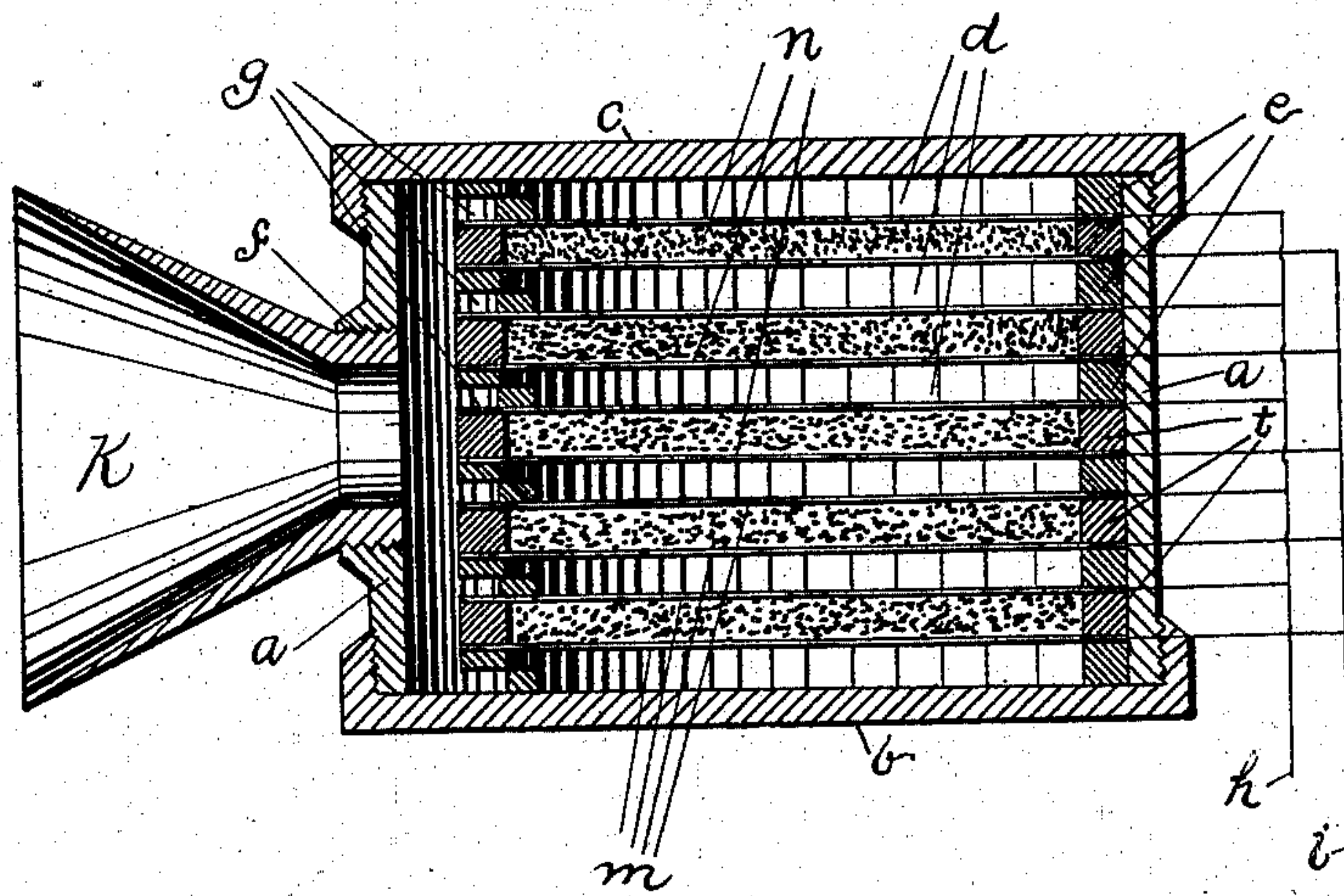


(No Model.)

F. A. RAY.
TELEPHONE TRANSMITTER.

No. 559,106.

Patented Apr. 28, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

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TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 559,106, dated April 28, 1896.

