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MICROPHONIC TRANSMITTER DEVICES IN PARTICULAR FOR SUBMARINE TRANSMISSION BY ULTRA SOUNDS
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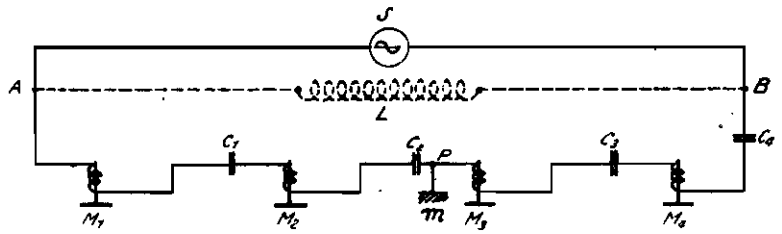

FIG: 1

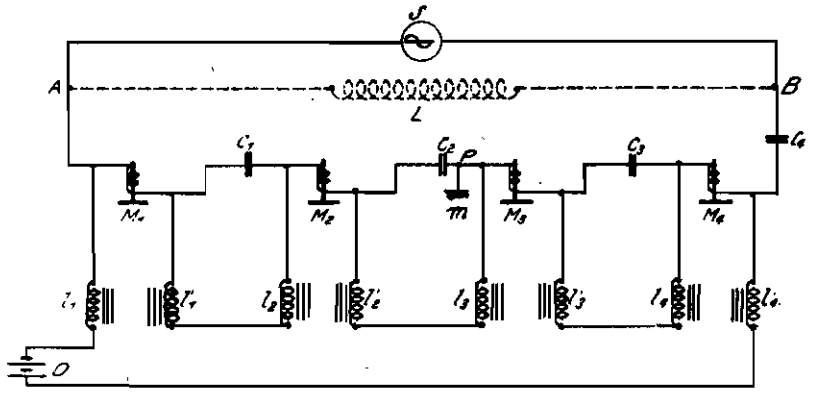

FIG: 2

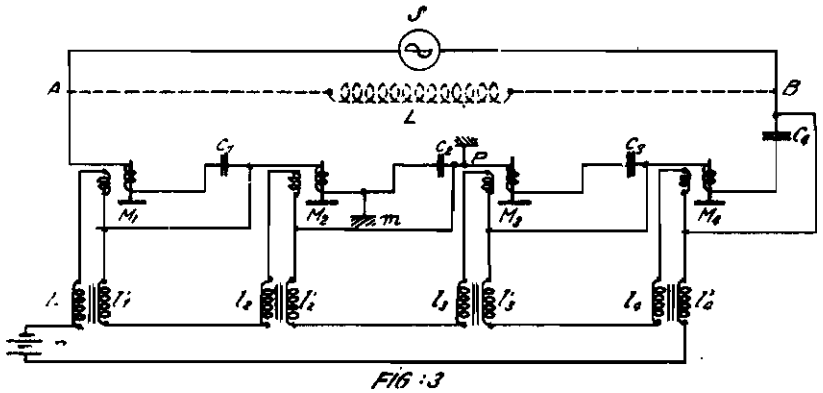

FIG: 3

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MICROPHONIC TRANSMITTER DEVICES IN PARTICULAR FOR SUBMARINE TRANSMISSION BY ULTRA SOUNDS

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The present invention relates to a connection system enabling the potential to be reduced with respect to earth, of microphone transmitter windings in particular of magneto strictive microphones, grouped on the same base.

In such systems the microphones are preferably connected in series and not in parallel, in order to effect the better distribution of the loads.

By such a series connection the least favorable elements are subjected to a high potential, that is to say, at the windings of the microphones which are the furthest away from the earth connection of the circuit, the importanee of the potential arises from the reactive terms due to the impedance of the microphones.

The invention consists essentially in reducing the potentials of the microphonic windings with respect to earth, by interposing at various points in their circuit, for example between each microphone or even between the coils comprising the microphone capacities of sufficient value to compensate for the reactance of these various elements.

The invention will be better understood by reference to the annexed drawings which set forth various embodiments thereof merely by way of example.

In Figure 1 the microphones M_1, M_2, M_3, M_4 are excited by alternating current from a source S without the addition of continuous current.

The capacities C_1, C_2, C_3, C_4 are chosen in such manner that they compensate exactly or almost exactly, the self-inductance of each microphone. It will be seen immediately that with this arrangement the total potential at each microphone remains slight, as there are only added together step by step the potentials corresponding to the actual terms of the impedances of the microphone. It is to be furthermore noted that in order still further to reduce the effects of the resultant potential there may be connected to earth m, as shown on the figure, a point P selected at the electric center or in the vicinity of the electric center of the system, when this connection to earth may be made either directly or through a resistance or resistances.

If the apparatus operates with very high alternating amplitudes, it may happen that the saturation of the microphones is reached and that it is no longer possible to preserve as above, with respect to the source S, a zero phase displacement of the whole of these microphones (eos $\phi=1$).

Owing to phenomena of ferro-magnetic resonance which come into play in this case, it is necessary in order to obtain a stable rate of the alternating current, that the circuit of the microphones regarded from the points A and B acts as a capacity, that is to say, presents a displacement of phase in advance of the eurrent over the potential.

Then to re-establish a cos ϕ (regarded from the souree S) equal to unity, there is arranged between the points A and B, as represented in broken lines on Figure 1, a self-inductance L not subject to the effects of saturation.

Figures 2 and 3 relate to the case of microphones used with a supplementary polarisation by continuous current. These microphones thus comprise either a common winding for the continuous current and the alternating current (Figure 2) or separate windings (Figure 3).

In Figures 2 and 3 a portion of the elements is the same as on Figure 1 and such elements are indicated by like letters.

The blocking self-inductances l_1 and l'_1, l_2 and l'_2, l_3 and l'_3, l_4 and l'_4 which are also shown in Figures 2 and 3 are intended to reduce the derivation of the alternating current in the circuit from the continuous current source D. It can be noted that the self-inductance L is of no interest except when the amplitude of the alternating current is sufficiently great with respect to the continuous current.

In Figure 2 the blocking self-inductances l_1 and l'_1, l_2 and l'_2, etc. are represented as separate but obviously if a suitable direction of the windings is maintained, they may be wound on a common core, either for each microphone (as illustrated in Figure 3) or even for the whole of the microphones.

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