



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
**United States Patent and Trademark Office**  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/840,267	03/15/2013	ANTHONY B. ROSS	H-EB-00541 (203-9077)	2622
90039	7590	09/24/2019	EXAMINER	
Covidien LP Attn: IP Legal 5920 Longbow Drive Mail Stop A36 Boulder, CO 80301-3299			MANNAN, MIKAIL A	
			ART UNIT	PAPER NUMBER
			3771	
			NOTIFICATION DATE	DELIVERY MODE
			09/24/2019	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@carterdeluca.com  
rs.patents.two@medtronic.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* ANTHONY B. ROSS, DAVID J. VAN TOL,  
and DAVID PRICE

---

Appeal 2018-009244  
Application 13/840,267  
Technology Center 3700

---

Before CATHERINE Q. TIMM, BEVERLY A. FRANKLIN, and  
LILAN REN, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1 and 3–25. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

---

<sup>1</sup> We use the word “Appellant” to refer to “Applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as the assignee of the entire interest in this patent application, Covidien LP, which is a subsidiary wholly-owned by Medtronic PLC. Appeal Br. 2.

### CLAIMED SUBJECT MATTER

The claims are directed to an ultrasonic surgical apparatus. *See, e.g.*, claim 1. An embodiment of the apparatus is shown in Figure 2A. The apparatus includes integrated transducer and generator (TAG) component 256 that drives waveguide 114 and ultimately drives blade 118. Spec. ¶ 56. Figure 10 depicts the transducer of TAG 256 at 1018. Spec. ¶ 77. The combination of transducer 1018, waveguide 114, and blade 118 make up a first oscillating structure. Spec. ¶ 57. The apparatus also includes a second oscillating structure, which is an accelerometer. Claim 1. The second oscillating structure (accelerometer) is integrally formed within a portion of the first oscillating structure. Spec. ¶ 57. According to the Specification, accelerometer 150 is imbedded within blade 118, waveguide 114, or both. Spec. ¶¶ 99, 101, 104, 107; Fig. 15.

Claim 1, reproduced below with reference numerals from Figures 2A, 10, and 15, with explanation from the Specification, and with the limitations at issue highlighted in italics, is further illustrative of the claimed subject matter:

1. An ultrasonic surgical apparatus comprising:
  - a first signal generator [Fig. 2A: generator portion of (TAG) component 256] outputting a drive signal at a predetermined frequency;
  - a first oscillating structure [Fig. 2A: combination of transducer portion of TAG 256 (Fig. 10: transducer 1018), waveguide 114, and blade 118], receiving the drive signal and oscillating at the frequency of the drive signal;
  - a bridge circuit [Fig. 10: motional bridge 1008], detecting the mechanical motion of the first oscillating structure

[combination of 114, 118, 1018] and outputting a signal representative of the mechanical motion;

*a second oscillating structure [Fig. 15:150] integrally formed within a portion of the first oscillating structure [114, 118, 1018], the second oscillating structure [150] outputting an electrical signal; and*

a microcontroller [Fig. 10:1004] receiving the signal representative of the mechanical motion output by the bridge circuit [1008] and the electrical signal output by the second oscillating structure [150], the microcontroller [1004] determining an instantaneous frequency at which the first oscillating structure [114, 118, 1018] is oscillating based on the received signal representative of the mechanical motion, comparing the electrical signal from the second oscillating structure [150] with a known signal value and determining the temperature of the second oscillating structure [150] based on the comparison,

*wherein the second oscillating structure [150] is an accelerometer.*

Appeal Br. 13 (Claims Appendix)(emphasis added).

## REJECTIONS

The Examiner maintains the following rejections:

A. The rejection of claims 1, 3, and 13–18 under 35 U.S.C. § 103(a) as obvious over Houser<sup>2</sup> in view of Smith,<sup>3</sup> Northrop,<sup>4</sup> and Houser-2<sup>5</sup>;

---

<sup>2</sup> Houser, US 2009/0036914 A1, published Feb. 5, 2009.

<sup>3</sup> Smith et al., US 2010/0004669 A1, published Jan. 7, 2010.

<sup>4</sup> Northrop, Noninvasive Instrumentation and Measurement in Medical Diagnosis, p. 27 (Sept. 26, 2001).

<sup>5</sup> Houser et al., US 2012/0116391 A1, published May 10, 2012 (“Houser-2”).

- B. The rejection of claims 4, 5, and 12 under 35 U.S.C. § 103(a) as obvious over Houser in view of Smith, Northrop, Houser-2, and further in view of Dannaher<sup>6</sup>;
- C. The rejection of claim 6 under 35 U.S.C. § 103(a) as obvious over Houser in view of Smith, Northrop, Houser-2, and further in view of Sinelnikov<sup>7</sup>;
- D. The rejection of claims 7–11 under 35 U.S.C. § 103(a) as obvious over Houser in view of Smith, Northrop, Houser-2, and further in view of Witt<sup>8</sup>; and
- E. The rejection of claims 19–25 under 35 U.S.C. § 103(a) as obvious over Houser in view of Smith, Northrop, Houser-2, and further in view of Vaitekunas.<sup>9</sup>

#### OPINION

Appellant does not argue any claim or rejection apart from the others. Appeal Br. 5–10. We select claim 1 as representative for resolving the issues on appeal.

