

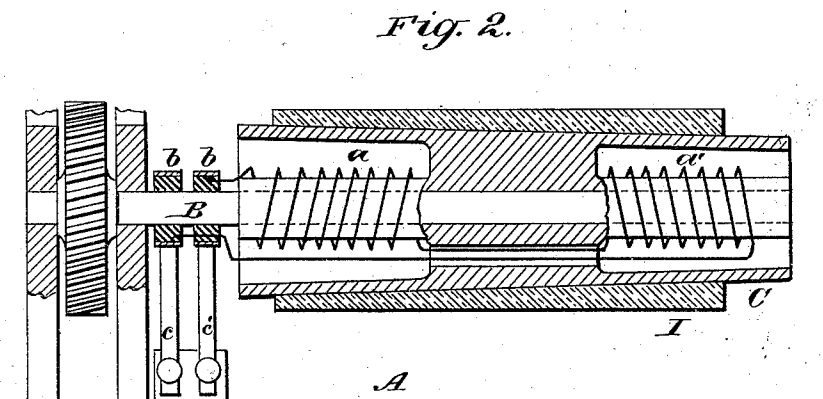
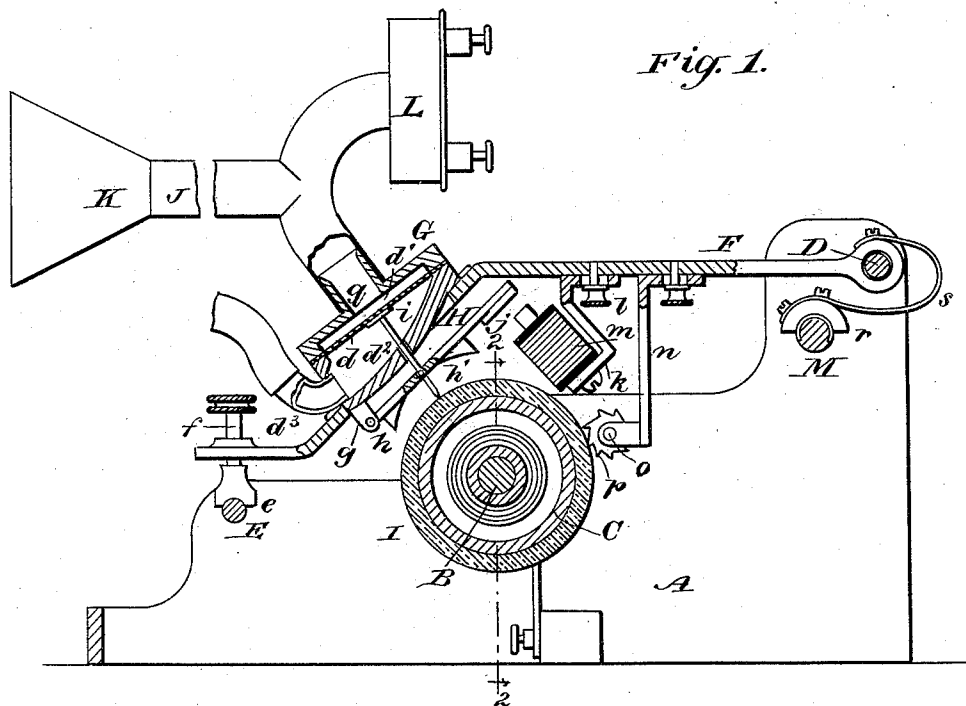
(No Model.)

2 Sheets—Sheet 1.

J. P. MAGENIS.
TELEPHONOGRAPH.

No. 476,054.

Patented May 31, 1892.



