

AL/s

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OKLAHOMA

FILED

JUN 4 2014

Phil Lombardi, Clerk
U.S. DISTRICT COURT

(1) NAVICO INC. and (2) NAVICO
HOLDING AS,

Plaintiffs,

v.

(1) GARMIN INTERNATIONAL, INC.,
and (2) GARMIN USA, INC.,

Defendants.

14 CV - 303 JED - TLW
Case No. _____

Jury Trial Demanded

COMPLAINT

Plaintiffs Navico Inc. and Navico Holding AS (collectively “Navico”) hereby file this Complaint (“Complaint”) against Garmin International, Inc. and Garmin USA, Inc. (“Garmin”), and allege on personal knowledge as to their actions, and upon information and belief as to the actions of others, as follows:

NATURE OF THE SUIT

1. This is a claim for patent infringement arising under the patent laws of the United States, Title 35 of the United States Code.

THE PARTIES

2. Navico Inc. is a corporation organized and existing under the laws of the State of Delaware, having a principal place of business at 4500 South 129th East Avenue, Suite 200, Tulsa, Oklahoma 74134.

AL/s

3. Navico Holding AS is a corporation organized and existing under the laws of Norway, having a principal place of business at Nyaskaiveien 2, 4370 Egersund, Norway.

4. Navico Inc. is a supplier of marine electronic equipment.

5. On October 30, 2012, United States Patent No. 8,300,499 (“the ’499 patent”) was duly and legally issued for an invention entitled, “Linear and Circular Downscan Imaging Sonar.” A true and correct copy of the ’499 patent is attached hereto at Exhibit A.

6. On November 6, 2012, United States Patent No. 8,305,840 (“the ’840 patent”) was duly and legally issued for an invention entitled, “Downscan Imaging Sonar.” A true and correct copy of the ’840 patent is attached hereto as Exhibit B.

7. On December 10, 2013, United States Patent No. 8,605,550 (“the ’550 patent”) was duly and legally issued for an invention entitled, “Downscan Imaging Sonar.” A true and correct copy of the ’840 patent is attached hereto as Exhibit C.

8. Navico Holding AS is the owner and assignee of the ’499 patent, and Navico Inc. is an exclusive licensee under the ’499 patent. Together, Navico owns all right, title, and interest in and to the ’499 patent.

9. Navico Holding AS is the owner and assignee of the ’840 patent, and Navico Inc. is an exclusive licensee under the ’840 patent. Together, Navico owns all right, title, and interest in and to the ’840 patent.

10. Navico Holding AS is the owner and assignee of the ’550 patent, and Navico Inc. is an exclusive licensee under the ’550 patent. Together, Navico owns all right, title, and interest in and to the ’550 patent.

11. Defendant Garmin International, Inc. is a company organized and existing under the laws of the State of Kansas, having a principal place of business at 1200 East 121st Street, Olathe, Kansas 66062. Garmin International, Inc. maintains a registered agent in Oklahoma at the following address: National Registered Agents Inc., 1833 South Morgan Road, Oklahoma City, OK 73128.

12. Defendant Garmin USA, Inc. is a company organized and existing under the laws of the State of Kansas, having a principal place of business at 1200 East 121st Street, Olathe, Kansas, 66062. Garmin USA, Inc. maintains a registered agent in Oklahoma at the following address: National Registered Agents Inc., 1833 South Morgan Road, Oklahoma City, OK 73128.

JURISDICTION AND VENUE

13. This Court has subject-matter jurisdiction over this action upon at least the following grounds:

- (a) 28 U.S.C. § 1331, this being a civil action arising under the laws of the United States; and
- (b) 28 U.S.C. § 1338(a), this being a civil action arising under the Patent Laws of the United States, namely, 35 U.S.C. § 1 *et seq.*;

14. This Court has personal jurisdiction over Garmin inasmuch as Garmin is doing business in this State, is licensed to conduct business in this State, has significant contacts with this State, has offered for sale and sold infringing products in this State, maintains sales representatives and engineering facilities in this State, has purposefully shipped or caused to be shipped infringing products into this State through established

distribution channels, and/or has committed acts in this State that are the subject of the counts set forth herein.

15. Venue is proper in this District under the provisions of 28 U.S.C. § 1391(b) and (c) insofar as Garmin has committed acts of infringement in this District.

COUNT I
INFRINGEMENT OF THE '499 PATENT UNDER 35 U.S.C. § 271

16. Navico incorporates by reference the allegations contained in Paragraphs 1 through 15 above.

17. Pursuant to 35 U.S.C. § 282, the '499 patent is presumed valid.

18. Garmin has made, used, sold, offered to sell, and/or imported into the United States sonar systems with linear and circular downscan imaging, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP 50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, and DownVü transducers that infringe the '499 patent, and continues to do so without authority from Navico.

19. Garmin is directly infringing, literally and/or under the doctrine of equivalents, the '499 patent, including but not limited to Claim 1 of the '499 patent.

20. Garmin's infringing acts include, but are not limited to, the importation, use, sale, and/or offer for sale of infringing sonar systems, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP 50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, and DownVü

transducers. Garmin is therefore liable for direct infringement of the '499 patent pursuant to 35 U.S.C. § 271(a).

21. Garmin has indirectly infringed the '499 patent by inducing infringement under 35 U.S.C. § 271(b) and by contributing to infringement under 35 U.S.C. § 271(c).

22. Garmin markets, advertises, sells, and offers for sale its sonar systems, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP 50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, and DownVu transducers, to retailers, distributors, and end users.

23. Garmin's retailers, distributors, and end users directly infringe, literally and/or under the doctrine of equivalents, the '499 patent by acts which include, but are not limited to, using the infringing sonar systems in a manner claimed in the '499 patent.

24. Garmin has knowledge of the '499 patent and has known of the '499 patent since at least as early as November 14, 2013.

25. Despite knowledge of the '499 patent, Garmin actively encourages and induces its retailers, distributors, and end users to infringe the '499 patent through, among other things, Garmin's marketing materials, advertising materials, user manuals, and installation manuals. These materials instruct, encourage, and induce Garmin's retailers, distributors, and end users to directly infringe the '499 patent.

26. As such, Garmin has knowingly induced and continued to induce direct infringement of the '499 patent by its retailers, distributors, and end users.

27. Garmin contributes to direct infringement of the '499 patent by its retailers, distributors, and end users by selling, offering for sale, and/or importing its

sonar systems, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP 50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, and DownVu transducers. Such sonar systems constitute a material part of the invention of the '499 patent, are not a staple article or commodity of commerce suitable for substantial noninfringing use, and are known by Garmin to be especially made and adapted for use in an infringement of the '499 patent.

28. Garmin's infringement of the '499 patent has been and is willful and deliberate, despite knowing of its infringement and/or having an objectively high likelihood that its actions constitute infringement and/or having a deliberate disregard of, or being willfully blind to, its infringement.

29. Garmin's infringing activities have harmed Navico, and Navico is entitled to recover damages adequate to compensate it for such infringement. Further, Garmin's infringing activities are harming Navico and will continue to harm Navico, causing irreparable injury for which there is no adequate remedy at law unless and until preliminarily and permanently enjoined by the Court.

COUNT II
INFRINGEMENT OF THE '840 PATENT UNDER 35 U.S.C. § 271

30. Navico incorporates by reference the allegations contained in Paragraphs 1 through 15 above.

31. Pursuant to 35 U.S.C. § 282, the '840 patent is presumed valid.

32. Garmin has made, used, sold, offered to sell, and/or imported into the United States sonar systems with downscan imaging, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP

50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, GCV 10, DownVü transducers, and DownVü/SideVü transducer, that infringe the '840 patent, and continues to do so without authority from Navico.

33. Garmin is directly infringing, literally and/or under the doctrine of equivalents, the '840 patent, including but not limited to Claim 1 of the '840 patent.

34. Garmin's infringing acts include, but are not limited to, the manufacture, use, sale, offer for sale, and/or importation of infringing sonar systems, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP 50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, GCV 10, DownVü transducers, and DownVü/SideVü transducer. Garmin is therefore liable for direct infringement of the '840 patent pursuant to 35 U.S.C. § 271(a).

35. Garmin has indirectly infringed the '840 patent by inducing infringement under 35 U.S.C. § 271(b) and by contributing to infringement under 35 U.S.C. § 271(c).

36. Garmin markets, advertises, sells, and offers for sale its sonar systems, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP 50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, GCV 10, DownVü transducers, and DownVü/SideVü transducer, to retailers, distributors, and end users.

37. Garmin's retailers, distributors, and end users directly infringe, literally and/or under the doctrine of equivalents, the '840 patent by acts which include, but are not limited to, using the infringing sonar systems in a manner claimed in the '840 patent.