There is no dispute that Houser discloses an ultrasonic surgical apparatus including a second oscillating structure integrally formed within a portion of a first oscillating structure. *Compare* Final Act. 4, *with* Appeal Br. 5–10. Houser discloses an acoustic sensor embedded within the end effector of an ultrasonic surgical apparatus for measuring temperature. Houser ¶ 45. Appellant’s arguments focus on the Examiner’s reliance on Northrop as

---

<sup>6</sup> Dannaher et al., US 2013/0282038 A1, published Oct. 24, 2013.

<sup>7</sup> Sinelnikov, US 2012/0143233 A1, published June 7, 2012.

<sup>8</sup> Witt et al., US 6,454,781 B1, issued Sept. 24, 2002.

<sup>9</sup> Vaitekunas, US 5,630,420, issued May 20, 1997.

evidence that an accelerator is equivalent to an acoustic sensor for detecting vibration and outputting a signal. Appeal Br. 5–10.

Appellant has not identified a reversible error in the Examiner’s finding of equivalence.

Houser discloses that temperature may be monitored by measuring resonant frequency in the end effector and discloses using an acoustic sensor for the measurement. Houser ¶¶ 45, 106–107. In other words, Houser discloses that acoustic sensors can be used to measure resonant frequency in the ultrasonic range.

Northrop is directed to the detection of sounds emitted by the heart, lungs, and other body parts. Northrop 27. Northrop explains that most of these sounds have “acoustic spectral energy in the lowest range of human hearing, as well as at audible low frequencies.” Northrop 27. According to Northrop, “sound can be picked up electronically by an accelerometer, low-frequency microphone, or laser Doppler microphone.” Northrop 27. Northrop, thus, establishes that it was known in the art to use accelerometers to sense acoustic vibrations. In other words, accelerometers were known acoustic sensors.

Appellant contends that accelerometers and acoustic sensors are not equivalents and cites definitions from IEEE. Appeal Br. 6. First, Appellant has not provided copies of the IEEE documents that are cited. Thus, we do not know in what context IEEE provided the definitions. Second, the definitions do not dissuade us that accelerometers were known to have the ability pick up sound vibrations. Northrop 27.

Appellant argues that Northrop says nothing of the general equivalency of an acoustic sensor and an accelerometer. Appeal Br. 7.

We do not agree that Northrop's statement that "sound can be picked up electronically by an accelerometer" is limited to picking up low-frequency sound. The statement of Northrop must be considered in view of the knowledge of those of ordinary skill in the art. The ordinary artisan would have understood that accelerometers are, as Appellant's state, inertial sensors that can detect motion. Appeal Br. 6. This detection includes the detection of the motion of vibrational waves. Northrop 27. This is not limited to low-frequency sound waves, but any type of vibrational energy waves.

Appellant further contends that "while an acoustic sensor within an end effector may be configured to sense acoustics remote from vibrations of an end effector, an accelerometer would not be able to sense such acoustics because the accelerometer's motion sensing mechanisms would likely be saturated by the end effector vibrations." Appeal Br. 8. Appellant provides no evidence to support this contention. Moreover, Houser discloses embedding an acoustic sensor in the end effector as required by the claim and does not specify the type of acoustic sensor used. Houser ¶ 45. An accelerometer can be used as an acoustic sensor and both sense vibrations. Northrop 27. It is not clear why the vibration sensing mechanism of an acoustic sensor would not be saturated, but the vibration sensing mechanism of an accelerometer would be saturated.

Appellant also contends it would not have been obvious to a person having ordinary skill in the art to combine Houser and Northrop because Northrop is not analogous art. Appeal Br. 9–10.

"In order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the

applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992).

Northrop is a book entitled "Noninvasive Instrumentation and Measurement in Medical Diagnosis" and the Examiner has relied on the first page of Chapter 3, which is entitled "Using Sounds from Within the Body." Appellant's claims are directed to an ultrasonic surgical apparatus. As stated by the Examiner, Northrop relates to medical instrumentation and is concerned with measuring sound, i.e., acoustic vibration. Northrop is directed to medical diagnostic tools while Appellant is concerned with medical treatment (surgical) tools. The two fields are not exactly the same, but they are related medical fields.

In deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor, it is necessary to consider "the reality of the circumstances"—in other words, common sense. *Oetiker*, at 1447 (quoting *In re Wood*, 599 F.2d 1032, 1036 (CCPA 1979)). The reality of the circumstances here is that Appellant and Houser both seek to use a sensor to measure the frequency of vibrations. Houser specifically teaches using an acoustic sensor, but does not give any details about the sensor. Northrop provides evidence that accelerometers were known for sensing acoustic vibrations. Northrop, thus, provides evidence of the types of acoustic sensors that the ordinary artisan would select and we cannot say that Northrop is non-analogous art under these circumstances.

Appellant has not identified a reversible error in the Examiner's rejections.

DECISION

The Examiner's rejection is affirmed.

DECISION SUMMARY

<b>Claims Rejected</b>	<b>Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 3, and 13–18	§ 103(a) Houser, Smith, Northrop, and Houser-2	1, 3, and 13–18	
4, 5, and 12	§ 103(a) Houser, Smith, Northrop, Houser-2, and Dannaer	4, 5, and 12	
6	§ 103(a) Houser, Smith, Northrop, Houser-2, and Sinelnikov	6	
7–11	§ 103(a) Houser, Smith, Northrop, Houser-2, and Witt	7–11	
19–25	§ 103(a) Houser, Smith, Northrop, Houser-2, and Vaitekunas	19–25	
<b>Overall Outcome</b>		1 and 3–25	

FINALITY AND RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED