US010639008B2

(12) **United States Patent**
Lindekugel et al.

(10) **Patent No.: US 10,639,008 B2**
(45) **Date of Patent: May 5, 2020**

(54) **SUPPORT AND COVER STRUCTURES FOR AN ULTRASOUND PROBE HEAD**

(75) Inventors: **Eric W. Lindekugel**, Salt Lake City, UT (US); **Jeremy B. Cox**, Salt Lake City, UT (US); **Daniel B. Blanchard**, North Salt Lake, UT (US); **Christian W. Crook**, West Jordan, UT (US); **Eddie K. Burnside**, Bountiful, UT (US); **Jeanette E. Southard**, Park City, UT (US); **Kevin W. Stinger**, Kaysville, UT (US); **Amir Orome**, Sandy, UT (US)

(73) Assignee: **C. R. Bard, Inc.**, Franklin Lakes, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 2383 days.

(21) Appl. No.: **13/206,396**

(22) Filed: **Aug. 9, 2011**

(65) **Prior Publication Data**

US 2011/0313293 A1 Dec. 22, 2011

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/900,750, filed on Oct. 8, 2010.
(Continued)

(51) **Int. Cl.**
A61B 8/00 (2006.01)
A61B 17/34 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***A61B 8/44*** (2013.01); ***A61B 8/42*** (2013.01); ***A61B 8/4209*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC ... A61B 8/4281; A61B 8/4455; A61B 8/4472; A61B 10/00; A61B 17/3403; A61B 8/44;
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,133,244 A 5/1964 Wojtulewicz
3,297,020 A 1/1967 Mathiesen
(Continued)

FOREIGN PATENT DOCUMENTS

AU 642647 11/1990
AU 1860597 B2 6/1999
(Continued)

OTHER PUBLICATIONS

Forauer, AR et al, Change in Peripherally Inserted Central Catheter Tip Location with Abduction and Adduction of the Upper Extremity, J Vasc Interv Radiol, pp. 1315-1318, vol. 11 No. 10, Nov.-Dec. 2000.
(Continued)

Primary Examiner — Amanda Lauritzen Moher
(74) *Attorney, Agent, or Firm* — Rutan & Tucker LLP

(57) **ABSTRACT**

A probe cap for use with an ultrasound probe including a head portion and an acoustic surface is disclosed. In one embodiment, the probe cap includes a body that defines a cavity sized for releasably receiving the head portion of the probe therein. The probe cap body further defines a hole that is proximate the acoustic surface of the head portion. A compliant spacer component is disposed in the hole. The spacer component can include a hydrogel and provides an acoustic path between the acoustic surface and a tissue surface of a patient. The spacer component includes a skin contact surface that defines a concavity and is deformable against the tissue surface. Additional embodiments disclose various probe cap and accompanying needle guide designs
(Continued)