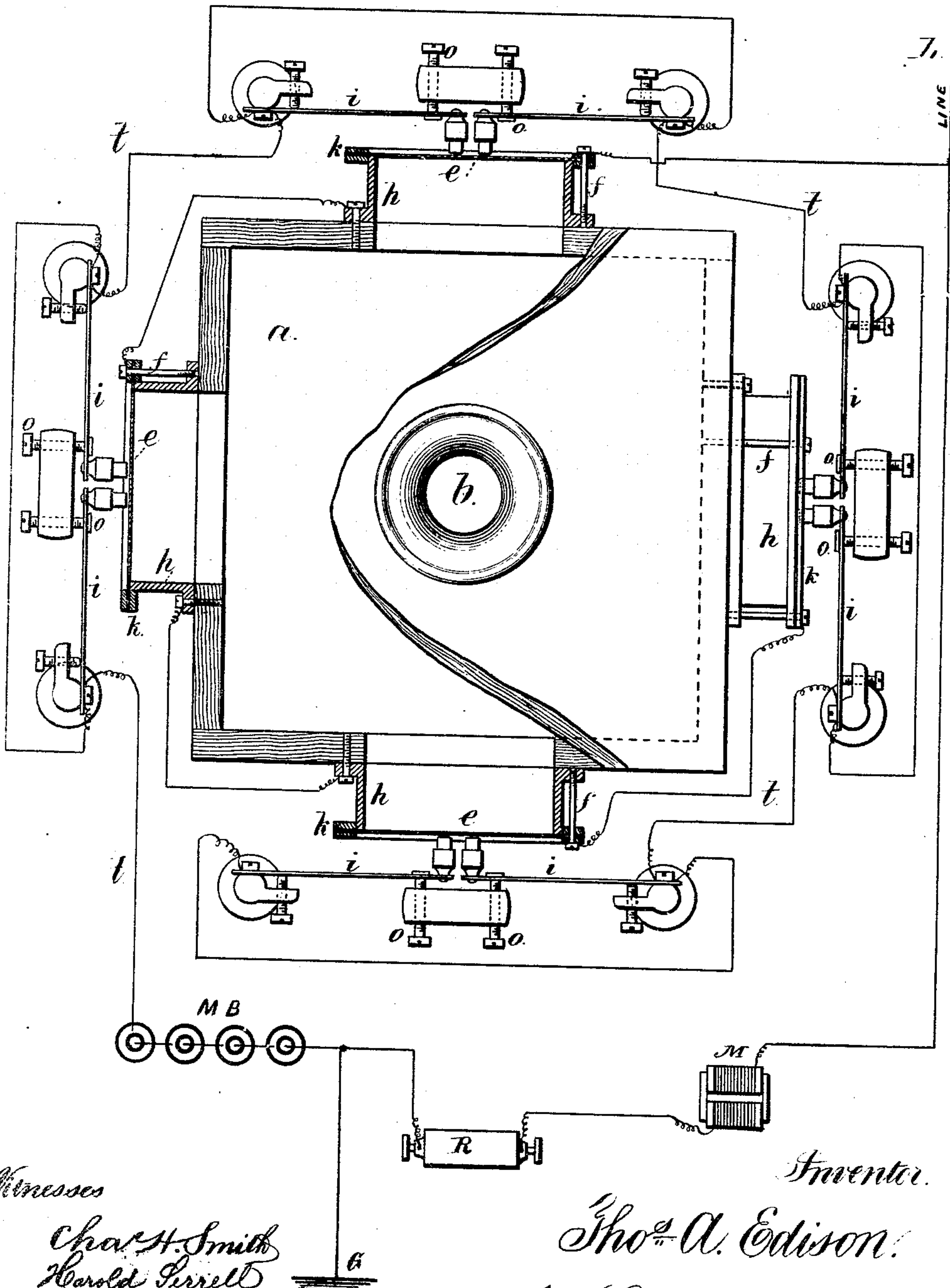


T. A. EDISON.  
Speaking-Telegraph.  
No. 203,014. Patented April 30, 1878.

Fig. 1.



Witnesses

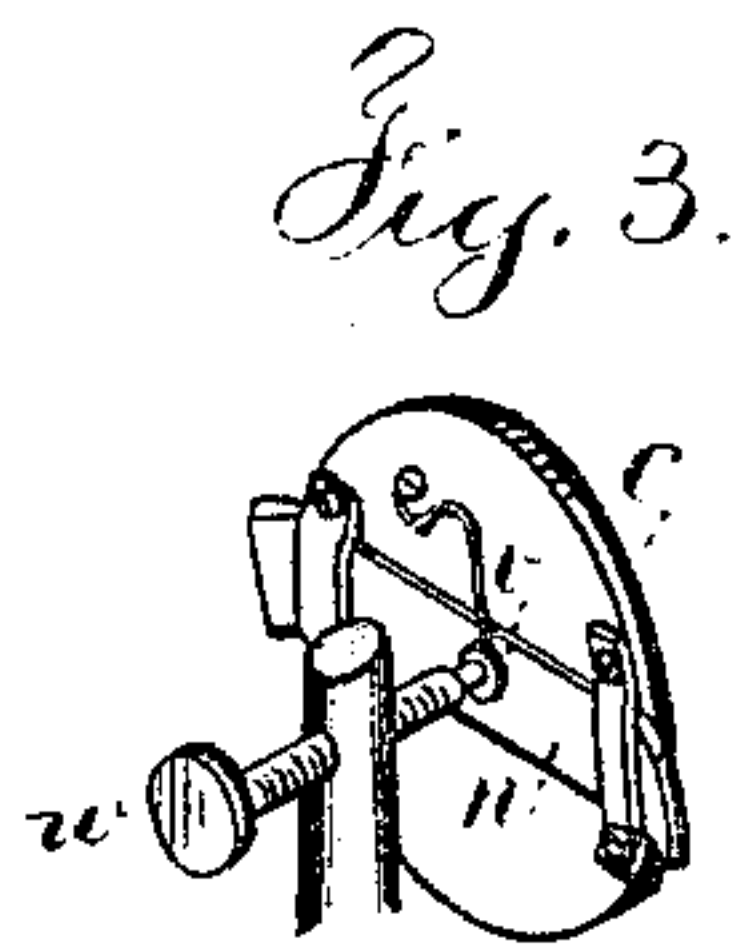
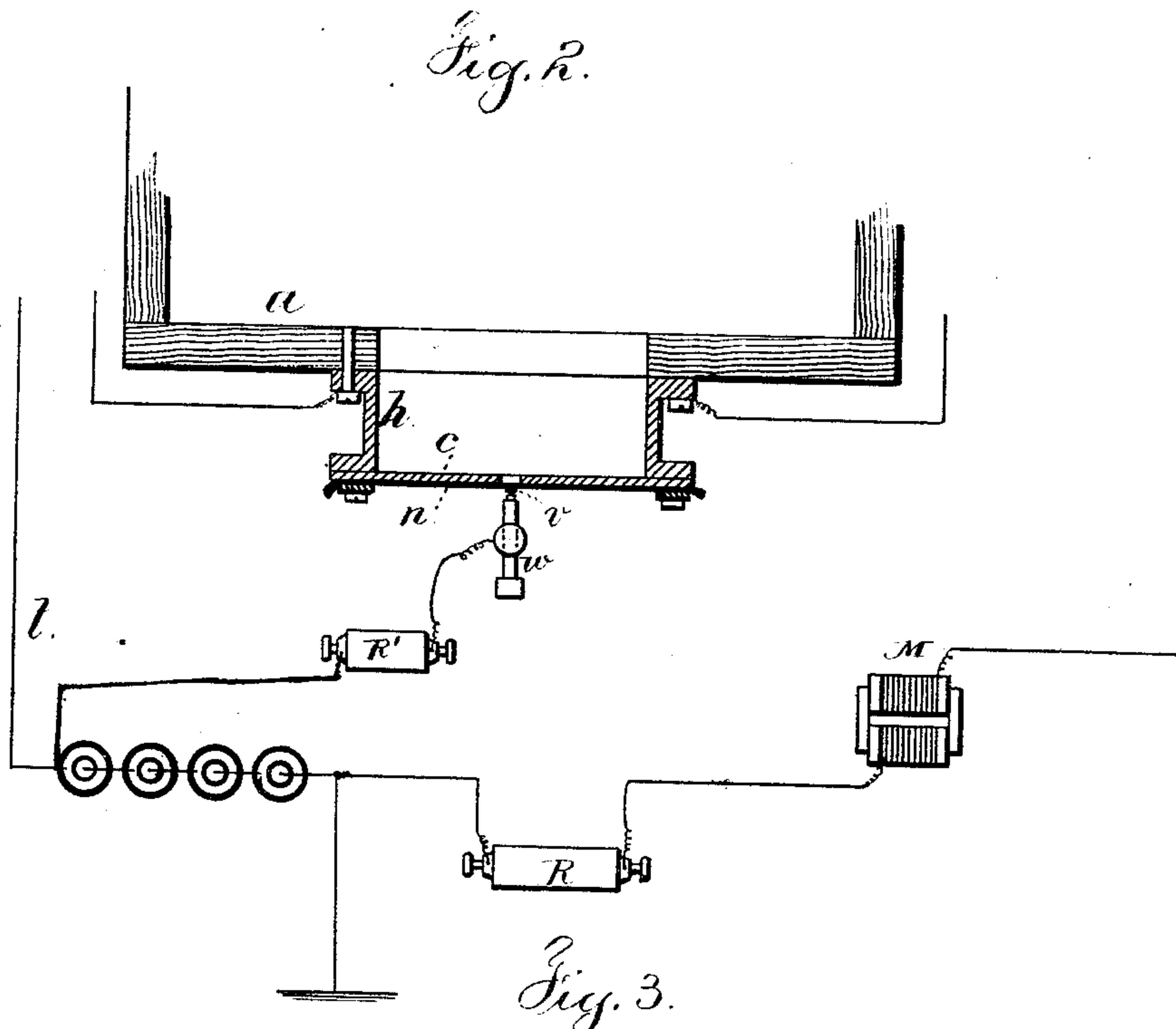
Chas. H. Smith  
Harold Perrell

Inventor.