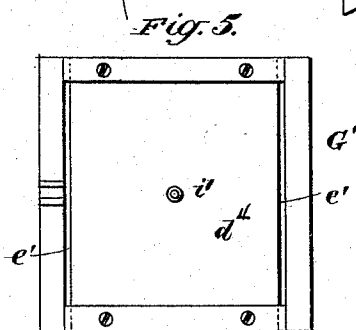
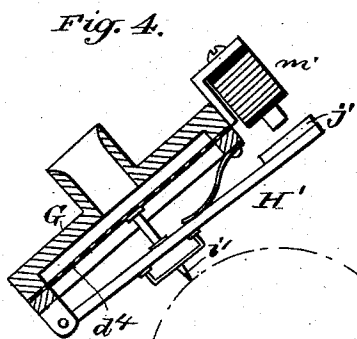
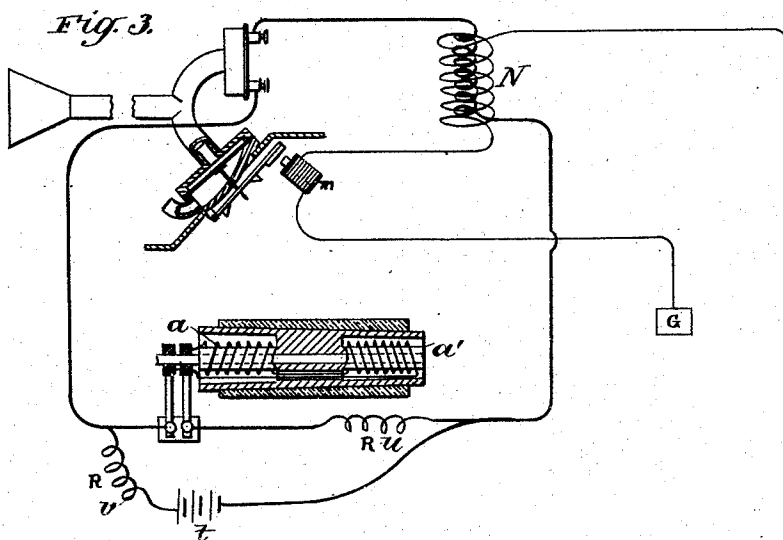
WITNESSES:
J. M. Griswell
C. Sedgwick

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ATTORNEYS.

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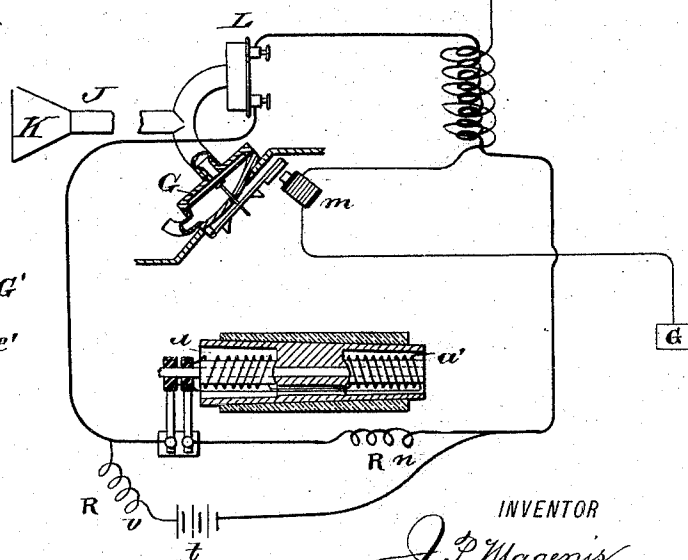
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H. B. Griswold
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UNITED STATES PATENT OFFICE.

JAMES P. MAGENIS, OF NORTH ADAMS, MASSACHUSETTS.

TELEPHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 476,054, dated May 31, 1892.

Application filed July 23, 1891. Serial No. 400,465. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. MAGENIS, of North Adams, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Telephonograph, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is an end elevation, partly in section, of my improved telephonograph. Fig. 2 is a sectional elevation of the magnetic phonograph-cylinder. Fig. 3 is a diagram of the telephonograph, showing the electric connections. Fig. 4 is a transverse section of a modified form of diaphragm-cell, showing the magnet arranged above the stylus-lever; and Fig. 5 is an inverted plan view of the same.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to construct a combined microphone, telephone, and phonograph by means of which while the operator is telephoning to a distant station a record of the words uttered by the operator will be made upon a phonograph-cylinder at both ends of the line, so that a record may be preserved and the necessity of transmitting the phonograms from one place to another may be avoided.