38. Garmin has knowledge of the '840 patent and has known of the '840 patent since at least as early as November 14, 2013.

39. Despite knowledge of the '840 patent, Garmin actively encourages and induces its retailers, distributors, and end users to infringe the '840 patent through, among other things, Garmin's marketing materials, advertising materials, user manuals, and installation manuals. These materials instruct, encourage, and induce Garmin's retailers, distributors, and end users to directly infringe the '840 patent.

40. As such, Garmin has knowingly induced and continued to induce direct infringement of the '840 patent by its retailers, distributors, and end users.

41. Garmin contributes to direct infringement of the '840 patent by its retailers, distributors, and end users by selling, offering for sale, and/or importing its sonar systems, including but not limited to Garmin's echo 551dv, echo 301dv, echo 201dv, echo 151dv, echoMAP 70dv, echoMAP 50dv, GPSMAP 1040xs, GPSMAP 1020xs, GPSMAP 840xs, GPSMAP 820xs, GPSMAP 741xs, GPSMAP 721xs, GPSMAP 547xs, GPSMAP 527xs, GCV 10, DownVü transducers, and DownVü/SideVü transducer. Such sonar systems constitute a material part of the invention of the '840 patent, are not a staple article or commodity of commerce suitable for substantial noninfringing use, and are known by Garmin to be especially made and adapted for use in an infringement of the '840 patent.

42. Garmin's infringement of the '840 patent has been and is willful and deliberate, despite knowing of its infringement and/or having an objectively high likelihood that its actions constitute infringement and/or having a deliberate disregard of, or being willfully blind to, its infringement.

43. Garmin's infringing activities have harmed Navico, and Navico is entitled to recover damages adequate to compensate it for such infringement. Further, Garmin's infringing activities are harming Navico and will continue to harm Navico, causing irreparable injury for which there is no adequate remedy at law unless and until preliminarily and permanently enjoined by the Court.

COUNT III
INFRINGEMENT OF THE '550 PATENT UNDER 35 U.S.C. § 271

44. Navico incorporates by reference the allegations contained in Paragraphs 1 through 15 above.

45. Pursuant to 35 U.S.C. § 282, the '550 patent is presumed valid.

46. Garmin has made, used, sold, offered to sell, and/or imported into the United States sonar systems with downscan imaging, including but not limited to Garmin's GCV 10 and DownVü/SideVü transducer, that infringe the '550 patent, and continues to do so without authority from Navico.

47. Garmin is directly infringing, literally and/or under the doctrine of equivalents, the '550 patent, including but not limited to Claim 1 of the '550 patent.

48. Garmin's infringing acts include, but are not limited to, the manufacture, use, sale, offer for sale, and/or importation of infringing sonar systems, including but not limited to Garmin's GCV 10 and DownVü/SideVü transducer. Garmin is therefore liable for direct infringement of the '550 patent pursuant to 35 U.S.C. § 271(a).

49. Garmin has indirectly infringed the '550 patent by inducing infringement under 35 U.S.C. § 271(b) and by contributing to infringement under 35 U.S.C. § 271(c).

50. Garmin markets, advertises, sells, and offers for sale its sonar systems, including but not limited to Garmin's GCV 10 and DownVü/SideVü transducer, to retailers, distributors, and end users.

51. Garmin's retailers, distributors, and end users directly infringe, literally and/or under the doctrine of equivalents, the '550 patent by acts which include, but are not limited to, using the infringing sonar systems in a manner claimed in the '550 patent.

52. Garmin has knowledge of the '550 patent and has known of the '550 patent since at least as early as June 4, 2014.

53. Despite knowledge of the '550 patent, Garmin actively encourages and induces its retailers, distributors, and end users to infringe the '550 patent through, among other things, Garmin's marketing materials, advertising materials, user manuals, and installation manuals. These materials instruct, encourage, and induce Garmin's retailers, distributors, and end users to directly infringe the '550 patent.

54. As such, Garmin has knowingly induced and continued to induce direct infringement of the '550 patent by its retailers, distributors, and end users.

55. Garmin contributes to direct infringement of the '550 patent by its retailers, distributors, and end users by selling, offering for sale, and/or importing its sonar systems, including but not limited to Garmin's GCV 10 and DownVü/SideVü transducer. Such sonar systems constitute a material part of the invention of the '550 patent, are not a staple article or commodity of commerce suitable for substantial

noninfringing use, and are known by Garmin to be especially made and adapted for use in an infringement of the '550 patent.

56. Garmin's infringement of the '550 patent has been and is willful and deliberate, despite knowing of its infringement and/or having an objectively high likelihood that its actions constitute infringement and/or having a deliberate disregard of, or being willfully blind to, its infringement.

57. Garmin's infringing activities have harmed Navico, and Navico is entitled to recover damages adequate to compensate it for such infringement. Further, Garmin's infringing activities are harming Navico and will continue to harm Navico, causing irreparable injury for which there is no adequate remedy at law unless and until preliminarily and permanently enjoined by the Court.

RELIEF SOUGHT

WHEREFORE, Navico respectfully requests that the Court enter judgment against Garmin and against its subsidiaries, successors, parents, affiliates, officers, directors, agents, servants, employees, and all persons in active concert or participation with them, granting the following relief:

- A. The entry of judgment in favor of Navico and against Garmin for direct infringement of the '499 patent;
- B. The entry of judgment in favor of Navico and against Garmin for indirect infringement of the '499 patent by inducing such infringement;
- C. The entry of judgment in favor of Navico and against Garmin for indirect infringement of the '499 patent by contributing to such infringement;

D. The entry of judgment in favor of Navico and against Garmin for direct infringement of the '840 patent;

E. The entry of judgment in favor of Navico and against Garmin for indirect infringement of the '840 patent by inducing such infringement;

F. The entry of judgment in favor of Navico and against Garmin for indirect infringement of the '840 patent by contributing to such infringement;

G. The entry of judgment in favor of Navico and against Garmin for direct infringement of the '550 patent;

H. The entry of judgment in favor of Navico and against Garmin for indirect infringement of the '550 patent by inducing such infringement;

I. The entry of judgment in favor of Navico and against Garmin for indirect infringement of the '550 patent by contributing to such infringement;

J. An award of damages against Garmin for an amount that will adequately compensate Navico for Garmin's infringement, but under no circumstances an amount less than a reasonable royalty for Garmin's use of Navico's patented inventions as permitted by 35 U.S.C. § 284;

K. An award to Navico of all remedies available under 35 U.S.C. §§ 284 and 285;

L. A preliminary and permanent injunction prohibiting Garmin and its subsidiaries, successors, parents, affiliates, officers, directors, agents, servants, employees, and all persons in active concert or participation with them, from further infringement of the '499 patent;

M. A preliminary and permanent injunction prohibiting Garmin and its subsidiaries, successors, parents, affiliates, officers, directors, agents, servants, employees, and all persons in active concert or participation with them, from further infringement of the '840 patent;

N. A preliminary and permanent injunction prohibiting Garmin and its subsidiaries, successors, parents, affiliates, officers, directors, agents, servants, employees, and all persons in active concert or participation with them, from further infringement of the '550 patent;

O. The entry of judgment in favor of Navico and against Garmin for pre-judgment and post-judgment interest on all damages awarded to Navico; and

P. The entry of such other and further relief that Navico is entitled to under law and any other and further relief that this Court or a jury may deem just and proper.

DEMAND FOR JURY TRIAL

Navico requests a trial by jury on all issues presented in this Complaint.

Dated: June 4, 2014

Respectfully submitted,



Lewis N. Carter, OBA No. 1524
N. Lance Bryan, OBA No. 19764
Doerner, Saunders, Daniel & Anderson, LLP
Williams Center Tower II
Two West Second Street, Suite 700
Tulsa, OK 74103-3117
918-582-1211 – Telephone
918-591-5360 – Facsimile
lcarter@dsda.com
lbryan@dsda.com

Of Counsel

Michael D. McCoy (NC Bar No. 11192)

Kirk T. Bradley (NC Bar No. 26490)

M. Scott Stevens (NC Bar No. 37828)

Travis J. Iams (NC Bar No. 39776)

ALSTON & BIRD LLP

Bank of America Plaza

101 South Tryon Street, Suite 4000

Charlotte, North Carolina 28280-4000

(704) 444-1000 – Telephone

(704) 444-1111 – Facsimile

Attorneys for Plaintiffs Navico Inc. and
Navico Holding AS

EXHIBIT A

Certified Copy of U.S. Patent No. 8,300,499

U 7427987

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

July 10, 2013

**THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM
THE RECORDS OF THIS OFFICE OF:**

U.S. PATENT: 8,300,499
ISSUE DATE: October 30, 2012

By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office



T. LAWRENCE
Certifying Officer





US008300499B2

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

(10) **Patent No.:** **US 8,300,499 B2**
(45) **Date of Patent:** **Oct. 30, 2012**

(54) **LINEAR AND CIRCULAR DOWNSCAN IMAGING SONAR**

(75) **Inventors:** **Aaron R. Coleman**, Broken Arrow, OK (US); **Jeffrey W. Hanoch**, Broken Arrow, OK (US); **Brian T. Maguire**, Broken Arrow, OK (US)

(73) **Assignee:** **Navico, Inc.**, Tulsa, OK (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 265 days.

