An Electromechanical Stimulation system for Treating a Tinnitus Disease

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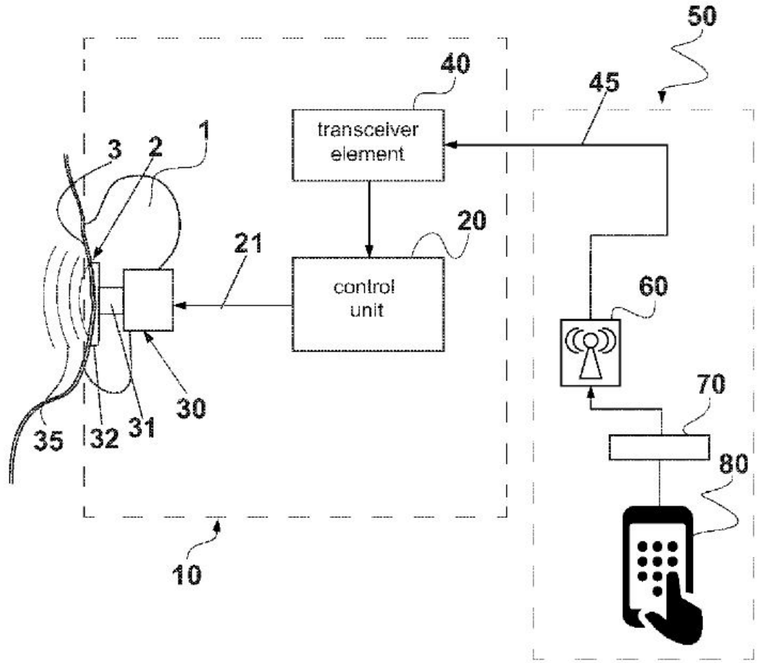
Invention

Tinnitus is an extremely frequent disorder, characterised by aberrant auditory perception, which interferes with the normal daily activities of patients, particularly on the correct perception of sounds and speech, as well as sleep alterations, to the point of debilitating cognitive-behavioural problems. Tinnitus is currently treated by masking the typical perceived frequency, through an external or surgically implanted audio device; these often invasive treatments also create an occlusion of the auditory canal and a restricted perception of sounds.

To overcome these difficulties, the present invention consists of an electromechanical stimulation system, and related wearable device, generating and transmitting mechanical vibrations to the bone processes near a user's ear. A transceiver element receives control signals from a transmitter element of the input interface which, via a microcontroller, allows the user to generate vibrations at frequencies varying from 20 Hz to 20 kHz.

The user instructs the input element to stop the scanning of frequencies where the tinnitus symptoms are significantly reduced. The information is relayed back to the microcontroller, which signals the electromechanical device in the proximal unit to maintain stimulation of the bone process at that frequency.