Application filed October 2, 1893. Serial No. 487,049. (No model.)

To all whom it may concern:

Be it known that I, FOREST A. RAY, a citizen of the United States, residing at Springfield, county of Clark, and State of Ohio, have
5 invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of
10 this application.

My invention relates to a means of increasing the volume in telephone transmission; and it consists in a new arrangement of electrodes, diaphragms, and mouthpieces.

15 In the drawing the figure represents a sectional view of the transmitter.

Upon a cylinder *a* are mounted two caps *b* and *c*. These caps are preferably screwed into place; but it is obvious that this connection may be widely varied. At one side of
20 the cylinder is a threaded aperture *f*, into which is screwed a mouthpiece *K*. Within the cylinder *a* are mounted diaphragms *m*, each two diaphragms being separated by insulating washers *t*. Between each two diaphragms are additional insulating washers *e*.
25 Between each pair of diaphragms the spaces are filled with comminuted resistance-varying material *n*, adapted to vary the resistance of the circuit in response to the vibrations of the diaphragms. Between each pair of diaphragms are open spaces *d*, permitting the vibrations from the mouthpiece to reach the surfaces of the diaphragms. These spaces *d*
30 communicate with the passage of the mouthpiece by means of apertures *g* cut out of the washers *e*. One diaphragm of each pair is connected to a circuit-wire *h*, and the other diaphragm of each pair is connected to a circuit-wire *i*.
40

When the vibrations of the air or sound-waves enter the mouthpiece *K*, they enter the apertures *g* and spaces *d*, acting on the diaphragms *m*, varying the compression of the
45 resistance-varying material *n*. This action is simultaneous upon all the diaphragms. As the two diaphragms of each pair act in opposition to each other, the variation in resistance of one cell is double the variation of the
50 ordinary single-diaphragm cell and the back supports are rendered unnecessary. By the use of several pairs of diaphragms in con-

junction with one mouthpiece this variation is increased many fold.

It is obvious that the specific form of resistance-varying material is unnecessary for
5 some of the advantages of my invention, though I prefer to use comminuted carbon. It is also evident that five pairs of diaphragms are not necessary, but that the number may
60 be varied.

Other variations or equivalents may be used without departing from the spirit of my invention.

What I claim is—

65 1. In a telephone-transmitter, two diaphragms, comminuted resistance-varying material mounted between and supported directly by said diaphragms, a cell containing said comminuted material, a mouthpiece, and
70 air-passages communicating with both diaphragms, whereby said resistance-varying material is subjected to increased variations of pressure.

75 2. In a telephone-transmitter, pairs of diaphragms, comminuted resistance-varying material mounted between and supported directly by said diaphragms, a cell containing said comminuted material a single mouth-
80 piece, and air-passages between said mouthpiece and each of said diaphragms.

3. In a telephone-transmitter, a receptacle containing pairs of diaphragms, an insulating-washer between the diaphragms of each pair, an insulating-washer between each pair
85 of diaphragms having an air-passage, resistance-varying material mounted between the two diaphragms of each pair, and a mouthpiece coöperating with said air-passages.

90 4. In a telephone-transmitter, pairs of diaphragms, an insulating-washer between the diaphragms of each pair, an insulating-washer between each pair of diaphragms having an air-passage, resistance-varying material
95 mounted between the two diaphragms of each pair, a mouthpiece coöperating with said air-passages, a cylinder inclosing said pairs of diaphragms, and a cap or caps for compressing and holding said diaphragms and washers
100 in place.

5. In a telephone-transmitter, a cell containing resistance-varying material, two diaphragms acting directly on the resistance-varying material in said cell, a mouthpiece

and air-passages from said mouthpiece to each of said diaphragms.

6. In a telephone-transmitter, two or more cells containing resistance-varying material,
5 two diaphragms acting directly on the resistance-varying material in each cell, a mouthpiece, air-passages from said mouthpiece to

each of said diaphragms, and a telephone-circuit containing the resistance-varying material of said cells in multiple.

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Witnesses:

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