(21) **Appl. No.:** **12/460,093**

(22) **Filed:** **Jul. 14, 2009**

(65) **Prior Publication Data**
US 2011/0013484 A1 Jan. 20, 2011

(51) **Int. Cl.**
G01S 15/00 (2006.01)

(52) **U.S. Cl.** 367/88

(58) **Field of Classification Search** 367/87, 367/88

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,823,329 A	9/1931	Marrison
2,416,338 A	2/1947	Mason
3,005,973 A	10/1961	Kietz
3,090,030 A	5/1963	Schuck
3,142,032 A	7/1964	Jones
3,144,631 A	8/1964	Lustig et al.
3,296,579 A	1/1967	Farr et al.
3,359,537 A	12/1967	Geil et al.
3,381,264 A	4/1968	Lavergne et al.
3,451,038 A	6/1969	Maass
3,458,854 A	7/1969	Murphree

3,484,737 A	12/1969	Walsh
3,553,638 A	1/1971	Sublett
3,585,578 A	6/1971	Fischer, Jr.
3,585,579 A	6/1971	Dorr et al.
3,618,006 A	11/1971	Wright
3,624,596 A	11/1971	Dickenson et al.
3,716,824 A	2/1973	Dorr et al.
3,742,436 A	6/1973	Jones
3,757,287 A	9/1973	Bealor, Jr.
3,895,339 A	7/1975	Jones et al.
3,895,340 A	7/1975	Gilmour
3,898,608 A	8/1975	Jones et al.
3,949,348 A	4/1976	Dorr

(Continued)

FOREIGN PATENT DOCUMENTS

GB 1316138 5/1973

(Continued)

OTHER PUBLICATIONS

Farrell, Edward J., "Color Display and Interactive Interpretation of Three-Dimensional Data," IBM Journal of Research and Development, vol. 27, No. 4, pp. 356-366, Jul. 1983.*

(Continued)

Primary Examiner — Isam Alsomiri

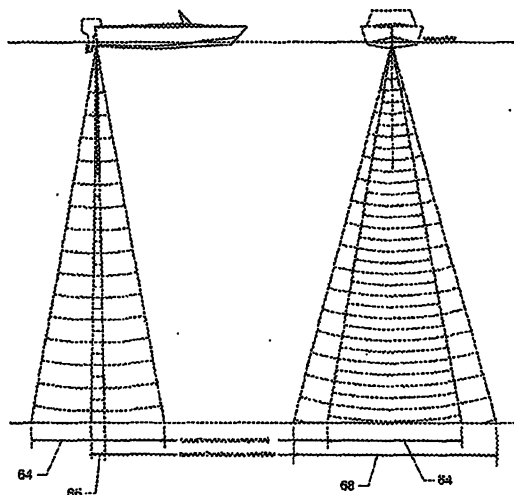
Assistant Examiner — James Hulka

(74) **Attorney, Agent, or Firm** — Alston & Bird LLP

(57) **ABSTRACT**

A method for providing a combined linear and circular downscan sonar display may include receiving linear downscan sonar data from a linear downscan transducer, receiving conical downscan sonar data from a circular downscan transducer, and combining the linear downscan sonar data and the conical downscan sonar data to produce combined downscan sonar data. A corresponding computer program product and apparatus are also provided.

81 Claims, 17 Drawing Sheets
(5 of 17 Drawing Sheet(s) Filed in Color)



US 8,300,499 B2

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U.S. PATENT DOCUMENTS

3,950,723 A 4/1976 Gilmour
 3,953,828 A 4/1976 Cook
 3,964,424 A 6/1976 Hagemann
 3,967,234 A 6/1976 Jones
 3,975,704 A 8/1976 Klein
 4,030,096 A 6/1977 Stevens et al.
 4,047,148 A 9/1977 Hagemann
 4,052,693 A 10/1977 Gilmour
 4,063,212 A 12/1977 Sublett
 4,068,209 A 1/1978 Lagier
 4,075,599 A 2/1978 Kosalos et al.
 4,184,210 A 1/1980 Hagemann
 4,197,591 A 4/1980 Hagemann
 4,198,702 A 4/1980 Clifford
 4,199,746 A 4/1980 Jones et al.
 4,200,922 A 4/1980 Hagemann
 4,204,281 A 5/1980 Hagemann
 4,207,620 A 6/1980 Morgera
 4,216,537 A 8/1980 Delignieres
 4,232,380 A 11/1980 Caron et al.
 4,247,923 A 1/1981 De Kok
 4,262,344 A 4/1981 Gilmour
 4,287,578 A 9/1981 Heyser
 RE31,026 E 9/1982 Shatto
 4,422,166 A 12/1983 Klein
 4,456,210 A 6/1984 McBride
 4,493,064 A 1/1985 Otero et al.
 4,538,249 A 8/1985 Richard
 4,635,240 A 1/1987 Geohegan, Jr. et al.
 4,641,290 A 2/1987 Massa et al.
 4,642,801 A 2/1987 Perny
 4,751,645 A 6/1988 Abrams et al.
 4,774,837 A 10/1988 Bird
 4,796,238 A 1/1989 Bourgeois et al.
 4,802,148 A 1/1989 Gilmour
 4,815,045 A 3/1989 Nakamura
 4,855,961 A 8/1989 Jaffe et al.
 4,879,697 A 11/1989 Lowrance et al.
 4,907,208 A 3/1990 Lowrance et al.
 4,912,685 A 3/1990 Gilmour
 4,924,448 A 5/1990 Gaer
 4,935,906 A 6/1990 Baker et al.
 4,939,700 A 7/1990 Breton
 4,958,330 A 9/1990 Higgins
 4,970,700 A 11/1990 Gilmour et al.
 4,975,887 A 12/1990 Maccabee et al.
 4,982,924 A 1/1991 Havins
 5,033,029 A 7/1991 Jones
 5,109,364 A 4/1992 Stiner
 5,113,377 A 5/1992 Johnson
 5,142,502 A 8/1992 Wilcox et al.
 D329,615 S 9/1992 Stiner
 D329,616 S 9/1992 Stiner
 5,155,706 A 10/1992 Haley et al.
 5,182,732 A 1/1993 Pichowkin
 5,184,330 A 2/1993 Adams et al.
 5,200,931 A * 4/1993 Kosalos et al. 367/88
 5,214,744 A 5/1993 Schweizer et al.
 5,241,314 A 8/1993 Keeler et al.
 5,243,567 A 9/1993 Gingerich
 5,245,587 A * 9/1993 Hutson 367/100
 5,257,241 A 10/1993 Henderson et al.
 5,260,912 A 11/1993 Latham
 5,297,109 A 3/1994 Barksdale, Jr. et al.
 5,303,208 A 4/1994 Dorr
 5,376,933 A 12/1994 Tupper et al.
 5,390,152 A 2/1995 Boucher et al.
 5,412,618 A 5/1995 Gilmour
 5,438,552 A 8/1995 Audi et al.
 5,442,358 A 8/1995 Keeler et al.
 5,455,806 A * 10/1995 Hutson 367/100
 5,493,619 A 2/1996 Haley et al.
 5,515,337 A 5/1996 Gilmour et al.
 5,525,081 A 6/1996 Mardesich et al.
 5,537,366 A 7/1996 Gilmour
 5,546,356 A 8/1996 Zehner
 5,561,641 A * 10/1996 Nishimori et al. 367/90
 5,574,700 A 11/1996 Chapman

5,596,549 A 1/1997 Sheriff
 5,602,801 A 2/1997 Nussbaum et al.
 5,612,928 A 3/1997 Haley et al.
 5,675,552 A 10/1997 Hicks et al.
 5,694,372 A 12/1997 Perennes
 5,805,528 A 9/1998 Hamada et al.
 5,850,372 A 12/1998 Blue
 5,930,199 A 7/1999 Wilk
 5,991,239 A 11/1999 Fatemi-Booshehri et al.
 6,002,644 A 12/1999 Wilk
 6,084,827 A * 7/2000 Johnson et al. 367/103
 6,215,730 B1 4/2001 Pinto
 6,273,771 B1 8/2001 Buckley et al.
 6,335,905 B1 1/2002 Kabel
 6,421,299 B1 * 7/2002 Betts et al. 367/105
 6,445,646 B1 9/2002 Handa et al.
 6,449,215 B1 * 9/2002 Shell 367/77
 6,537,224 B2 3/2003 Mauchamp et al.
 6,606,958 B1 8/2003 Bouyoucos
 6,678,403 B1 1/2004 Wilk
 6,738,311 B1 5/2004 Guigne
 6,842,401 B2 1/2005 Chiang et al.
 6,941,226 B2 9/2005 Estep
 6,980,688 B2 12/2005 Wilk
 7,236,427 B1 6/2007 Schroeder
 7,355,924 B2 4/2008 Zimmerman et al.
 7,405,999 B2 7/2008 Skjold-Larsen
 7,542,376 B1 * 6/2009 Thompson et al. 367/104
 7,652,952 B2 1/2010 Betts et al.
 7,710,825 B2 5/2010 Betts et al.
 7,729,203 B2 6/2010 Betts et al.
 7,755,974 B2 7/2010 Betts et al.
 2001/0026499 A1 10/2001 Inouchi
 2002/0071029 A1 * 6/2002 Zell et al. 348/97
 2003/0202426 A1 10/2003 Ishihara et al.
 2004/0184351 A1 * 9/2004 Nishimori et al. 367/103
 2005/0043619 A1 * 2/2005 Sumanaweera et al. 600/437
 2005/0099887 A1 * 5/2005 Zimmerman et al. 367/12
 2005/0216487 A1 * 9/2005 Fisher et al. 707/100
 2006/0002232 A1 1/2006 Shah et al.
 2006/0023570 A1 * 2/2006 Betts et al. 367/88
 2007/0025183 A1 * 2/2007 Zimmerman et al. 367/88
 2007/0091723 A1 * 4/2007 Zhu et al. 367/88
 2011/0013484 A1 1/2011 Coleman et al.
 2011/0013485 A1 1/2011 Maguire
 2012/0106300 A1 5/2012 Maguire

FOREIGN PATENT DOCUMENTS

JP 50-109389 (U) 9/1975
 JP 54-054365 (U) 4/1979
 JP 57-046173 A 3/1982
 JP 61-116678 A 6/1986
 JP 62-099877 (U) 6/1987
 JP 62-134084 (U) 8/1987
 JP 62-190480 (A) 8/1987
 JP 63-261181 (A) 10/1988
 JP 4-357487 A 12/1992
 JP 4357487 A 12/1992
 JP 7-031042 (A) 1/1995
 JP 10-186030 (A) 7/1998
 JP 2001-074840 (A) 3/2001
 JP 2004-020276 (A) 1/2004
 WO WO 84/01833 A1 5/1984
 WO WO 98/15846 4/1998
 WO WO 03/009276 A2 1/2003

OTHER PUBLICATIONS

Gary Melvin, Yanchao Li, Larry Mayer, and Allan Clay "Commercial fishing vessels, automatic acoustic logging systems and 3D data visualization" ICES J. Mar. Sci. (2002) 59(1): 179-189.*
 Pratson, Lincoln F., Edwards, Margo H. "Introduction to advances in seafloor mapping using sidescan sonar and multibeam bathymetry data" Marine Geophysical Research, Springer Netherlands. vol. 18, No. 6, p. 601-605, 1996.*
 Hansen, Hans Herman, "Circular vs. rectangular transducers", Dept of Electronics and Telecommunications, Norwegian University of Science and Technology, 28pp, Mar. 2010.*

US 8,300,499 B2

Page 3

- Kielczynski, P., Pajewski, W., and Szalewski, M., "Finite Element Method (FEM) and Impulse Response Method (IRM) analysis of circular and rectangular transducers". 1995 IEEE Ultrasonics Symposium, p. 693-696. 1995.*
- Anderson, K., "Side-Scanning for Sport Fishing"; Salt Water Sportsman; Apr. 1, 2009; 4 pages.
- Andrew, C., et al.; "Setup and Trouble shooting Procedures for the Klein 5500 Sidescan Sonar"; Australian Government; Department of Defence; Maritime Operations Division; Systems Sciences Laboratory; Published Nov. 2003.
- Armstrong, A.A., et al.; "New Technology for Shallow Water Hydrographic Surveys"; Proceedings of the 25th Joint Meeting of UJNR Sea-bottom Surveys Panel; Dec. 1996.
- Asplin, R.G., et al.; "A new Generation Side Scan Sonar"; Oceans '88 Proceedings. 'A Partnership of Marine Interests'; vol. 2; Oct.-Nov. 1988; pp. 329-334.
- Carey, W.M., "Sonar Array Characterization, Experimental Results"; IEEE Journal of Oceanic Engineering; vol. 23; Issue 3; Jul. 1998; pp. 297-306.
- Baker, N., et al, "Rifting History of the Northern Mariana Trough: SeaMARCH II and Seismic Reflection Surveys," Journals of Geophysical Research, vol. 101, No. B5, May 10, 1996.
- Cowie, P.A., et al., "Quantitative Fault Studies on the East Pacific Rise: A Comparison of Sonar Imaging Techniques," Journal of Geophysical Research, vol. 99, B8, Aug. 10, 1994.
- Curcio, J., et al.; "SCOUT—A Low Cost Autonomous Surface Platform for Research in Cooperative Autonomy"; Department of Mechanical Engineering; Massachusetts Institute of Technology; Aug. 2005.
- Farrell, E.J., "Color Display and Interactive Interpretation of Three-Dimensional Data"; IBM Journal of Research and Development; vol. 27; No. 4; Jul. 1983; pp. 356-366.
- Glynn, Jr., J.M., et al.; "Survey Operations and Results Using a Klein 5410 Bathymetric Sidescan Sonar"; Retrieved from the Internet <URL: http://www.thsoa.org/hy07/03_04.pdf; Mar. 2007.
- Hansen, H.H.; "Circular vs. rectangular transducers"; Department of Electronics and Telecommunications; Norwegian University of Science and Technology; Mar. 2010; 28 pages.
- Hughes Clarke, J. E., et al., Knudsen 320 200 kHz keel-mounted sidescan trials; Results from 2000/2001/2002 field operations; [online]; Retrieved on Jun. 23, 2010 from the Internet <URL: http://www.omg.unb.ca/Ksidescan/K320_SSTrials.html; 11 pages.
- Hughes Clarke, J.E.; "Seafloor characterization using keel-mounted sidescan: proper compensation for radiometric and geometric distortion"; Canadian Hydrographic Conference; May 2004; 18 pages.
- Hussong, D.M., et al., "High-Resolution Acoustic Seafloor Mapping," 20th Annual OTC, Houston, TX, May 2-5, 1988.
- Jonsson, J., et al. "Simulation and Evaluation of Small High-Frequency Side-Scan Sonars using COMSOL"; Excerpt from the Proceedings of the COMSOL Conference; 2009; Milan, Italy.
- Key, W.H., "Side Scan Sonar Technology"; Oceans 2000 MTS/IEEE Conference and Exhibition; vol. 2; Sep. 2000; pp. 1029-1033.
- Kielczynski, P., et al.; "Finite Element Method (FEM) and Impulse Response Method (IRM) analysis of circular and rectangular transducers"; 1995 IEEE Ultrasonics Symposium; 1995; pp. 693-696.
- Kozak, G.; "Side Scan Sonar Target Comparative Techniques for Port Security and MCM Q-Route Requirements"; L-3 Communications; Klein Associates, Inc.; [Online]; Retrieved from the Internet <URL: <http://www.chesapeake-tech.com/techniques-port-security.pdf>; 11 pages.
- Krotser, D.J., et al.; "Side-Scan Sonar: Selective Textural Enhancement"; Oceans '76; Washington, DC; Sep. 1976.
- Kvitek, R.G., et al.; "Victoria Land Latitudinal Gradient Project: Benthic Marine Habitat Characterization"; California State University; Monterey Bay; Field Report; Feb. 25, 2004.
- Langeraar, W.; "Surveying and Charting of the Seas"; Elsevier Oceanography Series; vol. 37; Sep. 1983; p. 321.
- Manley, J.E.; "Development of the Autonomous Surface Craft 'Aces'"; Oceans '97 MTS/IEEE Conference Proceedings; Oct. 1997; pp. 827-832.
- Manley, J.E., et al.; "Evolution of the Autonomous Surface Craft 'AutoCat'"; Oceans 2000 MTS/IEEE Conference and Exhibition; vol. 1; Sep. 2000; pp. 403-408.
- Melvin, G., et al.; Commercial fishing vessels, automatic acoustic logging systems and 3D data visualization; ICES; Journal of Marine Science; vol. 59; Issue 1; 2002; pp. 179-189.
- Newman, P.M.; "MOOS-Mission Orientated Operating Suite"; Department of Ocean Engineering; Massachusetts Institute of Technology; 2002.
- Ollivier, F., et al.; "Side scan sonar using phased arrays for high resolution imaging and wide swath bathymetry"; IEEE Proceedings on Radar, Sonar and Navigation; vol. 143; Issue 3; Jun. 1996; pp. 163-168.
- Prickett, T.; "Underwater Inspection of Coastal Structures"; The REMR Bulletin; vol. 14; No. 2; Aug. 1997.
- Pratson, L.F., et al.; "Introduction to advances in seafloor mapping using sidescan sonar and multibeam bathymetry data"; Marine Geophysical Research; Springer Netherlands; vol. 18; Issue 6; 1996; pp. 601-605.
- Pryor, Donald E.; "Theory and Test of Bathymetric Side Scan Sonar"; Office of Charting and Geodetic Services; National Ocean Service; National Oceanic and Atmospheric Administration; Post 1987; pp. 379-384.
- Shono, K., et al.; "Integrated Hydro-Acoustic Survey Scheme for Mapping of Sea Bottom Ecology"; Ocean Research Institute; Tokyo, Japan; Nov. 2004.
- Trevorrow, M.V., et al.; "Description and Evaluation of a Four-Channel, Coherent 100-kHz Sidescan Sonar"; Defence R&D Canada-Atlantic; Dec. 2004.
- Vaganay, J., et al.; "Experimental validation of the Moving Long Base-Line Navigation Concept"; 2004 IEEE/OES Autonomous Underwater Vehicles; Jun. 2004.
- Vaneck, T.W., et al.; "Automated Bathymetry Using an Autonomous Surface Craft"; Journal of the Institute of Navigation; vol. 43; Issue 4; Winter 1996; pp. 329-334.
- Waite, A.D.; "Sonar for Practising Engineers"; Third Edition; John Wiley & Sons, Ltd.; West Sussex, England; © 2002; 323 pages.
- Alpine Geophysical Data Programmer Model 485C Brochure and letter dated Feb. 17, 1976; 2 pages.
- Benthos C3D Sonar Imaging System; "High Resolution Side Scan Imagery with Bathymetry"; Benthos, Inc.; © May 2002.
- Coastal Engineering Technical Note; "Side-Scan Sonar for Inspecting Coastal Structures"; U.S. Army Engineer Waterways Experiment Station; Revised Nov. 1983.
- ConCAT Containerised Catamaran; Inshore hydrographic survey vessel that fits in a container; In Cooperation with Uniteam International; Kongsberg Simrad AS; Apr. 2004.
- Datasonics SIS-1000 Seafloor Imaging System; Combined Chirp Side Scan Sonar/Chirp Sub-Bottom Profiling for high resolution seafloor imaging; One System, All the Answers; Benthos, Inc.; © 2000.
- Detailed Sonar Transducer Product Information; Transducer Products; Side Scans; Models T36, T63, T62, and T403; Dec. 30, 2003; Retrieved from internet: URL: http://www.neptune-sonar.com/products.as_btype=Side-Scan+Transducers&category=-; 4 pages.
- Kongsberg Brochure EA 400 Survey; "A complete, integrated survey system"; Kongsberg Maritime AS; Oct. 2003.
- Kongsberg Brochure EA 400/600 "Sidescan Echo sounder with combined sidescan and depth soundings"; Kongsberg Maritime AS; May 2004.
- EDO Corporation Global Technology Reach, Model 6400 Fan Beam Transducer; <http://web.archive.org/web/20040608054923/www.edoceramic.com/NavDucers.htm>; Jun. 3, 2004.
- EM1110-2-1003; Department of the Army; U.S. Army Corps of Engineers; Engineering and Design; Hydrographic Surveying; Apr. 1, 2004.
- File Wrapper of Provisional U.S. Appl. No. 60/552,769, filed Mar. 12, 2004; Applicant: Terrence Schoreder.
- Final Report; Early Implementation of Nearshore Ecosystem Database Project Tasks 2 and 3; [online]; Retrieved on Feb. 26, 2010 from the Internet <URL: <http://seafloor.csumb.edu/taskforce/html%202%20web/finalreport.htm>; 90 pages.
- FishFinder L265 Instruction Manual; Raymarine; 79 pages.
- FishFinder L365 Instruction Manual; Raymarine; 83 pages.
- FishFinder L470 Instruction Manual; Raymarine; 102 pages.
- FishFinder L750 Instruction Manual; Raymarine; 93 pages.

US 8,300,499 B2

Page 4

GeoAcoustics; A Kongsberg Company; GeoSwath Plus Brochure; "Wide swath bathymetry and georeferenced side scan"; [Online]; Retrieved from the internet <URL: [http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/F4B7FD3461368388C1257599002D34BC/\\$file/GeoSwath-Plus-brochure.pdf?OpenElement](http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/F4B7FD3461368388C1257599002D34BC/$file/GeoSwath-Plus-brochure.pdf?OpenElement).

GeoPulse; GeoAcoustics Finger Sub-Bottom Profiler; Retrieved from the Internet <URL: [http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/D1084BB7DD0FD21DC12574C0003E01EA/\\$file/GeoPulse_Profiler.pdf?OpenElement](http://www.km.kongsberg.com/ks/web/nokbg0397.nsf/AllWeb/D1084BB7DD0FD21DC12574C0003E01EA/$file/GeoPulse_Profiler.pdf?OpenElement); GeoAcoustics Limited, UK; A Kongsberg Company.

GlobalMap Sport; Installation and Operation Instructions; Lowrance Electronics, Inc.; © 1996; 61 pages.

GPS Speed Correction; Sidescan Sonar; [online]; Retrieved from the Internet URL: <www.hydrakula.uni-kiel.de/downloads/Sidescan%20Sonar.doc; 10 pages.

Humminbird 1197c Operations Manual; Nov. 6, 2007; 188 pages.

Humminbird 200DX Dual Beam Operations Manual; 43 pages.

Humminbird 500 Series; 550, 560, 570 and 570 DI Operations Manual; © 2010; 84 pages.

Humminbird: America's favorite Fishfinder—the leading innovator of Side Imaging technology; [Online]; [Retrieved on Mar. 16, 2011]; Retrieved from the Internet <URL: <http://www.humminbird.com/support/ProductManuals.aspx>; 20 pages.

Humminbird: America's favorite Fishfinder—the leading innovator of Side Imaging technology; [Online]; [Retrieved on Mar. 16, 2011]; Retrieved from the Internet <URL: <http://www.humminbird.com/support/ProductManuals.aspx>; 5 pages.

Humminbird Dimension 3 Sonar 600 Operations Manual; 24 pages.

The Humminbird GPS Navigational System. Nothing Else Even Close.; Humminbird Marine Information Systems ©; 1992; 10 pages.

Humminbird GPS NS 10 Operations Manual; 75 pages.

Humminbird High Speed Transducer; 4 pages.

Humminbird LCR 400 ID Operations Manual; 28 pages.

Humminbird Marine Information Systems; Dimension 3 Sonar™; 1992; 16 pages.

Humminbird "Matrix 35 Fishing System," Prior to Aug. 2, 2003.

Humminbird Matrix 35 Fishing System; 2 pages.

Humminbird Matrix 55 and 65 Operations Manual; ©2003; 40 pages.

Humminbird Matrix 67 GPS Trackplotter Operations Manual; ©2003; 88 pages.

Humminbird "Matrix 97 GPS Trackplotter Operations Manual" 2003.

Humminbird Matrix 97 Operations Manual; ©2003; 87 pages.

Humminbird Matrix™ 87c Operations Manual; © 2004; 45 pages.

Humminbird The New Wave of Wide; 1997; Humminbird Wide®; fish wide open!®; 24 pages.

Humminbird NS25 Operations Manual; 71 pages.

Humminbird Piranha 1 & 2 Operation Guide; 5 pages.

Humminbird Platinum ID 120 Operations Manual; 36 pages.

Humminbird Platinum ID 600 Operations Manual; 18 pages.

Humminbird "The Product Line>Matrix Products>Matrix 35" http://web.archive.org/web/20030404000447/www.humminbird.com/hb_Products.asp?ID, Apr. 4, 2003.

Humminbird® Trolling Motor Mounted Transducer with Mount Assembly Brochure; © 2008 Humminbird®, Bufaula, AL; 2 pages.

Humminbird Wide 3D Paramount Operations Manual; 44 pages.

Humminbird Wide 3D View Operations Manual; 38 pages.

Humminbird Wide 3D Vision Operations Manual; 38 pages.

Humminbird Wide 3D Vista Operations Manual; 38 pages.

Humminbird Wide Eye Operations Manual; 32 pages.

Humminbird Wide Paramount Operations Manual; fish wide open!; 32 pages.

Humminbird "Wideside"; Schematic; Dec. 15, 1994; 5 pages.

Hydro Products; A Tetra Tech Company; 4000 Series Giff Precision Depth Recorder Product Brochure; date stamped 1977.

The Hydrographic Society—Corporate Member News—Kongsberg Simrad; Jul. 3, 2008; 7 pages.

Imagenex Model 855 Brochure: Online; Documents retrieved from internet web archives as follows: URL:http://web.archive.org/web/20021023212210/http://www.imagenex.com/Products/855_858/855_858.html; 1 page; Archived on Oct. 23, 2002 URL:http://web.archive.org/web/20021024124035/http://www.imagenex.com/Products/855_858/855/855.html; 1 page; Archived on Oct. 24, 2002 URL:http://web.archive.org/web/20021024125254/http://www.imagenex.com/Products/855_858/858/858.html; 1 page; Archived on Oct. 24, 2002 URL:http://web.archive.org/web/20030424071306/http://www.imagenex.com/855_Page_1.jpg; 1 page; Archived on Apr. 24, 2003 URL:http://web.archive.org/web/20030424091547/http://www.imagenex.com/855_Page_2.jpg; 1 page; Archived on Apr. 24, 2003 URL:http://web.archive.org/web/20030424094158/http://www.imagenex.com/855_Page_3.jpg; 1 page; Archived on Apr. 24, 2003 URL:http://web.archive.org/web/20030424101301/http://www.imagenex.com/855_Page_4.jpg; 1 page; Archived on Apr. 24, 2003 URL:http://web.archive.org/web/20030424101939/http://www.imagenex.com/855_Page_5.jpg; 1 page; Archived on Apr. 24, 2003 URL:http://web.archive.org/web/20030424135458/http://www.imagenex.com/855_Page_6.jpg; 1 page; Archived on Apr. 24, 2003 URL:http://web.archive.org/web/20030424141232/http://www.imagenex.com/855_Page_7.jpg; 1 page; Archived on Apr. 24, 2003 URL:http://web.archive.org/web/20030424143158/http://www.imagenex.com/855_Page_8.jpg; 1 page; Archived on Apr. 24, 2003.

Imagenex Model 872 "Yellowfin" Sidescan Sonar; Imagenex Technology Corp.; © 2004-2009.

The Imagenex SportScan; Digital Sidescan Sonar; "Redefining Image Clarity"; Imagenex Technology Corp.; © 2002.

Imagenex SportScan Digital SideScan Sonar Brochure: Online; Documents retrieved from internet web archives as follows: URL:<http://web.archive.org/web/20030212030409/http://www.imagenex.com/Products/products.html>; 1 page; Archived on Feb. 12, 2003 URL:<http://web.archive.org/web/20030214044915/http://www.imagenex.com/Products/SportScan/sportscan.html>; 1 page; Archived on Feb. 14, 2003 URL:http://web.archive.org/web/20030222152337/http://www.imagenex.com/Products/SportScan/SportScan_Specs/sportscan_specs.html; 3 pages; Archived on Feb. 22, 2003 URL:http://web.archive.org/web/20030222161450/http://www.imagenex.com/Products/SportScan/FAQ_s/faq_s.html; 4 pages; Archived on Feb. 22, 2003 URL:<http://web.archive.org/web/20030419024526/http://www.imagenex.com/Products/SportScan/distributors.html>; 2 page; Archived on Apr. 19, 2003.

Imagenex (Various) Technical Specifications and User's Manual; Prior to Aug. 2003.

Innomar—Products; "System Variants: SES Side Scan Option"; Retrieved from internet URL:http://www.innomar.com/produ_2000sidescan.htm; Dec. 30, 2003; 2 pages.

International Search Report and Written Opinion for Application No. PCT/US2010/039441 dated Oct. 11, 2010.

International Search Report and Written Opinion for Application No. PCT/US2010/039443 dated Oct. 6, 2010.

"ITC Application Equations for Underwater Sound Transducers"; Published by International Transducer Corporation, 1995, Rev. Aug. 2000; 3 pages.

Kelvin Hughes Transit Sonar; "... a new dimension in shallow water survey to assist in . . ."; Hydrography; Dredging; Salvage; Underwater Construction and Similar Works; Mar. 1966; 8 pages.

Klein Digital Sonar Systems, "... The Next Generation From the World Leader in Side Scan Sonar and Sub-bottom Profiling Systems," 1988.

Lowrance HS-3DWN Transducer Assembly and Housing (Eagle IID); Aug. 1994.

Lowrance LCX-18C & LCX-19C Fish-finding Sonar & Mapping GPS; Operation Instructions; © 2002; 200 pages.

Lowrance Transducers Product Information; 1 page.

Navico Design Report of Raytheon Electronics Side Looker Transducer; Mar. 12, 2010; 18 pages.

US 8,300,499 B2

Page 5

- NOAA: Nautical Charting general information from public records; [Online]; Retrieved on Sep. 10, 2010 from the Internet <URL: http://www.nauticalcharts.noaa.gov/csd/learn_hydroequip.html; 2 pages; http://www.nauticalcharts.noaa.gov/csd/learn_hydroequip.html; 1 page; <http://www.nauticalcharts.noaa.gov/csd/PDBS.html>; 2 pages; <http://www.nauticalcharts.noaa.gov/hsd/pub.html>; 1 page; <http://www.nauticalcharts.noaa.gov/hsd/fpm/fpm.htm>; 1 page; http://www.ozcoasts.gov.au/geom_geol/toolkit/Tech_CA_sss.jsp; 12 pages.
- ONR Grant N66604-05-1-2983; Final Report; "Cooperative Autonomous Mobile Robots"; Retrieved from the Internet <URL: <http://dodreports.com/pdf/ada463215.pdf>; Post 2006.
- Odom Echoscans™; For Sea Floor or Riverbed Surveys; Odom Hydrographic Systems; Apr. 26, 2002.
- Odom Hydrographic Systems ECHOSCAN Manual; Revision 1.11; Apr. 26, 2002.
- "Product Survey Side-Scan Sonar"; Hydro International Magazine; vol. 36; Apr. 2004; pp. 36-39.
- R/V Quicksilver; Hydrographic Survey Launch Bareboat or Crewed; F/V Norwind, Inc.
- R/V Tangaroa; Fact Sheet; Explore lost worlds of the deep; Norfanz Voyage; May 10 to Jun. 8, 2003.
- SeaBat 8101 Product Specification; 240kHz Multibeam Echo Sounder; © 1999 RESON Inc.; Version 4.0.
- Simrad EA 500; Hydrographic Echo Sounder; Product Specifications; Revision: Sep. 1993.
- SonarBeam Underwater Surveying System Using T-150P tow-fish hull mounted; [Online]; [Retrieved on Feb. 12, 2010 from the Internet <URL: http://dsmeu.en.ec21.com/Remotely_Operated_Sonar_Boat_System-618904_2479905.html; 4 pages; http://www.remtechnology.en.ec21.com/Side_Scan_Sonar_Remotely_Operated-2902034.html; 4 pages; [Retrieved on Feb. 16, 2010 from the Internet <URL: http://dsmeu.en.ec21.com/Remotely_Operated_Sonar_Boat_System-618904_2479905.html; 4 pages; http://www.remtechnology.en.ec21.com/Side_Scan_Sonar_Remotely_Operated-2902230.html; 7 pages.
- Starfish 450H; Sidescan System; Triton International Limited; UK. T297-00-01-01 Transducer housing outline drawing; Neptune Sonar Ltd.; © 2002.
- Techsonic Industries, Inc.; "Mask, Acoustic"; Schematic, May 24, 1996.
- Techsonic Industries, Inc.; "Element, 455 kHz"; Schematic, Jun. 13, 1996.
- "Transducers Quad Beam," Prior to Aug. 2, 2003.
- U-Tech Company Newsletter.
- USACE, "Chapter 11, Acoustic Multibeam Survey Systems for Deep-Draft Navigation Projects," Apr. 1, 2004.
- Ultra III 3D Installation and Operation Instructions; EAGLE™; © 1994.
- Westinghouse Publication; "Side-Scan Sonar Swiftly Surveys Sub-surface Shellfish"; May 1970; 4 pages.
- Sonar Theory and Applications; Excerpt from Imagenex Model 855 Color Imaging Sonar User's Manual; Imagenex Technology Corp.; Canada; 8 pages.
- Ballantyne, J.; "Find and Catch More, Fish, Quickly and Easily, with the Fishin' Buddy 2255"; [Online]; [Retrieved on Dec. 7, 2011]; Retrieved from the Internet <URL: http://www.articleslash.net/Recreation-and-Sports/Fishing/67018_Find-and-Catch-More-Fish-Quickly-and-Easily-with-the-FISHIN-BUDDY-2255.html; 4 pages.
- Deep Vision Side Scan Sonar Systems; [Online]; [Retrieved on Dec. 2, 2011]; Retrieved from the Internet <URL: <http://www.deepvision.se/products.htm>; 5 pages.
- Fishin' Buddy 4200™ Operations Manual; Dated Dec. 21, 2005; 16 pages.
- Fishing Tool Reviews—Bottom Line Fishin' Buddy 1200 Fishfinder; [Online]; [Retrieved on Dec. 7, 2011]; Retrieved from the Internet <URL: <http://www.tackletour.com/reviewbottomline1200.html>; 4 pages.
- Humminbird 100 Series™ Fishin' Buddy®; 110, 120, 130 and 140C Product Manual; © 2007; 2 pages.
- Sidefinder—Reviews & Brand Information—Techsonic Industries, Inc.; [Online]; [Retrieved on Dec. 7, 2011]; Retrieved from the Internet <URL: <http://www.trademarkia.com/sidefinder-74113182.html>; 4 pages.
- Trademark Electronic Search System (TESS); Word Mark: Sidefinder; [Online]; [Retrieved on Dec. 7, 2011]; Retrieved from the Internet <URL: <http://tess2.uspto.gov/bin/showfield?f=doc&state=4009:q14jkj.2.1>; 2 pages.
- Marine Acoustics Society of Japan (Editor); "Basics and Application of Marine Acoustics"; Apr. 28, 2004; pp. 152-172.
- International Search Report on Patentability for Application No. PCT/US05/27436 dated Nov. 20, 2007; 1 page.
- International Preliminary Report on Patentability for Application No. PCT/US05/27436 dated Dec. 6, 2007; 5 pages.
- Translation of Notice of Reason(s) for Rejection for Japanese Application No. 2007-524919 dated Aug. 16, 2011; 4 pages.
- Communication [extended European Search Report] for European Application No. 05782717.2-2220 dated Aug. 31, 2011; 12 pages.
- Communication for European Patent Application No. 05782717.2-2220 dated May 11, 2012; 9 pages.
- Australian Government, Department of Sustainability, Environment, Water, Population and Communities; Fact Sheet—The RV Tangaroa; date unknown; 3 pages.
- Blondel, Philippe; The Handbook of Sidescan Sonar; © 2009; 316 pages.
- Calcutt, Ron; Lowrance Book of Sonar & GPS; © 1986; and Lowrance Book of Sonar & GPS Update; 1997; collectively 122 pages.
- Derrow, II, Robert W. et al., A Narrow-Beam, Side-Looking Sonar for Observing and Counting Fish in Shallow Aquaculture Ponds; 1996; 34 pages.
- DSME E&R Ltd.; Remotely Operated Sonar Boat System (SB-100S); http://dsmeu.en.ec21.com/Remotely_Operated_Sonar_Boat_System-618904_2479905.html; printed on Feb. 12, 2010; 3 pages.
- Eagle Electronics; Ultra 3D Installation and Operation Manual; © 2002; 24 pages.
- Furuno Electric Co., Ltd.; Side Looking Sonar, Model SL-16, 1983; 4 pages.
- Geoacoustics; GeoPulse, Profiler System; Feb. 2006, 2 pages.
- Humminbird 1198C Review for Catfishing, Catfishing "How To" Catfishing Techniques, Oct. 31, 2011, 9 pages.
- Imagenex Technology Corp., Model 881 SportScan, Single or Dual Frequency Digital Sidescan Sonar, Software User's Manual; May 9, 2003; 16 pages.
- Klein Associates, Inc.; Modular Side Scan Sonar and Sub-Bottom Profiler System Components for Customized Configurations; date unknown; 10 pages.
- Klein, Martin; Side Scan Sonar; UnderSea Technology; Apr. 1967; 4 pages.
- Klein, M. et al., Sonar—a modern technique for ocean exploitation; IEEE Spectrum; Jun. 1968; pp. 40-46 and Authors page.
- Klein, Martin; New Developments in Side Scan Sonar for Hydrography; date unknown; 14 pages.
- Klein, Martin; Side Scan Sonar; Offshore Services; Apr. 1977, pp. 67, 68, 71, 72, 75.
- Klein, Martin; New Capabilities of Side Scan Sonar Systems; date unknown; pp. 142-147.
- Klein, Martin; Sea Floor Investigations Using Hybrid Analog/Digital Side Scan Sonar; date unknown; 18 pages.
- Kongsberg Maritime AS; Side Looking Transducer, 200 kHz—0.5x49, 200 kHz side looking transducer for shallow water and surveying and high resolution; date unknown; 2 pages.
- Kongsberg Simrad AS; ConCat Containerised Catamaran, Inshore hydrographic survey vessel that fits in a container, Rev. B, Apr. 2004; 4 pages.
- Kvitek, Rikk et al.; Final Report, Early Implementation of Nearshore Ecosystem Database Project Tasks 2 and 3; <http://seafloor.csumb.edu/taskforce/html%202%20web/finalreport.htm>; Jul. 29, 1999; 92 pages.
- Law, G., Sideways Glance, Side- and down-scan Imaging Open New Windows in Fishing Finding, Electronics, Nov. 2011, pp. 28-29.

US 8,300,499 B2

Page 6

Leonard, John L.; Cooperative Autonomous Mobile Robots; date unknown; 11 pages.

Maritime surveys takes delivery of SeaBat 8160; Sea Technology, Jul. 2001; http://findarticles.com/p/articles/mi_qa5367/is_200107/ai_n21475675/; website printed Jun. 30, 2010.

Marine Sonic Technology, Ltd.; Sea Scan® PC Side Scan Sonar System Information/Specifications Sheet; Sep. 9, 2002; 10 pages.

Mesotech; Mesotech Model 971 Sonar System Summary; Mar. 26, 1985, 2 pages.

Oughterson, B., Sophisticated Sonar Reveals Detailed Images Recently Unimaginable. Is it Too Much too Soon?, Basic Instincts, pp. 75-78.

Raymarine, L750 Fishfinder, Operation Handbook; date unknown; 93 pages.

Raytheon Marine Company; Installation Instructions; Oct. 1998; 2 pages.

Remtechsroy Group; Side Scan Sonar-Remotely Operated Vehicle Surface; http://remtechnology.en.ec21.com/Side_Scan_Sonar_Remotely_Operated-2902034_2902230.html; printed on Feb. 12, 2010; 4 pages.

Reson Inc.; SeaBat 8101 Product Specification, 240kHz Multibeam Echo Sounder; © 1999; 2 pages.

Reson; SeaBat 8101; Multibeam acoustic echosounder; date unknown; 1 page.

Reson; SeaBat 8160 Product Specification, Multibeam Echosounder System; date unknown; 2 pages.

Russell-Cargill, W.G.A. ed.; Recent Developments in Side Scan Sonar Techniques; © 1982; 141 pages.

Simrad; Product Specifications, Simrad EA 500 Side-looking Option; Feb. 1992, 1 page.

Techsonic Industries, Inc., Humminbird Wide fish wide open!; brochure, 1997; 4 pages.

Techsonic Industries, Inc.; Humminbird GPS brochure; © 1992; 10 pages.

Teleflex Electronic Systems; Humminbird 1997; © 1996; 24 pages.

The Norwegian and Finnish navies performing operations with the Kongsberg Hugin AUV and minesniper mine disposal vehicle in Finnish waters; FFU nytt; No. 3, Nov. 2003; p. 12.

Trabant, Peter K.; Applied High-Resolution Geophysical Methods, Offshore Geoengineering Hazards; © 1984; 265 pages.

Tritech International Limited; StarFish; 450H Hull-Mounted Sidescan System; date unknown; 2 pages.

Universal Sonar Limited; High Frequency Broad Band Line Array Type G27/300LQ; date unknown 2 pages.

Williams, J. P., *Glancing Sideways, Nautical Know-How*, Chesapeake Bay Magazine, May 2011, pp. 14-17.

