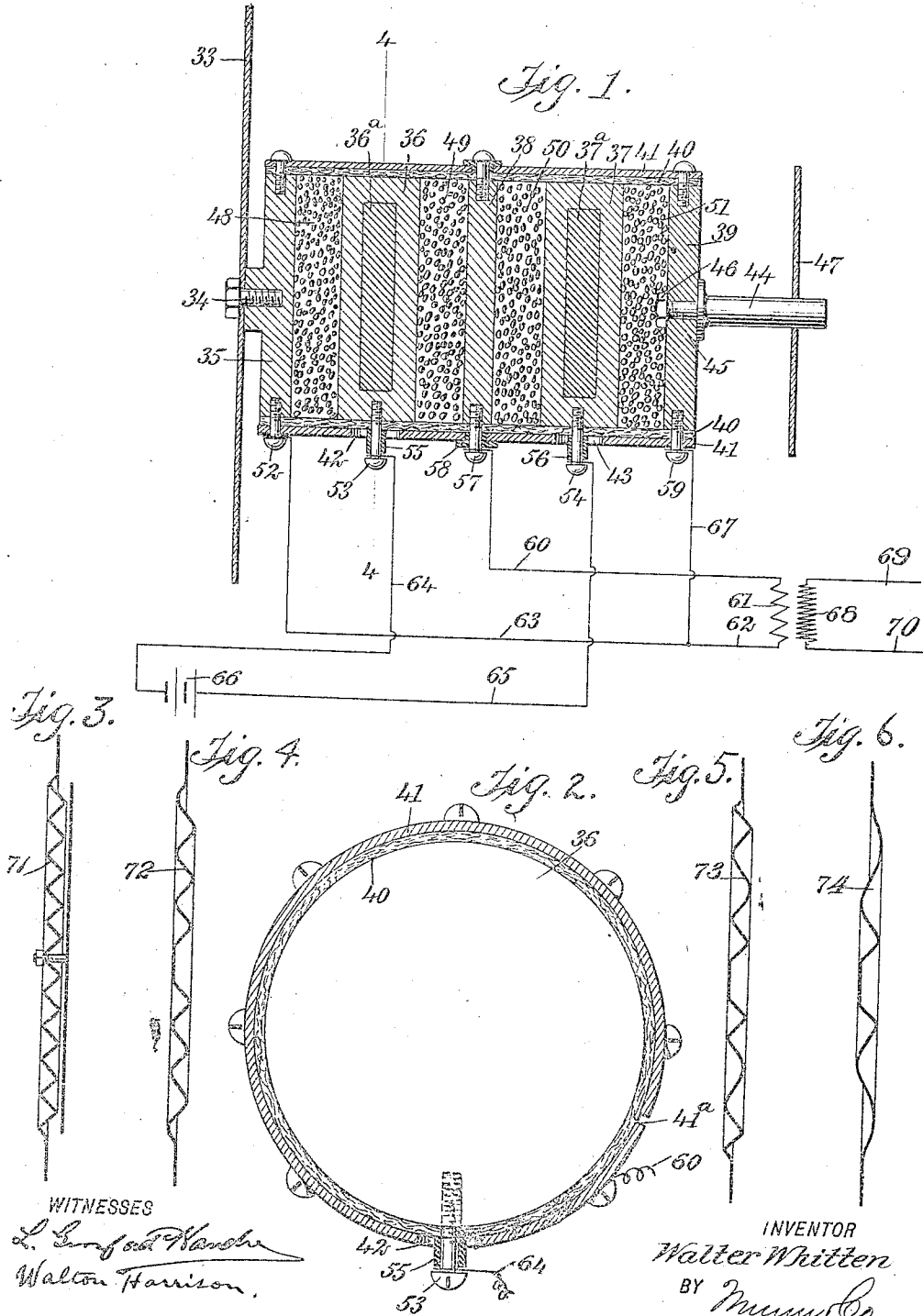


951,864.

W. WHITTEN.
TELEPHONE TRANSMITTER.
APPLICATION FILED AUG. 11, 1908.

Patented Mar. 15, 1910.



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TELEPHONE-TRANSMITTER.

951,864.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed August 11, 1908. Serial No. 447,943.

To all whom it may concern:

Be it known that I, WALTER WHITTEN, a citizen of the United States, and a resident of Schenectady, in the county of Schenectady and State of New York, have invented a new and Improved Telephone-Transmitter, of which the following is a full, clear, and exact description.

My invention relates to telephone transmitters adapted for use in connection with heavy currents.

More particularly stated my invention contemplates such a distribution of the carbon granules employed in the transmitter, that the current used may be employed as a slowly pulsating current, a rapidly pulsating current or an alternating current, by merely changing the electric connections.

My invention further contemplates various improvements in construction, whereby the general efficiency of the transmitter is greatly improved.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a fragmentary central section through my improved transmitter, showing the same as used particularly for alternating currents; Fig. 2 is an enlarged section upon the line 4-4 of Fig. 3, showing how the supplementary diaphragms are mounted; Figs. 3, 4, 5 and 6 show various forms of main diaphragm against which the sound vibrations are directed.

The main diaphragm appears at 33 and is connected by a bolt or other means 34 with a supplementary diaphragm 35. Disposed back of this are other diaphragms 36, 37 provided with weights 36^a, 37^a, and between these weighted diaphragms is another supplementary diaphragm 38 made thinner and lighter than the others. A supplementary diaphragm 39 is disposed at the rear of the weighted diaphragm 37.

At 40 is a barrel of insulating material, preferably rubber, paper or other soft material, and encircling this barrel is a cylinder 41, preferably of metal or hard material, provided with holes 42, 43. In order to give this cylinder 41 the proper degree of resilience and to enable it to fit properly into position, it is provided with a slot 41^c,

as indicated in the lower right hand corner of Fig. 2.

