MEMS ACOUSTIC TRANSDUCER, AND ACOUSTIC TRANSDUCER ASSEMBLY HAVING A STOPPER MECHANISM

This invention relates to a MEMS sound transducer for generating and/or detecting sound waves in the audible wavelength spectrum, along with a sound transducer arrangement with such a MEMS sound transducer. Such sound transducer arrangements can be very small in size, and are therefore installed as loudspeakers and/or microphones, for example, in hearing aids, in-ear headphones, mobile telephones, tablet computers and other electronic devices that offer little installation space.

The term "MEMS" stands for microelectromechanical systems. A MEMS sound transducer for sound generation or a MEMS loudspeaker is known, for example, from DE 10 2012 220 819 A1. Sound is generated by a swivel-mounted membrane of the MEMS loudspeaker. Such sound transducer arrangements are specifically constructed according to the acoustic and other requirements of the respective application area, and consist of a multiple number of different elements.

A MEMS sound transducer for detecting sound waves or a MEMS microphone is known from WO 2015/017979 A1. This MEMS sound transducer is characterized by a stopper mechanism that protects the sensitive membrane from damages that could occur, for example, through the excessive movement of the membrane due to sound pressure or impact. However, the complex structure, which can be manufactured only with great expense, of this stopper mechanism, which comprises a plate with holes and T-shaped stopper elements, is disadvantageous. The plate is arranged in a manner spaced at a distance from the membrane and features a multiple number of holes, through which the stopper elements extend with their lower free ends. With the other ends, the stopper elements are fastened to the membrane.

MEMS SOUND TRANSDUCER AND SOUND TRANSDUCER ARRANGEMENT WITH A STOPPER MECHANISM

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