

In the Matter of

**CERTAIN STABILIZED HULL UNITS  
AND COMPONENTS THEREOF  
AND SONAR UNITS  
UTILIZING SAID  
STABILIZED HULL UNITS**

Investigation No. 337-TA-103



USITC PUBLICATION 1260

JUNE 1982

United States International Trade Commission / Washington, D.C. 20436

**UNITED STATES INTERNATIONAL TRADE COMMISSION**

**COMMISSIONERS**

**Bill Alberger, Chairman**

**Michael J. Calhoun, Vice Chairman**

**Paula Stern**

**Alfred E. Eckes**

**Eugene J. Frank**

**Veronica A. Haggart**

---

**Kenneth R. Mason, Secretary to the Commission**

---

**Address all communications to  
Office of the Secretary  
United States International Trade Commission  
Washington, D.C. 20436**

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436

In the Matter of )  
)  
)

CERTAIN STABILIZED HULL UNITS AND )  
COMPONENTS THEREOF AND )  
SONAR UNITS UTILIZING SAID )  
STABILIZED HULL UNITS )  
)

Investigation No. 337-TA-103

COMMISSION ACTION AND ORDER

Introduction

The United States International Trade Commission has concluded its investigation under section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337), of alleged unfair methods of competition and unfair acts in the unauthorized importation of certain stabilized hull units and components thereof into the United States, or in their sale by the owner, importer, consignee, or agent of either, the alleged effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically operated, in the United States. The Commission's investigation concerned allegations that stabilized hull units imported or sold by respondents Furuno Electric Co. of Japan and Furuno U.S.A. are covered by certain claims of U.S. Letters Patent 3,553,638 (hereinafter the '638 patent). The '638 patent is owned by complainant Western Marine Electronics, Inc. (WESMAR), of Seattle, Washington.

This Action and Order provides for the final disposition of investigation No. 337-TA-103 by the Commission. It is based upon the Commission's unanimous determination, made in public session at the Commission meeting of May 20, 1982, that there is no violation of section 337.

#### Action

Having reviewed the record compiled and information developed in this investigation, including (1) the submissions filed by the parties, (2) the transcript of the evidentiary hearing before the administrative law judge (ALJ) and the exhibits which were accepted into evidence, (3) the ALJ's recommended determination, and (4) the arguments and presentations made at the Commission's public hearing on April 28, 1982, the Commission, on May 20, 1982, unanimously determined that with respect to respondents Furuno Electric Co. of Japan and Furuno U.S.A., the respondents in investigation No. 337-TA-103, there is no violation of section 337 of the Tariff Act of 1930 in the importation into and sale in the United States of certain stabilized hull units and components thereof and sonar units utilizing said stabilized hull units.

#### Order

Accordingly, it is hereby ORDERED THAT--

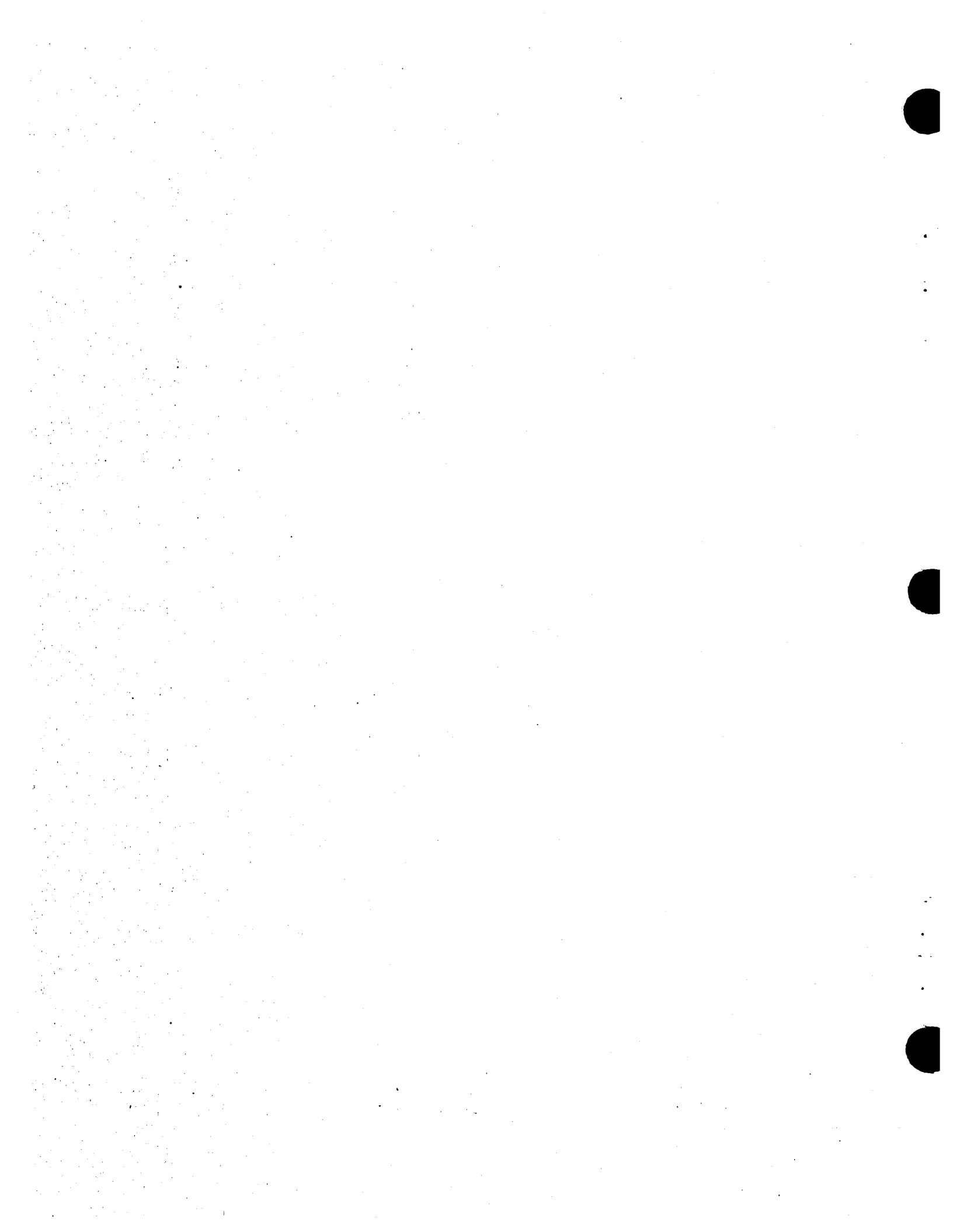
1. Investigation No. 337-TA-103 is terminated as to all issues and all respondents;
2. The Secretary shall serve this Action and Order and the Commission Opinion in support thereof upon each party of record in this investigation, and upon the U.S. Department of Health and Human Services, the U.S. Department of Justice, the Federal Trade Commission, and the U.S. Customs Service; and

3. The Secretary shall publish notice of this Action and Order in the Federal Register.

By order of the Commission.

  
Kenneth R. Mason  
Secretary

Issued: June 9, 1982



UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C. 20436

\_\_\_\_\_  
In the Matter of )  
 )  
CERTAIN STABILIZED HULL UNITS AND )  
COMPONENTS THEREOF AND SONAR UNITS )  
UTILIZING SAID STABILIZED HULL UNITS )  
\_\_\_\_\_ )

Investigation No. 337-TA-103

COMMISSION OPINION

I. Procedural History

On April 29, 1981, complainant Western Marine Electronics, Inc. (WESMAR), filed a complaint with the Commission alleging that Furuno Electric Co. of Japan and Furuno U.S.A., Inc. (collectively referred to hereinafter as Furuno) had violated section 337. The Commission issued a notice of investigation which was published in the Federal Register on June 10, 1981 (46 F.R. 30737). The investigation was to determine whether there is a violation of section 337 in the unauthorized importation of certain stabilized hull units and components thereof, or in their sale, by reason of--

the alleged infringement of said stabilized hull units of claims 1, 11, 12, and 14 of U.S. Letters Patent 3,553,638, and the contribution to the infringement of these claims by components thereof,

the effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically operated, in the United States. 1/

---

1/ The following abbreviations are used in this opinion: ALJ = Administrative Law Judge; RD = ALJ's recommended determination; CX = complainant's exhibit; RX = respondents' exhibit; TR = transcript of evidentiary hearing before ALJ; CTR = transcript of April 28, 1982, hearing before the Commission on violation, remedy, public interest, and bonding.

On August 13, 1981, the complaint and notice of investigation were amended to describe more accurately Furuno's devices and to show how those devices allegedly infringe WESMAR's '638 patent.

Meanwhile, on July 8, 1981, Furuno U.S.A. filed a request with the U.S. Patent and Trademark Office (PTO) for a reexamination of claims 1, 11, 12 and 14 of WESMAR's '638 patent under 35 U.S.C. §§ 302-307. On November 10, 1981, the PTO granted Furuno's request for reexamination and on December 7, 1981, issued an initial office action. 1/

An evidentiary hearing was held intermittently before the ALJ during December. WESMAR on February 10, 1982, filed a letter requesting withdrawal of claims 1 and 11 of the '638 patent from the investigation because of WESMAR's intention to amend those two claims during the reexamination proceedings. The letter stated, however, that this withdrawal would not affect claim 12 as that claim would be amended to combine claims 1 and 11 with it. 2/

On February 12, 1982, respondent Furuno filed a motion to reopen the proceedings before the ALJ in order to submit as additional evidence 11 new prior art patents concerning guide members on oil well drilling equipment. WESMAR did not oppose the motion. The ALJ on February 17, 1982, granted the motion in Order No. 12.

On March 1, 1982, the ALJ submitted her recommended determination that a violation of section 337 does not exist. She found claim 12 invalid and not infringed and claim 14 valid but not infringed. She adopted various findings

---

1/ See discussion at pp. 8-9.

2/ WESMAR letter to Commission received March 10, 1982.



of fact and conclusions of law of complainant, respondents, and the Commission investigative attorney (CIA). 1/

On April 12, 1982, WESMAR moved to reopen the record to add Exhibit 76, the final action by the PTO, dated March 26, 1982, in the reexamination of the WESMAR patent. In his final determination, the patent examiner accepted claim 12 rewritten in independent form. The patent examiner also found claim 14 valid over a combination of two prior art patents, the Kessler and Williams patents.

On April 28, 1982, the Commission held a public hearing on violation, remedy, public interest, and bonding. At this hearing, the Commission granted WESMAR's motion to reopen the record as to Exhibit 76. On May 20, 1982, the Commission unanimously determined that a violation of section 337 does not exist.

## II. Summary of the Commission's Findings

Having reviewed the record compiled and information developed in this investigation, we find that claim 12 is invalid because the guide members disclosed in the claim are obvious in light of 11 prior art patents which show guide members on oil well drilling equipment. Claim 12 is not infringed because the universal joint on the Furuno devices cannot be read on the element in original claim 1 which calls for mounting means journaled to said support means. The Furuno devices also do not infringe claim 12 because the part of claim 12 which calls for vertical scan drive means is a means plus function clause and under 35 U.S.C § 112 must be construed to cover only the

---

1/ RD at 62.

specification of the '638 patent and equivalents thereof. The gearing mechanism on the Furuno devices is not made in accordance with the specification which describes the vertical scan drive means or equivalents thereof.

We find claim 14 valid and unobvious over the combination of the Kessler and Williams patents. Claim 14, however, is not infringed by Furuno models 105, 106 and 107 because element 2 of claim 14 is not met as the oscillatory driving element of the transducer is not mounted for rotation about an axis perpendicular to the vertical axis of the frame. Further, Furuno models 105, 106 and 107 and revised models 106 and 107 do not infringe claim 14 because the claim calls for a transducer drive means, and this part of claim 14 is a means plus function clause. Under 35 U.S.C. § 112 a means plus function clause must be construed to cover only the specification of the '638 patent and equivalents thereof. The transducer drive mechanism of the Furuno devices is not made in accordance with the specification of the '638 patent or equivalents thereof.

We conclude that there is no domestic industry because the products now being produced by WESMAR are not made in accordance with the specification of the '638 patent or its equivalents. If we had determined that the products presently manufactured by WESMAR were equivalent to the specification of the '638 patent and defined the domestic industry as the facilities devoted to the production and sale of WESMAR's current line of stabilized hull units, we would have found that industry efficiently and economically operated and substantially injured.

### III. The products and the '638 patent

A stabilized hull unit is a scanning sonar device that is supported by a mechanism that maintains directional aiming of an acoustic transducer in spite of the pitching and rolling of the boat upon which it is mounted. <sup>1/</sup> More simply, a stabilized hull unit, which is attached to the hull of a boat, is one component of a sonar system. The units are employed by commercial fishermen to locate schools of fish. The system includes an acoustic transducer which is lowered from a boat into the water where it projects sound waves. These waves pass through the water until they encounter submerged objects and are reflected back to the transducer and projected on a screen on the fishing vessel.

The transducer is directional, i.e., the sound that it produces travels through the water in a narrow beam that is analagous to a beam of light produced by a flashlight. A fisherman may adjust the electronic equipment to change horizontally or vertically the direction in which the transducer projects its sound waves. When the fisherman adjusts the vertical direction in which the transducer projects its sound waves, i.e., moves the face of the transducer up or down, the operation is called tilting the transducer. When he moves the transducer horizontally, i.e., moves the transducer in a circle, he is scanning or training the transducer, which is usually a continuous motion. The fisherman may also both tilt and scan the transducer at the same time while it is stabilized against the pitch and roll of the vessel.

"Stabilizing" means holding the transducer in substantially the same position relative to the ocean floor regardless of the pitch and roll of the

---

<sup>1/</sup> A boat itches when it moves bow to stern and rolls when it moves side to side.

vessel. If a sonar unit is not stabilized, the pitching and rolling causes apparent movement of the fish or other objects on the screen, even though the true position of the object is unchanged.

The WESMAR '638 (or Sublett) patent describes a gravity stabilized hull unit which solves the problem of stabilizing the transducer against the pitch and the roll of the vessel by pendulously suspending the transducer. Such pendulous suspension permits the transducer to pivot against the pitch and roll of the boat to maintain the desired angle of transmission for the sound waves.

The specification of the '638 patent states that in this hull unit the transducer is freely suspended from the "frame." The entire frame can be moved for scanning the transducer. The specification then goes on to describe a specific gear mechanism which sends motion from a motor on a platform above the pendulum through the frame to tilt the transducer without substantially affecting the pendulous suspension of the transducer.

The entire gear mechanism is encased by what is known as a housing. The lower part of the housing is the sound dome. The sound dome encases most of the gear mechanism, except for the motor. In the sound dome there is a dielectric liquid which prevents the transducer's sound waves from bouncing off of the dome. On the outside of the housing are fins which permit the free flow of water past the housing as the housing is raised and lowered within the well of the boat. The fins also prevent lateral movement within the well of a boat when the housing is raised and lowered.

The WESMAR model which conforms to the '638 patent specification is the SS-220. Since 1978 WESMAR has been producing and selling new devices which

are no longer made in accordance with the specification. 1/ In these new models the frame, the transducer, and the tilting motor are all pendulously supported from a yoke. The tilting motor is now placed below the platform and is encased within the sound dome and also has a new gear arrangement to tilt the transducer. All current WESMAR stabilized sonar units use this type of device. This new mechanism is described as "the motor in the oil."

#### IV. Respondents' Products

In 1977 Furuno Japan began to manufacture and sell a stabilized hull unit with a mechanism for pendulously supporting the transducer as disclosed in U.S. Letters Patent 4,144,518 (the '518 or Minohara patent) owned by Furuno Japan. This patent was issued on March 13, 1979, over the WESMAR '638 patent. The patent describes the transducer as supported from a universal joint located in a shaft coming down from two motors located on a platform above the universal joint. The position of the transducer can be controlled through the shaft to tilt the transducer. The transducer can be scanned and tilted at the same time. The device described in the '518 patent was sold by Furuno as its FH-105 unit. All of the Furuno devices involved in this investigation are covered by the '518 patent in that all the devices support the transducer from a universal joint.

Furuno later imported other models which basically incorporate the same mechanism as in the FH-105. These models are the FH-106/107 models which coordinate the arrangement of the scanning motor and the tilting motor by

---

1/ Stip. 17, 18, 19, Prehearing TR 24, TR 1375, RD at 52.

differential gearing, and a revised model of the FH-106/107 which has two metal ears or cheeks which restrict the movement of the universal joint and allow the transducer to swing pendulously only about an axis parallel to the tilt axis of the transducer.

The Furuno mechanism is encased by a housing as the WESMAR device is. The housing is lowered and raised by a drive motor from a well in the vessel's hull for scanning. A "guide piece" is attached to the shaft above the upper housing and "fins" or "ribs" are also attached to the upper housing of the Furuno device.

#### V. Reexamination

On November 10, 1981, the PTO granted Furuno's request for reexamination. The patent examiner found that a substantial new question of patentability was raised regarding claims 1, 11 and 12 of the WESMAR patent in view of the teachings of U.S. Letters Patent 2,832,944 (Kessler) and British patent No. 897,739 (Oldenburg). As to claim 14, the patent examiner found that no question of patentability had been raised because that claim was not obvious in light of the Kessler patent. Further, claim 14 was not indefinite under 35 U.S.C. § 112 since the statute explicitly permits an element in the claim to be expressed as a means for performing a specified function.

WESMAR did not file a statement in response to this decision within the allotted time. The patent examiner, therefore, on December 7, 1981, in an initial office action rejected claims 1 and 11, but found claims 12 and 14 patentable. In his decision, the examiner found that claim 1 was obvious in light of Kessler and claim 11 was unpatentable over Kessler in view of the

British patent (Oldenburg) because it too was obvious. As to claims 12 and 14, the patent examiner found that claim 12 was not obvious in light of the Kessler patent and the British patent and that claim 14 was not obvious in light of Kessler. 1/

On March 26, 1982, in the PTO's final action, the patent examiner reiterated his earlier conclusion that claim 12 was valid in light of Kessler and the British patent and also found claim 12 valid in light of the 11 prior art patents for oil well drilling equipment. The patent examiner also determined that claim 14 is valid in light of the combination of the Kessler and Williams patents. 2/

VI. Unfair methods of competition or unfair acts

A. Claim 12--validity.

Claim 12 has been rewritten in independent form from former claims 1, 11, and 12 to read as follows:

(1) A sonar system for installation in a marine vessel, which comprises:

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects; support means, mounting means journaled to said support means and mounting said transducer from said support means such that said support means and transducer are independently pivotable about a transverse axis; vertical scan drive means operably coupled to said transducer to rotate said transducer about a transverse axis for vertical scanning without affecting the independent pivotability of said transducer and support means; horizontal scan drive means operably coupled to said transducer to rotate said transducer about a vertical axis perpendicular to said transverse axis for horizontal scanning without affecting the independent pivotability of said transducer and support means;

---

1/ CX No. 68 at pp. 2 and 3.

2/ See detailed discussion in CX 76 at 3, 4 .

(11) an elevator well adapted for mounting within the hull of a ship adjacent the keel and open at the lower end;

a water-tight housing enclosing said transducer and transducer drive means mounted within said elevator well;

a lift mechanism connected to said housing for raising and lowering the housing within the elevator well to advance said transducer to a scanning position below the keel of a ship and to retract the housing to a rest position within said well for protection of said transducer when not in use; and

(12) guide members attached to said housing and abutting the inner walls of the elevator well to prevent lateral movement of the housing within the well and permit free flow of water past the housing as the housing is raised and lowered.

Claim 12 of the '638 patent, which now includes claims 1 and 11, concerns guide members of the hull unit which are attached to the housing and abut the inner walls of the elevator well to prevent lateral movement of the housing within the well and permit free flow of water past the housing as the housing is raised and lowered.

Claim 12 is obvious under 35 U.S.C. § 103 in light of 11 prior art patents which disclose guide members in oil drilling equipment. 1/ 2/

Section 103 states that a patent cannot be obtained:

If the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

In Graham v. John Deere Co., 383 U.S. 1, 17 (1966), the Supreme Court set forth the steps to be followed to determine whether a patent is obvious.

