

Magnetic Linear Motor Drive for Ultrasound with Feedback Control

TECHNOLOGY NUMBER: 4981

OVERVIEW

Low cost, handheld ultrasound imaging system

- Operator-independent image analysis

BACKGROUND

Ultrasound imaging is used in the detection and treatment of many diseases and injuries. Ultrasound imagers use high-frequency sound waves to view soft tissues, such as blood vessels, muscles, and internal organs, in real time. Ultrasound imagers are able to measure tissue movement or displacement and blood flow and are also used to guide the introduction of devices, tubes, and catheters, among others.

Conventional ultrasound imagers use a probe with transducer array that is placed against the skin and is connected to a hand-carried (or table mounted) scanner device for signal processing. Most current probe-based ultrasound systems are expensive devices that scan an ultrasound beam over an area of interest. The transducer arrays are wire-coupled to an ultrasound imaging station that includes a display, input keyboard, and processing machine, which is typically housed on a moveable frame (cart based), carry case (hand carried), or desktop machine. Recently, handheld (as opposed to hand carried) diagnostic ultrasound imaging devices have been proposed. Such devices would be pocket-sized and incorporate a miniature display and signal processing system that is connected to an ultrasound probe through a wired connection. The devices are small, but still cumbersome in that the operator (e.g., physician, pharmacist, or other health care provider) holds and scans the probe with one hand and holds the display/processing unit in the other hand. This can make it difficult to perform certain procedures that require the use of another hand. Furthermore, these devices are expensive, in large part because all the image processing is performed on the portable device, which requires expensive signal processing circuitry and the associated programming.

In contrast, this technology describes a handheld ultrasound device where the image processing is performed remotely by another system, which decreases the cost and size of the device and allows the operator to use the other hand for different tasks.

PATENT APPLICATION

Number:US10517569

Technology ID

4981

Category

Medical Devices

Life Sciences

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