* cited by examiner

U.S. Patent

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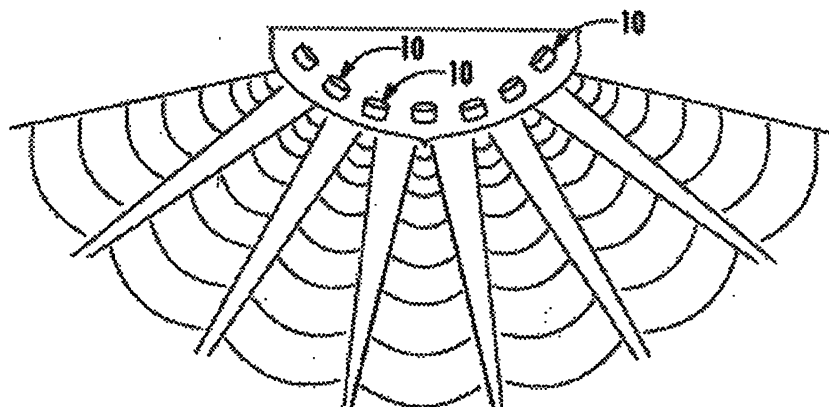


FIG. 1
(PRIOR ART)

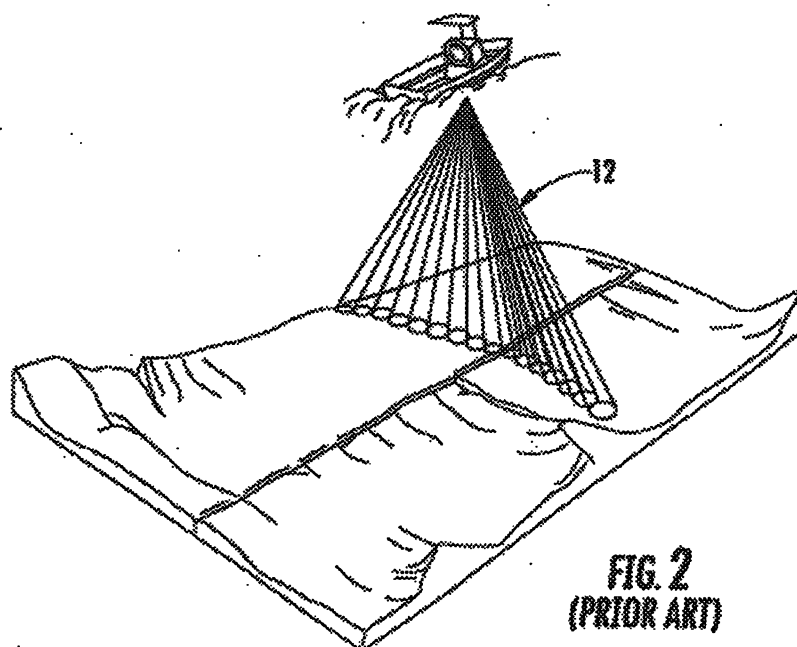


FIG. 2
(PRIOR ART)

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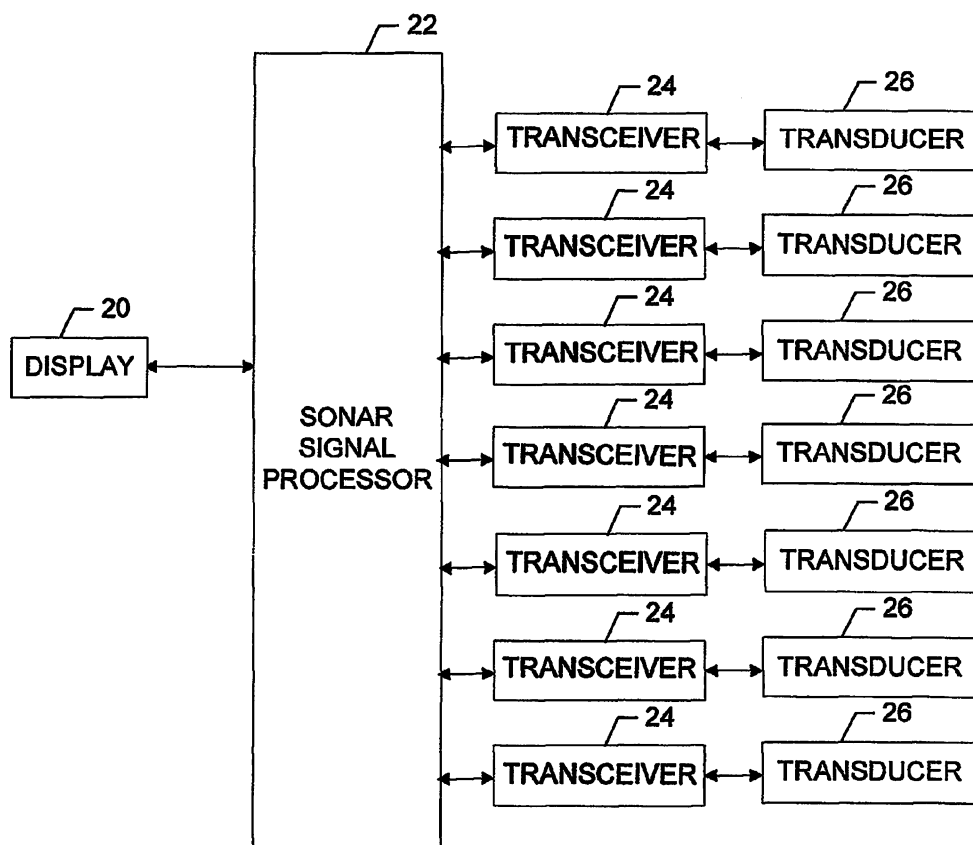


FIG. 3.
(Prior Art)

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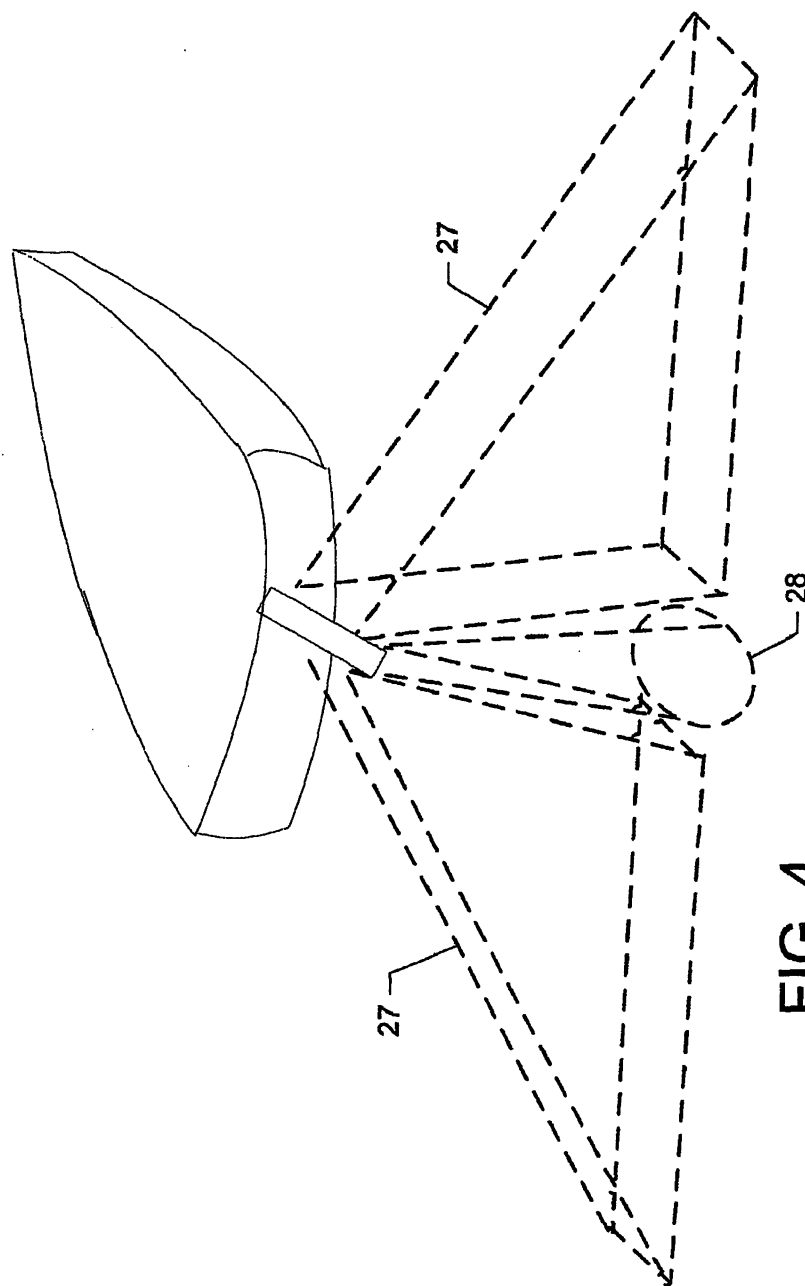


FIG. 4.
(Prior Art)