---

1/ Furuno Physical exhibits K-U. See RD at 18.

2/ We agree with the ALJ and the patent examiner that claim 12 is not invalid in light of the British patent (Oldenburg). See RD at 17.



"Under § 103, the scope and content of the prior art must be determined, differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved."

It must then be determined whether the differences between the claims at issue and the prior art would have been obvious to a hypothetical person with ordinary skill in the pertinent art at the time the invention was made.

In making a determination as to obviousness, the Commission must first determine whether guide members in oil well drilling equipment are analogous to guide members for stabilized hull units and are thus part of the relevant prior art to be considered. The Supreme Court addressed a similar issue in the latter half of its John Deere opinion when it considered the companion case, Calmar, Inc. v. Cook Chemical Co. <sup>1/</sup> In that case the primary issue on appeal was whether a pump sprayer with a screw-on cap for liquid insecticides was obvious in light of a plastic overcap used to cover and protect pour spouts. The patent owner argued that the invention was not obvious because the prior art related to liquid containers having pour spouts rather than pump sprayers for insecticides. The Court found that "so restricted a view of the applicable prior art is not justified. The problems confronting [inventor] Scoggin and the insecticide industry were not insecticide problems; they were mechanical closure problems." Graham v. John Deere Co., 383 U.S. 1, 35 (1966). In determining the prior art, the Supreme Court, rather than focusing

---

<sup>1/</sup> This case was considered by the Supreme Court in the Graham v. John Deere opinion, 383 U.S. at 26-37.

on the field of endeavor for which the device was to be used, focused on the actual problem to be solved by the inventor. 1/

The problem addressed by claim 12 is not one solely of stabilizing a sonar unit, but one of moving an object within a well that contains a liquid. It is a guiding problem. Claim 12 of the '638 patent refers to "guide members." In this case, the 11 patents are found in PTO Class 308, "machine elements, bearings and guides." 2/ Although these 11 patents deal with oil well drilling technology which is outside the field of the inventor's principal endeavor, they deal with the same problem. As the ALJ stated in her RD:

Mr. Sublett, the inventor, testified that the problem to be solved by claim 12 was finding a way to mount the sound dome rigidly inside a well "so that it still slides up and down, and then also allows room for the water to move back and forth." (TR 568.) The references from the well-drilling field submitted by Furuno deal with a similar problem: the stabilization of a "sucker-rod" inside

---

1/ See In re Kylstra, 87 F.2d 487, 32 USPQ 382 (C.C.P.A. 1937) where the CCPA found a patent for a machine gun firing mechanism to be analogous art to a patent for a street car distance register because the actual art, i.e., the problem to be solved, was one of numbering or counting; and in In re Heldt, 433 F.2d 808, 167 USPQ 676 (C.C.P.A. 1970), where the CCPA found a patent on golf club storage tubes to be analogous to a patent for sewage disposal systems because the problem to be solved was that of reinforcing structures. See also In re Wood and Eversole, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (C.C.P.A. 1979); Stevenson v. International Trade Commission, 612 F.2d 546, 550, 204 U.S.P.Q. 276, 280 (C.C.P.A. 1979); Certain Steel Toy Vehicles, Inv. No. 337-TA-31, USITC Pub. 880, 197 U.S.P.Q. 873 (1978).

2/ Attached to its posthearing brief, Furuno submitted a PTO publication, Index to Classification, U.S. Dept. of Commerce Publication (April 1972), of which the Commission takes official notice. The 11 prior art patents are from Class 308 "machine elements, bearings and guides." Oil well drilling art is found in Class 175. See Index to Classification, pages 224-225 and 372. Furthermore, the 11 prior art patents are found under "wells . . . centering guide" at p. 372 of the Index.

a tube or well while allowing free movement of fluid around the stabilizing guide structure. The problems are clearly similar and the solution to one is pertinent to the other. 1/

Furthermore, the ALJ also found that "there is nothing complicated about these devices," and stated:

The alleged invention of claim 12 involved a simple mechanical guiding problem, how to guide the sound dome up and down in a well, and allow water to move around it. 2/

We believe that persons of ordinary skill in the art would look at devices that have solved similar problems, that is, he or she would have looked to the art of guides and such art includes guiding a sucker rod inside an oil well while allowing the free movement of liquid around the structure. The 11 patents are, therefore, part of the relevant prior art to be considered when applying the obviousness test set forth in John Deere, supra, at 11.

We also agree with the ALJ's determination that in light of the guide members disclosed in these 11 patents, especially the Conrader patent (Furuno Phys. Ex. L), the Smith patent (Furuno Phys. Ex. M), the Osborne patent (Furuno Phys. Ex. T), and the Leathers patent (Furuno Phy. Ex. U), "[t]o one with ordinary skill in the art of sonar devices, the guide devices disclosed in claim 12 would have been obvious." 3/

The patent examiner in his final reexamination decision disagreed. 4/ In Certain Headboxes and Papermaking Machine Forming Sections for the Continuous

---

1/ RD at 19, 20.

2/ Id. at 21.

3/ Id.

4/ The patent examiner stated:

The patents to Mayhew, Conrader, Smith, Dodson, Moreland, Bostic, Merrick, Osborne, and Leathers, submitted with the amendment have been considered but are not seen to render the claimed system obvious. These patents are from the non-analogous oil drilling art,  
(Footnote continued)

Production of Paper, and Components Thereof, Inv. No. 337-TA-82, USITC Pub. 1138, 213 USPQ 291, 297 (1981), the Commission determined that when a patent and most of the prior art have been reexamined in the PTO (as in a reissue proceeding), the statutory presumption of validity is strengthened. The final decision by the PTO in this case, however, only strengthened the presumption. The PTO's decision is not binding on the Commission. RD at 16.

The patent examiner in his determination failed to recognize that the oil well drilling references addressed a similar problem as that addressed by claim 12--i.e., that of moving a cylindrical device within a well without obstructing the free flow of liquid within that well. The patent examiner never addressed the fact that claim 12 concerns "guide members" and that these 11 patents are found in Class 308 "guides," and not Class 175 for oil well drilling.

In his decision, the patent examiner also stated:

Further the guide means shown in the patents would have the unwanted effect of increasing flow resistance and turbulence if attached to a transducer housing when the transducer is in a scanning position "below the keel of the ship" as recited in the claim . . . 1/

However, when these patents are examined, specifically, the Conrader patent, the Smith patent, the Osborne patent, and the Leathers patent, they are found to concern the stabilization of a drill string by centering it within a well, that is, by preventing lateral movement and, at the same time, allowing the

---

(Footnote continued)

and it would not be obvious to apply their teachings to the claimed sonar system with a lift mechanism for raising and lowering the transducer housing. . . . The examiner is in agreement with the remarks on pages 22-26 of the amendment concerning the patentability of claim 12.

