Imaging Electrical Current Patterns Generated by a Medical Device

Published date: Aug. 5, 2019

Technology description

Invention

This invention spatially visualizes electrical currents through acoustoelectric imaging to provide better therapeutic application.

Background

Electrical stimulation offers many positive health benefits, but requires precise application of current for desired effect. Transcutaneous electrical nerve stimulation (TENS) therapy works to stimulate nerves and reduce pain. Deep brain stimulation (DBS) treats movement disorders such as Parkinson's disease. Transcranial magnetic stimulation (TMS), cardiac pacemakers, and vagal nerve stimulators represent a few other opportunities. Visualization of the electrical stimulation allows for easier calibration of the equipment and better operation as a therapeutic device. This method works alongside currently established devices to provide more information without impeding the underlying process. It demonstrates real-time current density, direction, and location in an intuitive and descriptive manner. This provides opportunities for better and more consistent use of active electrical current therapeutic devices.

Application area

- Medical device companies
- Medical imaging companies
- Pain, nerve, and disease research

Advantages

- Uniquely provides spatial awareness of electrical current application
- Real-time visualization allows for immediate feedback and optimal use of device
- Non-invasive procedure easily works cooperatively with current practices
- More complete view of process expands research opportunities

Institution

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