When the above described diaphragms weigh down the main diaphragm, a supporting stem 44 is provided with a reduced portion 45 which extends through the supplementary diaphragm 39 and is connected rigidly to the same by aid of a nut 46. This supporting stem 44 is mounted upon a back plate or support 47.

The carbon or other granules are shown at 48, 49, 50, 51, and are disposed intermediate the various supplementary diaphragms.

Extending through the cylinder 41 and barrel 40 into the supplementary diaphragm 35 is a screw 52 serving as a binding post. Other binding posts are shown at 53, 54 and are encircled by sleeves 55, 56 of insulating material. A screw 57 extends through a sleeve 58 of insulating material and also through the cylinder 41 and barrel 40 into the supplementary diaphragm 38. Another screw 59 extends through the cylinder 41 and barrel 40 into the supplementary diaphragm 39. The screws 57, 59 serve as binding posts.

A wire 60 is connected with the binding post 57 and with a primary winding 61. A wire 62 is connected with this primary winding and also with a wire 63 which leads to the binding post 52. Connected with the binding post 53 is a wire 64 which leads to a battery 66. From this battery a wire 65 leads to the binding post 54. A wire 67 is connected with the binding post 59 and wires 62, 63. At 68 is shown a secondary winding which, with the primary winding 61 constitutes an induction coil. The winding 68 is connected with line wires 69, 70.

Instead of the main diaphragm 33, shown in Fig. 1, I may employ any one of the diaphragms 71, 72, 73, 74, shown respectively, in Figs. 3, 4, 5, 6, which may also be used with or without straight diaphragms as shown in Fig. 3, with diaphragm 71.

The operation of the device is as follows: The various wires being connected as indicated in Fig. 1, and the parts being otherwise assembled, the action of the mechanism shown in Fig. 1 may be readily understood. The diaphragms 36, 37 being provided with weights 36^a, 37^a, have considerable inertia and are therefore not readily moved by the sound vibrations. The other supplementary

diaphragms being lighter have comparative freedom of movement, in order to respond to the action of the sound waves. In order to facilitate the understanding as to the general action, it may be well to consider the barrel 40 and the lighter supplementary diaphragms 35, 38 and 39 as being movable while the diaphragms 36, 37, because of their weights, are practically stationary. It is evident that each vibration of the main diaphragm 33 causes the carbon or other granules to be affected differently upon opposite sides of each of the loaded diaphragms 36, 37. Suppose, for instance, that the center of the diaphragm 33 at a particular instant swings to the right, according to Fig. 1. The carbon granules 48, 50 are slightly compressed for the moment, while the pressure upon the carbon granules 49, 51 is slightly relaxed. The circuit may now be traced as follows: battery 66, wire 65, binding post 54, supplementary diaphragm 37, carbon granules 50, supplementary diaphragm 38, binding post 57, wire 60, primary winding 61, wire 62, wire 63, binding post 52, supplementary diaphragm 35, carbon granules 48, supplementary diaphragm 36, binding post 53, wire 64, back to battery 66. The current thus passes through the carbon granules 48, 50. The main diaphragm 33 now swings so that its center moves to the left according to Fig. 1, the circuit thus completed being as follows: battery 66, wire 65, binding post 54, supplementary diaphragm 37, carbon granules 51, supplementary diaphragm 39, binding post 59, wire 67, wire 62, primary winding 61 (the current now traveling through the same in the direction opposite that in which it first traveled), wire 60, binding post 57, supplementary diaphragm 38, carbon granules 49, supplementary diaphragm 36, binding post 53, wire 64, back to battery 66. It will be noted that during the last-mentioned movement of the diaphragm 33 the current passes through the carbon granules 51 and 49. Little or no current, however, passes through the carbon granules 48 or 50. This is because the main diaphragm, having relieved the pressure of the carbon granules 48, 50, these granules act for the moment as insulators. If, however, the main diaphragm 33 swings back in the opposite direction, the reverse condition takes place; to wit, the carbon granules 48, 50 become conducting and the carbon granules 49, 51 act as insulators. Each time this occurs, the direction of the current through the primary winding of

changes, the result being that this winding is subjected to the action of an alternating current.

While for the sake of clearness I show and describe my improved transmitter as made in certain special forms, and as containing the materials stated, I do not limit myself to this exact arrangement, as various changes may be made in the construction and in the materials employed without departing from the spirit of my invention.

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

1. In a transmitter, the combination of a main diaphragm, a plurality of supplementary diaphragms, some of said supplementary diaphragms being weighted, the weighted diaphragms being disposed intermediate the other supplementary diaphragms, which are not weighted, and semi-conducting material disposed intermediate said supplementary diaphragm.

2. In a telephone transmitter the combination of a cylinder, provided with slots a barrel made of insulating material and mounted within said cylinder, fastening members extending through said slots and into said barrel, diaphragms mounted within said barrel and engaged by said fastening members, and semi-conducting material disposed intermediate said diaphragms.

3. In a telephone transmitter the combination of a barrel made of insulating material, a cylinder encircling said barrel, a plurality of diaphragms mounted within said barrel, means for securing some of said diaphragms relatively to said cylinder and for allowing others of said diaphragms comparatively greater freedom of movement relative to said cylinder, and semi-conducting material disposed intermediate of said diaphragm.

4. In a telephone transmitter the combination of a barrel, a cylinder encircling the same and provided with slots, diaphragms mounted within said barrel, screws extending through said slots into said barrel, and diaphragms mounted within said barrel and engaged by said screws.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER WHITTEN.

Witnesses:

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