CX No. 76 at 3.

1/ Id.

free flow of liquid within the well. The parties have stipulated that an ordinary person skilled in the art is a person of engineering competency who is familiar with the problems associated with the marine application of sonar devices. 1/ We believe it would have been obvious to a person of ordinary engineering competency with knowledge of the marine application of sonar devices to modify these "flutes," "ribs," "recesses" or "channels" in oil well drilling equipment by attaching certain "fins" or "guide members" to the housing of the sonar unit which would not have the effect of increasing flow resistance or turbulence.

In his initial office action, the examiner rejected claim 1 as anticipated by the prior art and claim 11 as obvious in light of the prior art. None of the limitations in claim 12 (as originally drafted in separate form) adds a nonobvious element, nor is the combination of claim 12's elements with those of claims 1 and 11 nonobvious. Claim 12, therefore, is invalid as obvious.

B. Claim 12--infringement.

In her RD, the ALJ determined that claim 12 was not infringed. She failed, however, to discuss whether claims 1 and 11 could be read on the Furuno devices because those two claims had been withdrawn from the proceeding, and claim 12 had not yet been amended. Claim 12, however, has always included the elements recited in claims 1 and 11. We must consider claim 12 in its entirety.

---

1/ Stip. 26, Prehearing TR at 27.

Furuno has argued that several elements of claim 1 cannot be read on the Furuno devices. The most important issue concerns the element in claim 1 calling for mounting means journaled to said support means. Mr. Intlekofer testifying for WESMAR defined the mounting means as the two pins and the upper yoke of the universal joint (TR. 965) and the support means as the lower yoke of the universal joint. Furuno argues that the support and mounting means are not journaled.

All of the Furuno devices (FH-105, 106/107 past and present) "journal" the transducer for pivotable movement upon one transverse axis. However, the support means in each of the Furuno devices is not "journaled" but, in contrast, connects to a universal joint consisting of a pair of yokes interconnected by a pair of transverse pins (TR-936, 1225). Neither of those pins without the other is capable of mounting the transducer from the "support means" and yet provide an operable device. The "pins" of the universal might be termed "journals", but as you turn the tilt control shaft to effect tilting "those axes are moving all over the place" (TR-1225). Mr. Intlekofer conceded that to substitute a journal for the universal joint would not work (TR-1023-1024; 1229). Nor does the function of a universal joint perform the dictionary definition of a "journal". One such definition (Furuno Ex. 9) reads: "The part of a rotating shaft, axle, roll or spindle that turns in a bearing" (See also Intlekofer's definition, TR-989; and his description of operation, TR-1020-1023.) The universal joint employed in the Furuno device simply will not work as a journal. Locking one of the yokes of the universal to immobilize pivotable rotation upon one pin was demonstrated by Mr. Straw as giving such device a "wounded duck" effect, a condition which becomes serious when the transducer is scanned and the upper portion of the universal joint is offset relative to the vertical. That condition always occurs during stabilization against pitching and rolling. 1/

WESMAR never specifically rebutted the Furuno argument that the mounting means in the Furuno devices are not journaled to support means as required by original claim 1. We agree with Furuno that the mounting means are not

---

1/ Respondents' brief to the Commission on violation at 17.

journalled to the support means and therefore claim 1 now embodied in claim 12 is not infringed.

The ALJ noted that the Furuno devices contain a clearance between the fins which are attached to the housing and the inner wall of the well. The ALJ concluded that such a clearance prevents the fins from "abutting" the inner wall of the well as is required by claim 12, and that the Furuno devices do not, therefore, infringe claim 12. Although we have already determined that the Furuno devices do not infringe claim 12 because of their substantially different gearing system, we do not agree with the ALJ's recommendation on abutment.

To evaluate the requirement of claim 12 that the "guide members . . . abut . . . the inner walls of the elevator well to prevent lateral movement of the housing . . .," we must consider the ordinary meaning of the word "abut" and its significance to the invention in question as disclosed in the specification. The word "abut" commonly indicates that two objects touch one another along a common border. Given the slight clearance observed by the ALJ (see WESMAR exhibit 42, p. 4-2), we believe that the fins would in fact touch the inner wall of the well. During the pitch and roll of a boat, the fins of the housing would come into contact with the wall and therefore, abut it. 1/

The specification also supports our interpretation of the word "abut." It reads in pertinent part:

The transducer and associated mechanism are mounted in a housing. The housing is in turn slidably mounted within an elevator well so that the transducer can be lowered into the water to a

---

1/ Although the clearance would allow slight movement within the well, the fin-guide piece construction substantially prevents "lateral movement of the housing" as required by claim 12.

scanning position and raised to a protective position within the elevator well when the scanning operation is completed. Fins are attached to the housing for bracing it against lateral movement within the elevator shaft and for permitting the free flow of water past it when it is raised and lowered. [Emphasis added.]

Column 2, lines 33-42.

The notion of "abutment" in claim 12 must be interpreted in light of the need for the housing to be capable of sliding within the well and yet braced against lateral movement within the well. The slight clearance revealed in WESMAR Exhibit 42 and in what is exhibit II of Furuno's actual model itself would accomplish this dual purpose. The housing can slide through the well without substantial lateral movement within the well. If the housing fins fit within the well without any clearance at all, the housing could not slide within the well as disclosed in the specification and the hull unit could not function.

An argument can be made that the fins alone or the guide piece 1/ and the fins combined are equivalent to claim 12. The fins on the Furuno device perform substantially the same function in substantially the same way as the fins on the WESMAR device. Even if the fins on the Furuno device do not actually abut the well in that they do not all simultaneously contact the adjacent sides of the well, it is clear that they are "guide members attached to the housing which prevent lateral movement of the housing within the well and permit the free flow of water past the housing as the housing is raised and lowered." We cannot believe that these ribs, especially those on the 106 and 107 models which have a metal housing, are used solely to reinforce the housing. These fins must have an additional purpose, i.e., a guiding function.

---

1/ For an illustration of the Furuno guide piece, see CX 42 and CX 46 and respondents' physical exhibit K.



Furthermore, although the guide piece above the housing is not directly attached to the housing, it is indirectly attached. It is clear that the guide piece constitutes a guide member which abuts the well of the housing and prevents lateral movement of the housing within the well while allowing the free flow of water. This guide piece, especially when it is viewed in conjunction with the fins, is equivalent to the "guide member" element recited in claim 12 because it accomplishes the same result in substantially the same way with substantially the same means. Graver Tank & Mfg. Co. v. Linde Air Products, 339 U.S. 594, 608-609 (1950).

