

UNITED STATES PATENT OFFICE.

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TRANSMITTER-DIAPHRAGM.

SPECIFICATION forming part of Letters Patent No. 539,636, dated May 21, 1895.

Application filed March 11, 1895. Serial No. 541,334. (No model.)

To all whom it may concern:

Be it known that we, GEORGE A. NELLIS and FLORENCE S. WEISSER, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Transmitter-Diaphragms, of which the following is a full, clear, and exact description.

Our invention relates to the diaphragms employed for transmitting sound in electrical apparatus, such as telephones, microphones, and battery-transmitters, and it is designed to afford a diaphragm for this purpose, which shall transmit sound with greater clearness and shall not deteriorate by continued use. The ordinary iron disk which is used for these purposes will not retain its polished surface and hence will absorb a portion of the sound which it receives, instead of reflecting the same.

We have discovered that when aluminum is alloyed with a small portion of another metal or metals, a diaphragm made of the resulting composition possesses the quality of transmitting sound to a remarkable degree, it being very sonorous and resilient in character. On account of its resiliency, it retains its shape much better than does the ordinary diaphragm, and hence does not need adjustment toward or from other parts of the apparatus, resulting from a change of shape effected by continuous use. The metals which we prefer to combine with the aluminum are iron, nickel, or silver, or a combination of these metals, in any case but a small percentage of the supplementary metal being necessary. Thus, if iron is used, about two or three

percent. is preferred. If nickel is used, preferably about four or five per cent. is employed, and about the same per cent. in the case of silver. When nickel or silver is employed, we preferably also add a small per cent. of iron.

The composition we prefer is the nickel-aluminum alloy, which is preferably in about the following proportions: aluminum, ninety-four per cent.; nickel, four per cent.; iron, one per cent.; silicon, one per cent. A plate thus formed of aluminum with a small per cent. of another metal or metals will receive and retain a high polish, and hence not absorb a portion of the sound received. The acid of the breath will not affect or tarnish the surface, and the composition is exceedingly springy and sonorous.

Many variations may be made in the proportions of the various metals and in the metals used for the addition, without departing from our invention; since

What we claim is—

1. A transmitter-diaphragm consisting of a plate composed of a mixture of aluminum and nickel; substantially as described.

2. A transmitter-diaphragm composed of aluminum with a small percentage of nickel and iron; substantially as described.

In testimony whereof we have hereunto set our hands.

GEO. A. NELLIS.
FLORENCE S. WEISSER.

Witnesses:

W. B. CORWIN,
H. M. CORWIN.