My object is also to construct a magnetic phonographic cylinder by means of which the pressure of the stylus upon the record-cylinder will be augmented by magnetic attraction instead of by gravity; also, to provide means whereby the recording-stylus of the phonograph will be assisted by the microphonic and telephonic action.

My object is also, further, to provide means for cutting a groove in the phonographic cylinder preparatory to making a record by the cylinder.

My invention consists in the combination, in a phonograph, of a diaphragm-cell, a stylus-carrying lever provided with an armature, and a magnetic phonograph-cylinder arranged to act upon the armature of the stylus-carrying lever.

It also consists in the combination, with the stylus-carrying lever, of an auxiliary armature, an electro-magnet arranged to act upon the armature, and a microphone connected

with the mouthpiece of the phonograph and connected up in circuit with the distant-stylus-lever-operating electro-magnet; also, in the combination, with the stylus-carrying lever, of a telephonic magnet for assisting the diaphragm in the production of the record.

It also consists in a novel arrangement of carriage-feeding mechanism, all as will be hereinafter more fully described.

In the frame A of the phonograph is journaled a shaft B, which receives motion in any convenient way and upon the overhanging end of which is placed the phonograph-cylinder C. The said cylinder is made of magnetic material, and its ends are chambered to receive the magnet-coils $a a'$, the terminals of which are connected with the rings $b b'$, carried on the shaft B, but insulated therefrom. The current for charging the coils $a a'$ and energizing the cylinder C is taken from the contact-springs $c c'$, which bear upon the rings $b b'$ and are connected with the local battery in the manner presently to be described.

In the frame A are supported the rods D E, parallel with the shaft B. Upon the rod D is placed the arm F, which carries the diaphragm-cell G, containing the diaphragm d , which is clamped by its edge in the usual way. The diaphragm-cell is provided above and below the diaphragm with resonance-chambers $d' d''$. The free end of the arm F is provided with a saddle e , which is swiveled to a screw f , passing through the end of the arm F. By means of this screw the diaphragm-cell G is raised or lowered, according to the requirements. Between ears g , projecting from the under surface of the diaphragm-cell G, is fitted a stylus-carrying lever H, which is furnished with armatures $h h'$, which are within the influence of the magnetic cylinder C. To the diaphragm d is attached the upper end of the stylus i , the lower part of which is pivoted in the lever H. The stylus i is adapted to act upon the phonogram-cylinder I, carried by the magnetic cylinder C, the said cylinder C being made slightly tapering to insure the perfect fitting of the phonogram-cylinder I. The lever H is prolonged beyond the diaphragm-cell and provided with an armature j , which is held

within the field of an electro-magnet m , attached to the arm F by means of the bracket k and the clamping-screw l , the said bracket having an elongated opening for the screw to permit of adjusting the magnet m along the length of the arm F, as may be required. The magnet m may be either a polarized or a plain electro-magnet. When a polarized magnet is required, the core of the magnet and the bracket k for supporting the same are made of steel tempered and magnetized. To the arm F is also adjustably secured a bracket n , provided at its lower end with bearings, in which is journaled a shaft o , carrying a cutter p , which is narrower than the stylus, for forming a groove in the surface of the phonogram-cylinder I, the said groove being formed in the path of the stylus i , so that when the said stylus makes its record it will be formed principally at the edges of the groove. The cutter p is rotated by connection with any rotating part of the phonograph.

The tube J, connected with the mouthpiece K, is branched, one end thereof being in communication with the central aperture q of the diaphragm-cell G, the other end being connected with the microphone L, which may be of any approved construction, and will not, therefore, require a special description.

In the frame A is journaled a feed-screw M, to which is fitted a half-nut r , connected with the arm F by a bowed spring s . The screw M is located below and slightly in front of the rod D, so that when the arm F is raised it will disengage the half-nut r from the screw and will re-engage it as the arm is lowered.

