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DYNAMIC MICROPHONE

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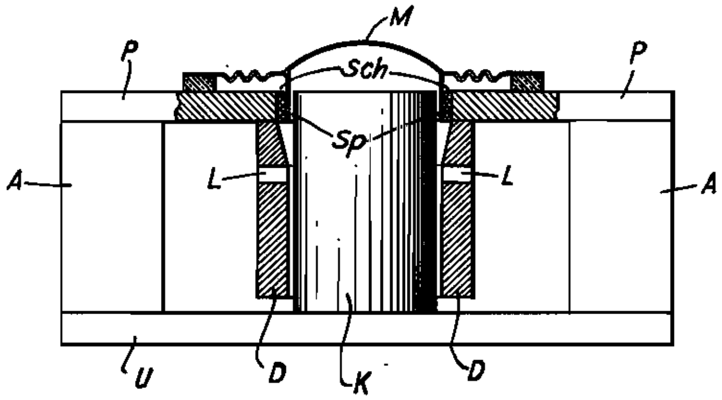

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ALIEN PROPERTY CUSTODIAN

DYNAMIC MICROPHONE

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This invention relates to a new and useful dynamic microphone.

The recently developed dynamic plunger coil microphones offer a great advantage because they require no biasing source such as, for instance, the carbon microphones, or the condenser microphones. On the other hand, except for a few rather complicated constructions, this microphone is not satisfactory in view of its frequency pattern. In fact, if these microphones are built with low pitch, the sensitivity decreases with an an increase of the frequency. When choosing a high tuning, the low frequencies are poorly reproduced. Hence, in some modes of construction, a tuning in the intermediate frequency range is employed thus admitting the drawbacks entailed thereby.

It is already known to arrange such diaphragms in spaces which are filled out with cotton, or like material, whereby the diaphragms act upon said spaces. These damping arrangements have a rather selective effect and furthermore the cotton fillings, or like fillings, are hygroscopic and influenced by the temperature such that the damping is not constant.

In accordance with the present invention the drawbacks of the known plunger coil microphones are eliminated in that a low tuned oscillatory system is employed and that the influence of the falling frequency pattern is checked by a damping depending on the frequency and which is produced by a damping device comprising a hollow cylinder surrounding the center pole at a short distance therefrom and adjoining the pole plate. The new device is of very simple construction and produces a damping which acts safely, is insensitive to moisture and does not vary on account of the temperature, in that the air forced out by the diaphragm at the side of the magnet is forced through a narrow channel which is formed by a hollow cylinder adjoining the pole plate and whose inside has a very small distance from the magnet core. This damping arrangement acts especially on the range of the low and intermediate frequencies. Eventually, it may be desirable to keep lower the damping for the low frequencies. This can be accomplished by drilling holes at a few places into the cylinder which surrounds the core of the magnet. At low frequencies, the pressure fluctuations can be equalized across the holes. Then, only the part of the channel between pole plate and these openings acts as damping resistance. At high frequencies the pressure exchange is prevented by the mass of air oscillating in the openings. For this frequency range the entire length of the channel acts as damping resistance.

The accompanying figure shows a form of construction of the subject matter of the present invention given by way of example. The calotte-like diaphragm M is mounted on the level pole plate P. It carries the oscillatory coil S*ch* which is immersed into the air gap S*p* between the pole plate P and the center pole K. The block-shaped outer magnets made preferably from an aluminum-nickel-steel-alloy, supply the required magnetic flux. The center pole K, the pole plate P and the lower pole plate U consist of soft iron. The center pole K has placed around itself at short distance the damping cylinder D arranged in accordance with the present invention. This damping cylinder extends up to the pole plate P. In order to maintain lower the damping for the low frequencies, holes L may be provided in the damping cylinder D. The distance of the damping cylinder from the center pole K is chosen in a form of construction equal to 0,4 mm.

The subject matter of the present invention may also be employed, as is obvious, in magnet systems and oscillation systems of different constructions, such as for instance in systems having a rectangular oscillation coil whereby the arrangement according to the invention is modified accordingly.

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