Claim 12, however, was originally dependent on claim 1, and as amended, it now includes claim 1. Claim 1, like claim 14, is a "means plus function" claim. Section 112, 35 U.S.C. § 112, states that a means plus function claim must be construed to cover only those devices revealed by the specification and equivalents thereof. Part of claim 1 requires a "vertical scan drive means operably coupled to said transducer to rotate said transducer about a transverse axis for vertical scanning without affecting the independent pivotability of said transducer and support means." Such vertical scan drive means is described in column 5, lines 1 to 4 of the specification which states:

The pinion and ring gears form a transducer drive mechanism for varying the orientation of transducer 29 relative to frame 39 without disturbing the alignment of the transducer with the gravity vector.

The specification then goes on to describe the elaborate gear mechanism that makes up the transducer drive mechanism, i.e., the vertical scan drive means. This mechanism conveys motion from a platform above the pendulum down to tilt the transducer without affecting the pendulous suspension of the transducer.

As can be seen by examining the Furuno devices, the Furuno devices do not conform to the specification of the '638 patent. Nor are the Furuno devices equivalent to it because, although they perform substantially the same function, they do so in a substantially different way. Graver Tank & Mfg. Co. v. Linde Air Products, 339 U.S. 594, 608-609 (1950).

The Furuno devices use a universal joint to stabilize and tilt the transducer. The patented device is suspended along only one axis, but Furuno models 105, 106, and 107, which are made strictly in accordance with the Minohara patent, are freely suspended along many axes.

The WESMAR patented device is not a pioneer invention such as the sewing machine, the telegraph, or the telephone. Westinghouse v. Boyden Power Brake Co., 170 U.S. 537, 561, 562 (1898); Chisum Patents § 18.04[2] at 18-40 and 18-41. The basic concept of stabilizing a transducer by the use of pendulum is found in the Williams reference (U.S. Letters Patent 2,407,697).

Therefore, the range of equivalents is much more narrow than for a pioneer invention. When the first patent is not a pioneer patent and a patent is subsequently issued over it, there is a presumption that the two patented structures are not equivalents, Kokomo Fence Machine Co. v. Kitselman, 189 U.S. 8, 23 (1903), especially when the two patents were considered by the same patent examiner as were the Sublett and Minohara patents. SAB Industri AB v. Bendix Corp., 199 U.S.P.Q. 95, 101 (E.D. Va. 1978). See also McCutchen v. Singer Co., 386 F.2d 82, 88, 156 U.S.P.Q. 33, 38 (5th Cir. 1967). We conclude, therefore, that the Minohara patent is not made in accordance with the vertical scan drive means specification of claim 12 or equivalents thereof. Therefore, the Furuno devices do not infringe the Sublett patent,

because they do not have an equivalent of the transducer drive means in claim 12. 1/

C. Claim 14--in general

Claim 14 reads as follows:

A system for scanning and detecting schools of fish in a body of water comprising a marine vessel; a sonar system mounted in said vessel, said sonar system comprising

- (1) a frame,
- (2) an acoustic transducer capable of generating a sonar scanning beam and detecting sound waves reflected from objects such as fish, said transducer pendulously suspended from said frame so that said scanning beam is substantially stabilized against the roll and pitch of said vessel, the face of the oscillatory driving element of said transducer mounted for rotation about an axis perpendicular to the vertical axis of said frame,
- (3) transducer drive means for varying the angle of said transducer and scanning beam with respect to said vertical axis independently of the suspension of said transducer from said frame,
- (4) scan drive means for rotating the frame and transducer about said vertical axis,
- (5) a water tight housing enclosing said frame and transducer, and
- (6) a high dielectric constant liquid within said housing surrounding said transducer; and means for advancing said transducer to a scanning position below the keel of said vessel and for retracting it to a rest position when not in use.

Since claim 14 describes parts of the invention in terms of function, in accordance with 35 U.S.C. § 112 the patent must be construed to cover the

---

1/ For a more detailed discussion of the question of equivalents as it relates to claim 1 now embodied in claim 12, see discussion on equivalents as it relates to claim 14 at pp. 31-35.

corresponding structure, material, or acts described in the specification and equivalents thereof. The relevant paragraph of section 112 states:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.  
[Emphasis added.]

Ordinarily, the language of a claim is to be interpreted in light of the specification. However, a "means plus function" claim element is construed as incorporating the appropriate "structure, material or acts described in the specification and equivalents thereof" into the claim itself. Thus, such an element does not cover every means for the stated function, but rather the structure, material or acts (found in the specification) and their equivalents. 1/

We agree with the ALJ's finding as to the function of the device described in the '638 patent:

Mr. Sublett described part of the original invention in his testimony, when he drew Wesmar Physical Exhibit P, showing a model he constructed to demonstrate that there was "a way of transmitting motion through the hinge area of a pendulum and getting the motion down without affecting the ability of the pendulum to continue to be a pendulum, to be fairly independent of the drive means down through it". (TR 595.) Mr. Sublett indicated that Wesmar Physical Exhibit P demonstrated an ability to drive through an axis of pendulous support to control the angle of tilt. (TR 596-597.)

In effect, Mr. Sublett was able to control the tilt of a transducer which was suspended like a pendulum by conveying motion to the transducer through a gear at the pivot point of the pendulum. 2/

---

1/ WESMAR ignores this limitation imposed by section 112 when it contends that claim 14 covers every means for accomplishing the functions recited therein.

2/ RD at 26 and 27.

The most significant language in claim 14 is contained in element 3 which describes a "transducer drive means . . . ." The specification reveals a transducer drive means consisting essentially of a gear system directing a tilt motion down through the axis of pendulous support of the transducer. The Furuno devices, however, also have the same function, that is, to drive motion through the pendulum to tilt the transducer without affecting its pendulous suspension.

D. Claim 14--validity

The Commission finds that claim 14 of the '638 patent is valid because the structure described therein would not have been obvious to one of ordinary skill in the relevant art at the time of the claimed invention. 35 U.S.C. § 103.

In addition to the discussion noted above, the Supreme Court in John Deere, supra, noted certain "secondary considerations" from which one may infer obviousness or nonobviousness:

Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy. 383 U.S. at 17, 18

(1) Prior Art.

In its attempt to demonstrate that the WESMAR device would have been obvious to one of ordinary skill in the art at the time of the alleged invention, Furuno cites several prior art references. The first of these is the Williams device which is described in U.S. Letters Patent 2,407,697. The

Williams device is a sonar unit which is attached to the hull of a boat and employed to locate objects in the water by means of sound waves emanating from a transducer. The transducer is suspended from a compound pendulum and relies on the force of gravity to maintain its vertical position despite the pitch and roll of the boat. The weight of the transducer is distributed so as to fix its center of gravity sufficiently below the axis of suspension to form this compound pendulum. Encircling the suspended transducer is a casing. The casing, in turn, is filled with sea water which tightly surrounds the transducer. The sea water is useful in that it both conducts sound waves and protects the transducer. Williams also includes a means for rotating the scan position of the transducer. This adjustment is constructed so as not to interfere with the pendulous stabilization of the transducer. The Williams patent, however, does not disclose a method for tilting the transducer independent of the pendulous suspension without the use of a gyroscope.