The microphone L is connected up in the local telephone-circuit, as shown in Fig. 3, with the battery t and primary wire of the induction-coil N, and the coils $a' a'$ of the magnetic cylinder C are in the shunt-circuit. The amount of current sent through the coils $a' a'$ of the cylinder C is regulated by the variable resistance u , and the amount of current sent through the microphone is regulated by the variable resistance v . The secondary wire of the induction-coil N is connected with one terminal of the magnet m , the remaining terminal of the said magnet being connected with the ground, as shown. The other terminal of the secondary wire of the induction-coil N is connected with the line-wire, which leads to the secondary wire of the induction-coil of a similar instrument at a distant station and through the said induction-coil to the magnet m and the ground, as in the first instance.

When sounds are uttered in the mouthpiece K, the diaphragm d in the cell G is vibrated and a record is produced upon the phonogram-cylinder I while it is rotated, and at the same time the diaphragm of the microphone is vibrated, transmitting impulses to the distant station, which, acting upon the magnet m , cause the stylus-carrying lever H to vibrate and produce a record upon the distant

phonogram-cylinder similar to that which is produced at the transmitting-station. In addition to the effect thus described, the magnet m assists the voice in producing the record at the transmitting-station.

Instead of simultaneously transmitting speech by the microphone and making a record by means of the phonograph at the transmitting-station, a phonogram may be placed on the cylinder C and made to vibrate the diaphragm d , and the vibrations thus produced may be transmitted to the microphone through the branched pipe J, and the message may thus be transmitted to a distant station. The resonance-chamber d^2 is provided with a tube d^3 , which is connected with a stethoscopic ear-tube. The operator may transmit speech and hear by the use of the stethoscopic tube. As the instruments at opposite ends of the line are exactly alike, a description of one will suffice for both.

In the modifications shown in Figs. 4 and 5 the diaphragm d^4 in the cell G' is rectangular in form and is bound only at its ends, leaving the spaces e' at its edges. In ears projecting from the diaphragm-cell G' is pivoted a lever H', connected with the diaphragm and carrying a stylus i' . An electro-magnet m' , supported by the diaphragm-cell above the lever H', acts upon an armature j' , carried by the said lever.

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

1. In a telephonograph or phonograph, the combination of a record-cylinder, a recording and reproducing stylus or styluses, a magnetic cylinder, and a stylus-operating lever furnished with one or more armatures held in the field of the magnetic cylinder, substantially as specified.

2. In a telephonograph or phonograph, the combination, with the mouthpiece and stylus-carrying lever of a phonograph, of an armature attached to the stylus-carrying lever, an electro-magnet adapted to act upon the armature, and a microphone attached to the phonograph mouthpiece and connected up in an electric circuit with the stylus-lever magnet, substantially as specified.

3. In a telephonograph or phonograph, the diaphragm-supporting arm, the guide-rod for supporting one end of the same, the feed-screw, the curved spring attached to the arm, and the half-nut carried by the curved spring and adapted to engage the screw when the diaphragm-supporting arm is in the position of use, substantially as specified.

4. In a telephonograph or phonograph, the combination, with the diaphragm-carrying arm F, of the adjusting-screw f , the saddle e , swiveled to the adjusting-screw, and the guide-rod E, substantially as specified.

5. In a telephonograph or phonograph, the combination of a rectangular diaphragm bound at the ends and free at the edges, an

electro-magnet, and a lever carrying a stylus and armature and adapted to be operated by the joint action of the diaphragm and electro-magnet, substantially as specified.

5 6. In a telephonograph or phonograph, the combination of the magnetic cylinder C, the stylus-carrying lever H, provided with the armatures *h*, *h'*, and *j*, the magnet *m*, the microphone or transmitter L, and the battery and
10 line connections, substantially as specified.

7. The combination, in a telephonograph or phonograph, of a magnetic record-cylinder, a vibratory diaphragm carrying a recording-stylus, and an armature connected with the
15 stylus and supported in the field of the mag-

netic record-cylinder, substantially as specified.

8. In a telephonograph or phonograph, the combination, with the phonograph-diaphragm and recording-stylus, of a microphone arranged to be operated simultaneously with the phonograph-diaphragm, armatures connected with the recording-stylus, and an electro-magnet arranged to act upon the said armature and placed in the circuit of the distant microphone, substantially as specified.

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Witnesses:

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