Thos. A. Edison.

per Lemuel W. Perrell  
att'y.

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# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO WESTERN UNION TELEGRAPH COMPANY, OF NEW YORK, N. Y.

## IMPROVEMENT IN SPEAKING-TELEGRAPHS.

Specification forming part of Letters Patent No. 203,014, dated April 30, 1878; application filed July 20, 1877.

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented an Improvement in Speaking-Telegraphs, of which the following is a specification:

I make use of a resonant case with several tympan, adjusted to different degrees of tension or delicacy, and these are all so connected with contact-points in the metallic line-circuit that the electric pulsations will be sent over the line from one or more of these tympan, and operate upon an electro-magnet and receiving-tympan of a resonator. By this arrangement it is sought to produce such undulations of the electric currents passing over the line that they will represent the inflections of the human voice speaking into the transmitting-resonator, and therefore the receiving-instrument will be correspondingly influenced.

In the drawings, Figure 1 is a plan view, partially in section; and Fig. 2 is an end view of one tympan and circuit-closing device.

The box *a* is of a suitable size and shape. At one side thereof there is a mouth-piece, *b*, adapted to receiving the sounds of the human voice as spoken into the resonant box *a*. This mouth-piece may be upon the top of the box, or at one of the sides thereof. It is preferable that the hollow resonant box be cubical, in order that at its sides may be placed the tympan aforesaid. I have shown four such tympan. Each tympan is made similar to the head of a kettle-drum, but preferably of a plate of metal, and it covers an opening in one of the sides of the resonant box. The edge of the tympan *e* is between the rings *k*, and rests against the end of the cylinder *h*; and there are screws *f*, by which to adjust the rings and apply greater or less strain to the tympan. The tympan are all connected with the metallic line-circuit *L*, and in front of each there are one or more circuit-closing springs, *i*, preferably with carbon or plumbago points, and each spring is adjusted by the screw *o*, so that the point is in nearer or more remote proximity to the tympan. The springs *i* are all in the circuit *t* to the battery *M B*, and there is a ground-connection at *G*, and a shunt from the main line *L* to *G*, in which is placed a

rheostat, *R*, and magnet-helix *M*, to neutralize the static charge and discharge.

It will now be evident that whenever the tympan, or any one of them, are vibrated by the action of the voice, the line-circuit will be connected to the battery, and pulsations sent that represent the vibrations of the tympan. I therefore construct or adjust the tympan so that they respond to different tones or modulations of the voice, in order that when a person speaks into the resonant box the sound will be responded to by one or more of the tympan, and pulsations will be sent upon the line co-efficiently, so that the various modulations and tones of the voice will be represented by the electric pulsations, which, acting upon an electro-magnet at the receiving-station, will influence the resonant receiver and produce the same tones, whereby the articulation will be apparent to a listener.

On very long lines, owing to the excessive weakness of sound in uttering the hissing consonants, the electric pulsations resulting therefrom at a certain distance cease to be perceptible. To overcome this, I arrange the device shown in Figs. 2 and 3 in place of one of the tympan, so as to increase the strength of the consonant waves, as in *ch*, *S*, *T*, *P*. This is accomplished by using a plate, *c*, with a small hole or slot near the center, in front of which is stretched a strip or piece of sheet-rubber, *n*, that is secured near each edge of the disk *c*, and laps a little over the hole in *c*; and upon the rubber is secured a small piece of platina-foil, *v*, an arm of which runs over to and makes connection with the plate *c*. Immediately opposite is a platina contact-screw, *w*, which is connected to the battery through a resistance, *R'*; and by regulating this, the hissing parts of speech may be increased or decreased instead of being lost, as in the other tympan, owing to the minute amplitude given them by these sounds, and also to the enormous resistance of the plumbago points to the slight pressure which these vibrations give. By using a platina point these vibrations are rendered very loud, and by the employment of the rubber in front of the aperture in *c* great amplitude is obtained, even to the faintest hiss.

I do not herein make any claim to the trans-

mission of electric currents varying in intensity proportionately to the sound-vibrations, as that is set forth in applications heretofore filed by me; and in my application No. 141, plumbago is described as acted upon by the vibrations of the diaphragm. I do not, therefore, claim the same herein.

I claim as my invention—

1. The combination, in the telegraphic circuits, of two or more tympana, a resonant box, and one or more circuit-closers to each tympan, substantially as set forth.

2. The plate *c*, provided with an aperture, an elastic membrane, and circuit-breaking connections, arranged and operated substantially for and in the manner set forth.

Signed by me this 16th day of July, A. D. 1877.

THOS. A. EDISON.

Witnesses:

GEO. T. PINCKNEY,  
HAROLD SERRILL.