The second principal prior art reference relied on by Furuno is the Kessler invention which is described in U.S. Letters Patent 2,832,944. Kessler is quite similar to Williams in that both employ sonar transducers which can be lowered from the hull of a ship to locate objects submerged in the water. Although the transducers in Kessler are rigidly mounted on a bracket (pendulum), these transducers are stabilized against the pitch and roll of a ship by a gyroscope. The gyroscope recognizes movement of the boat and instantaneously adjusts the pendular suspension to maintain the position of the transducers. Kessler also includes means for changing the tilt of the transducers. Furuno asserts that such means is a motor mounted on the pendulum. The ALJ, however, correctly points out that the motor which tilts

the transducer is independent of the pendulum, resting beneath the transducers, "in the oil." This motor rotates the transducers about a horizontal axis. Kessler contains no mechanism for scanning.

Although the patent examiner considered only the Williams reference during the original application process, he considered both during the reexamination proceeding. The fact that the examiner found claim 14 to be valid in light of all the relevant prior art references strengthens the statutory presumption of validity. 35 U.S.C. § 282. Universal Athletic Sales Co. v. American Gym Recreational & Athletic Equipment Corp., Inc., 546 F.2d 530, 540 (3d Cir. 1976), cert. denied, 430 U.S. 984 (1977). 1/

(2) Skill in the art

The parties stipulated that a person with ordinary skill in the art to which the invention of the Sublet (WESMAR) patent relates is a person of engineering competence. Such a person would be knowledgeable in the marine application of sonar devices and familiar with the problems associated therewith. He would understand the principles of gravity, the purpose and use

---

1/ The patent examiner stated:

The amendment includes a request that the examiner also consider the combination of Kessler and Williams with respect to claim 14. The exhibits submitted have been carefully considered and the proposed combination, even if it would result in an operational system, is considered to be clearly unobvious to a person of ordinary skill in the art.

There is no suggestion in the art of record that would lead one of ordinary skill in the art to render portions of essential components inoperative in the Kessler system and combine them with portions of Williams system and to add an "Ear" as shown in Exhibit D. Even after making these extensive modifications, claim 14 would not read on the resulting system as noted on page 22 of the amendment. CX 76 at 4.

of gyroscopes to stabilize sonar devices in marine applications and the practical necessity of (a) raising and lowering a transducer relative to the keel of the ship; (b) providing a scanning capability; (c) providing means for changing the angle of tilt to control the direction of search; (d) providing means for housing the transducer assembly when not in use; and (e) providing means for supporting the transducer in relation to the keel when not in use. (Stip. 26, TR 27, 28.)

(3) Obviousness

Respondent contends it would have been obvious for one of ordinary skill in the art to combine Williams and Kessler to create the device described in claim 14. (TR 1169-1182.) Respondent may be correct in this regard.

However, the crude combination of references urged upon the Commission by the respondent would not yield a hull unit constructed in accordance with the particular specification which must be incorporated into claim 14 through its "means plus function" language in element 3. Further, the necessary wiring in such a combination would interfere with the scanning motion. R.D. at 32.

An examination of the secondary considerations supports our conclusion of nonobviousness. Prior to the Sublett invention, the fishing industry experienced "a long felt need for an inexpensive sonar hull unit performing the functions described in claim 14." RD at 35. Yet, no one in the industry was able to design a unit like Sublett's. Additional proof of the nonobviousness of claim 14 is the commercial success it has enjoyed. (TR 380.)



E. Claim 14--infringement

The arguments on this issue have narrowed to the question of whether the Furuno models contain the following elements of claim 14:

- (1) a frame,
- (2) an acoustic transducer . . . the face of the oscillatory driving element of said transducer mounted for rotation about an axis perpendicular to the vertical axis of said frame,
- (3) transducer drive means for varying the angle of said transducer and scanning beam with respect to said vertical axis independently of the suspension of said transducer from said frame. . . . 1/ [Emphasis added.]

As to the first element of claim 14, we agree with the ALJ in her finding that the upper jaw of the universal joint of the Furuno models constitutes a frame. As the ALJ stated in her analysis of Model FH-105 which is applicable to all of the Furuno models:

Element 1 of claim 14 is found in the FH-105 model. The frame is the upper yoke or upper jaw of the universal joint, and that it [sic] is the equivalent of the frame in the '638 patent specification. The upper jaw of the universal joint support [sic] the pendulum, just as the frame in the '638 patent specification supports the pendulum. The upper jaw moves as the vessel rolls and pitches, but the vertical axis of the upper jaw is always the same as the vertical axis of the shaft, and they both move with the roll and pitch of the vessel. The upper jaw turns for certain scanning and tilting functions, but it does not change its vertical axis relative to the vertical axis of the shaft. The Furuno frame and the Sublett frame do not perform all of the same functions. The important thing they have in common is that they support the pendulum from a pivot. It is not necessary that each element of an infringing device be exactly like the corresponding element in the specification of the '638 patent, if it is the equivalent of it. 2/ [Emphasis added.]

---

1/ We note that claim 14 requires a marine vessel and therefore, as WESMAR conceded during the oral argument, the issue here is technically one of contributory infringement. CTR at 62 and 67.

2/ RD at 41.

The ALJ also found that element 2 of claim 14 did not always read on models FH-105 and FH-106-107 because the face of the oscillatory driving element of the transducer is not always mounted for rotation about an axis perpendicular to the vertical axis of the frame. She stated:

The face of the oscillatory driving element of the transducer which the parties agree is the face of the transducer (TR 951, 1207, 1208), is mounted for rotation about an axis. This axis, however is not always perpendicular to the vertical axis of the frame. It is sometimes perpendicular to the vertical axis of the frame (the upper jaw of the universal joint). The vertical axis of the upper jaw of the universal joint is perpendicular to the axis on which the transducer is mounted for tilting when the vessel is still in the water or at other times when the combined motions of the vessel put the vessel in that position. 1/

She then concluded that element 2 of claim 14 is met sometimes, but not always, by models FH-105 and FH-106/107.

The ALJ, however, found that element 2 reads on the revised models FH-106 and 107 because the addition of the ears on the revised models results in the face of the transducer always rotating about a transverse axis which is perpendicular to the axis of the upper jaw of the universal joint. This is because the addition of the ears or two metal cheeks on either side of the universal joint prevents the universal joint from swinging from side to side.

WESMAR did not take exception to this finding by the ALJ and appears to have conceded the point as to Models FH-105 and FH-106 and 107. CTR at 29, 44-48, 80-85.

