

T. C. RAFFERTY.
TELEPHONIC APPARATUS.
APPLICATION FILED JULY 24, 1909.

956,171.

Patented Apr. 26, 1910.

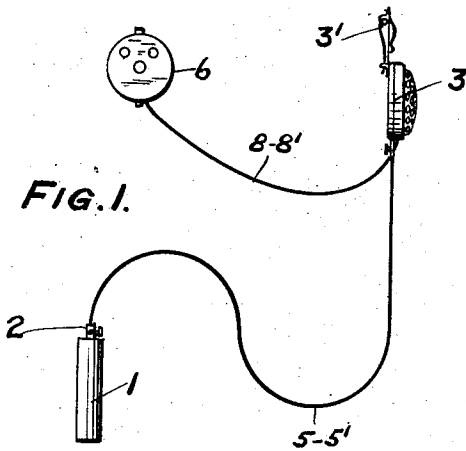
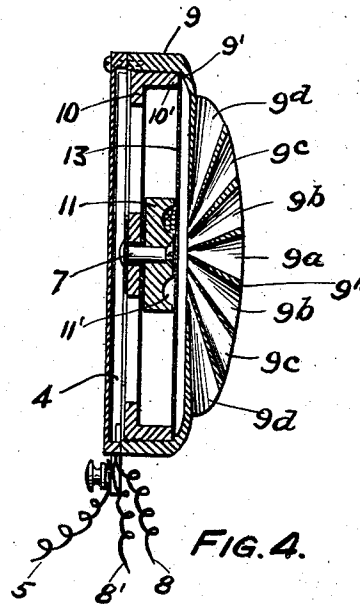
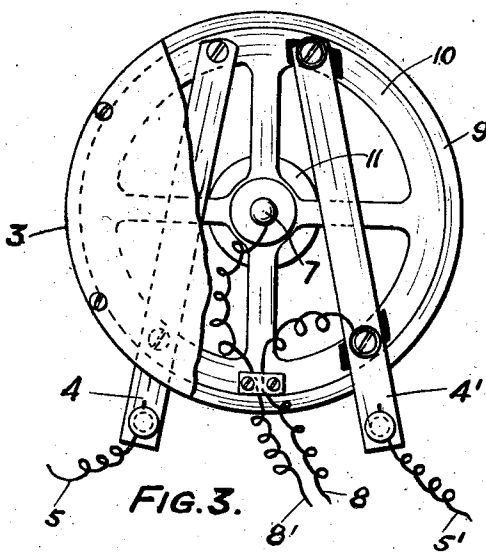
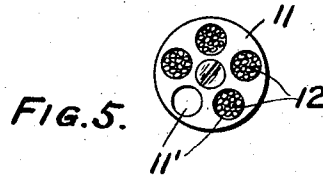
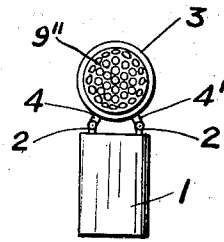


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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TELEPHONIC APPARATUS.

956,171.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS C. RAFFERTY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Telephonic Apparatus, of which the following is a specification.

This invention is a telephonic apparatus designed for the use of persons having defective hearing. Its primary object is to provide improved means, preferably adapted to be carried upon the person, for collecting, intensifying and transmitting sounds. Its characteristic features are comprised in the combination of a battery, a receiver and a transmitter having several megaphones or sound collecting funnels radiating and expanding from the central portion of a microphone diaphragm, the expanded ends being adapted for collecting sound waves traveling in every direction in the hemisphere which they occupy.

In the accompanying drawings, Figure 1 represents a pocket battery and receiver combined with my improved transmitter shown in side elevation; Fig. 2 is a front elevation of the battery and transmitter directly connected; Fig. 3 is a rear elevation of the transmitter with part of the back broken away to show the interior construction; Fig. 4 is a sectional view taken through the axis of the transmitter, and Fig. 5, is a plan view showing parts of the microphone.

The apparatus, as shown in the drawings, comprises the battery 1 having the electrodes 2 and 2', the transmitter 3 having the electrodes 4 and 4' which may be connected to the electrodes 2 and 2' directly as shown in Fig. 2 or indirectly by the conductors 5 and 5' as shown in Figs. 1 and 3, and the receiver 6 which is connected with the electrodes 4' and 7 by the conductors 8 and 8' respectively.

The transmitter comprises the circular insulating shell 9, suitably of hard rubber, which has therein the conducting skeleton disk or spider 10. The bar electrode 4 is fixed to the member 10 and electrically connected therewith, the bar electrode 4' is fixed to the member 10 and electrically insulated therefrom and the pin electrode 7

is fixed to the member 10 and electrically insulated therefrom. A conducting microphone block 11, suitably of carbon, is supported by the member 10, from which it is insulated and is held by the member 7 with which it is in electrical contact. The block 11 is provided with the cups or cavities 11' which contain carbon granules 12. A carbon diaphragm 13 is clamped between the bearing or inwardly extending part 9' of the shell 9 and the bearing 10' of the spider 10; the central portion of the diaphragm being in contact with the granules of the cups 11'.

The shell 9 has formed, in the forward or receiving part 9'' thereof, the several megaphones or sound collecting funnels 9^a, 9^b, 9^c and 9^d, which radiate and expand from the central portion of the microphone diaphragm 13, the outer expanded ends embracing the bulk of the space in front of the diaphragm and being disposed so as to concentrate and carry directly to the center of the diaphragm sound waves reaching the transmitter from all points in the hemisphere coincident with the front of the transmitter.

The transmitter can be supported by attaching it to wearing apparel, as upon the breast of the user, by the hook 3' when the conductors 5, 5' are used, or otherwise it can be supported by the battery in the pocket of the user by directly connecting together the respective members 2, 2' and 4, 4'.

It will be understood that by this sound collecting mechanism, comprising the megaphones integrally formed with the transmitter shell, sound waves are carried to the diaphragm which otherwise would not reach it and that the vibrations of the diaphragm are accentuated. Consequently the variations in the pressure between the diaphragm and the granules, the pulsations of the current which are carried through the microphone to the receiver and the transmission of sound thereby is amplified.

Having described my invention, I claim:

1. A transmitter comprising a diaphragm, megaphones radiating and expanding from the central portion of said diaphragm, and microphonic means coacting with said diaphragm.
2. A transmitter comprising a microphone

having a diaphragm connected therewith
and several megaphones radiating and ex-
panding from the central portion of said
diaphragm so as to collect sound waves and
5 cause them to impinge upon said central por-
tion of said diaphragm.

In witness whereof I have hereunto set

my name this 15th day of July, A. D. 1909,
in the presence of the subscribing witnesses.

THOMAS C. RAFFERTY.

Witnesses:

CHARLES J. McDERMOTT,
JOS. G. DENNY, Jr.