Drawings
& pictures



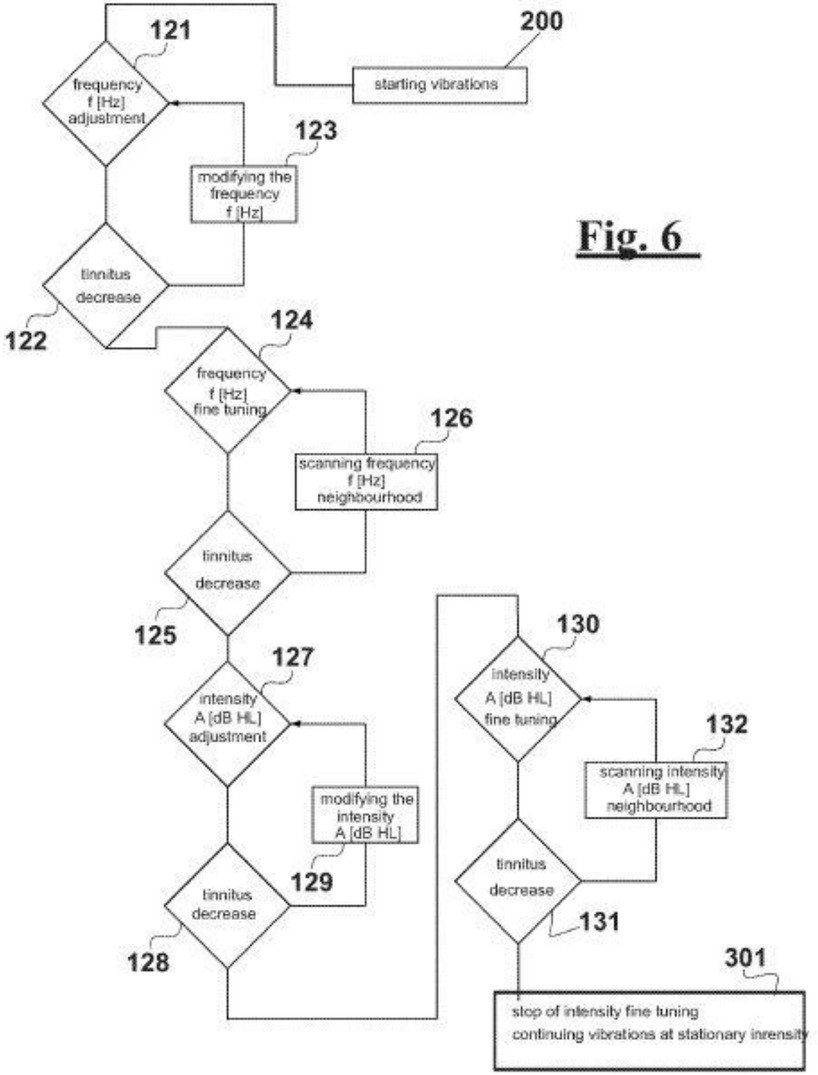
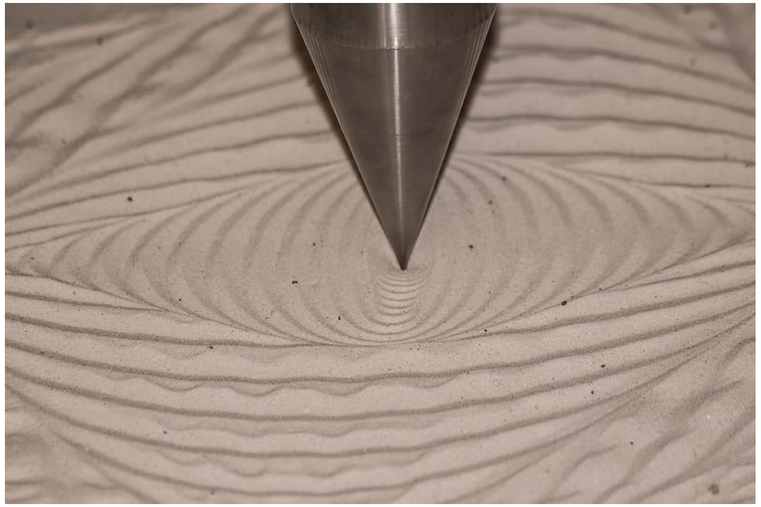


Fig. 6

Industrial applications

The technology may be of interest to companies operating in the field of medical devices and ICT applied to medicine.

In particular, the system will be compatible with most external ear devices, avoiding acoustic isolation yet simultaneously giving the patient independence from the therapist, adjustability of the treatment frequency and reduced perception of white noise.



Possible developments

Currently evaluated at a TRL of 4, the technology can be further developed within specific technology maturation projects aimed at raising the level and facilitating its introduction into the industrial network.

The group is looking for industrial partners operating in the medical ICT field interested in collaborating on the aforementioned technological maturation of the invention.

The University of Siena is open to discuss specific agreements for the exploitation, licensing or option of the patented invention.

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