-shaft and proper electric circuits.

5. The combination of a pair of combined  
80 graphophone and telephone instruments located at different stations, each instrument comprising an impression-cylinder, two styli laterally movable on a single screw, a diaphragm carrying one stylus and an electro-  
85 magnet upon its opposite side, suitable electric circuits, and gearing connecting the screw and cylinder.

6. The combination of two graphophones, each provided with a diaphragm having a  
90 magnet and a stylus and two arms, one above another, one arm having a stylus underneath and a contact-point on top, the other arm having a contact-point underneath and resting on the other contact-point, and a contact-  
95 point on top and a diaphragm against the bottom of which the second contact-point rests, with an electric circuit, the two arms being in circuit, as set forth.

In testimony whereof I affix my signature in  
presence of two witnesses.

MALONE WHELESS.

Witnesses:

GEORGE E. NOYES,  
M. DORIAN.