We agree with the ALJ, but for a different reason. Element 2 of claim 14 states that "the face of the oscillatory driving element of said transducer [is] mounted for rotation about an axis perpendicular to the vertical axis of

---

1/ Id. at 42.

said frame." In its post-Commission-hearing brief, WESMAR argued that the Furuno models 105 and 106-107 when they are "mounted," i.e., positioned, are perpendicular to the frame and these models lose their perpendicular relationship to the frame only when they move, and that claim 14 describes the relationship of the elements while at rest. 1/ However, this claim must be read in light of the specification. The specification shows (specifically figures 2, 3 and 4) that the patented device can move along only one axis, it cannot move side to side. 2/

The transducer of the Furuno Models FH-105, 106 and 107, however, is capable of swinging in many directions and on many different axes. Element 2 of claim 14 read in light of the specification calls for the face of the WESMAR transducer always to be mounted about an axis perpendicular to the vertical axis of the frame because the transducer can swing along only one axis. Since the transducer on the Furuno models swings on many different axes, the face of the transducer is not always perpendicular to the vertical axis of the frame and is not covered by element 2 of claim 14. The transducer on Furuno revised models 106 and 107, however, always swings on one axis and the face of the transducer is always perpendicular to the vertical axis of the frame. Therefore, revised models 106 and 107 are covered by element 2 of claim 14.

The ALJ also found that element 3 of claim 14 does not read on any of the Furuno models. Element 3 of claim 14 states that the transducer drive means varies the angle of the transducer and the scanning beam with respect to the

---

1/ Complainant's post-Commission-hearing brief at 6.

2/ For discussion of this issue see Vice Chairman Calhoun's statement in CTR at 65.

vertical axis independently of the suspension of the transducer from the frame. The ALJ construed "suspension" to mean the device supporting the transducer and not a state of suspension. Therefore, she concluded the Furuno devices do not literally meet element 3 of claim 14.

Giving these words in claim 14 any meaning other than their normal meaning is unjustified, however, because claim 14 accurately describes the manner in which the Sublett invention actually worked. In the Sublett invention, the transducer drive means varied the angle of the transducer and scanning beam (tilted the transducer) with respect to the vertical axis of the frame without the drive means being part of the suspension of the transducer from the frame and without substantially affecting the pendulous swing of the transducer. In Sublett's invention, the tilt drive means does not support the pendulum, although the gear controlling the tilt is attached to a gear extended from the support pin. In the Furuno device the tilting of the transducer does not affect the pendulous swing of the transducer, but the transducer assembly is suspended from the upper jaw of the universal joint in the tilt control shaft, and the tilt control shaft is rotated to tilt the transducer. The Furuno shaft performs both the function of suspending the transducer from the frame and tilting it. The two functions are not independent. (TR 1268-1269.) 1/

We disagree. We believe the ALJ erred in comparing the Furuno device to the WESMAR device. Section 112 states that a means plus function claim will "be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." [Emphasis added.] The word "suspension" in the specification clearly refers to the state of being or operation of the device and not to the actual device that suspends the transducer. Thus, lines 4 and 5 of the abstract of the disclosure in the specification state: "The transducer is freely suspended from a frame," and column 4, lines 16 to 26, of the specification states:

The transducer carriage 33, and hence transducer 29, is pendulously suspended from the frame 39 by support members 44 and 45 at point 40

---

1/ RD at 43.

on frame 39 coaxial with the axes of pinion gears 37 and 38. Carriage 33 holding the transducer is connected to the opposite end of support members 44 and 45 at point 41. Mounting points 40 and 41 are journal mountings of low friction and enable the scanning beam direction to be varied by rotating the pinion gears without disturbing the pendulous suspension of the transducer.

Whenever the specification refers to a device which suspends, it refers to "support members." Thus, column 2, lines 20 and 21, states: "The transducer is pivotally suspended from a frame by support members." If the word "suspension" were intended to mean a specific part, it would have been so labelled in the drawings and described in the specification. It is not. Therefore, we conclude that all of the Furuno models meet element 3 of claim 14 because the transducer drive means varies the angle of the transducer and scanning beam with respect to the vertical axis independently of the suspension of the transducer from the frame. Consequently, we believe that Furuno models 105, 106 and 107 do not infringe claim 14 because they cannot be read on element 2, but the revised models 106 and 107 do fall within the literal language of claim 14.

Under section 112, however, claim 14 as a means plus function clause must be construed to cover the relevant specification and equivalents thereof. When the specification of the '638 patent and Furuno devices are examined, it is apparent that the Furuno devices are not equivalent to the specification because, although they perform substantially the same function to obtain the same result (i.e., to transmit motion to tilt the transducer without affecting the pendulous suspension of the transducer), the Furuno devices use substantially different means to perform the same function.

Further, since the Furuno revised models 106-107 use substantially different means, even though they fall within the literal words of claim 14,

these models do not infringe claim 14. Westinghouse v. Boyden Power Brake Co., 170 U.S. 537, 568-569 (1898) ("reverse doctrine of equivalents").

When the prior art is examined, it is clear that the WESMAR device is not a pioneer invention. The Williams patent disclosed that a pendulum could be used to stabilize a transducer. 1/ What Sublett invented was a specific gearing mechanism which would convey motion down from a motor on a platform above the pendulum to tilt the transducer without affecting the pendulous suspension of the transducer. The Supreme Court in Westinghouse v. Boyden Power Brake Co., 170 U.S. 537, 561, 562 (1898) defined "pioneer" as used to describe certain patents.

This word, although used somewhat loosely, is commonly understood to denote a patent covering a function never before performed, a wholly novel device, or one of such novelty and importance as to mark a distinct step in the progress of the art, as distinguished from a mere improvement or perfection of what had gone before. Most conspicuous examples of such patents are: The one to Howe of the sewing machine; to Morse of the electrical telegraph; and to Bell of the telephone. 2/

Patents that are not pioneer patents are not entitled to a broad range of equivalents. Since the '638 patent is not a pioneer patent, it is not entitled to a broad range of equivalents. Chisum Patents § 18.04[2].

Under section 112, we must construe claim 14 to cover the specification and equivalents thereof. Element 3 describes the means as the "transducer drive means" and the function of the means as to vary "the angle of said transducer and scanning beam with respect to said vertical axis independently

---

1/ Column 2, lines 46-51 of the specification in the Williams patent states: "It will be noted that the oscillator as suspended in the pivots forms a compound pendulum and its radiating face 2 will consequently be kept in a vertical plane by the action of gravity."

2/ See also Chisum Patents § 18.04[2].

of the suspension of said transducer from said frame." Column 5, lines 1-5 of the specification states:

The pinion and ring gears form a transducer drive mechanism for varying the orientation of transducer 29 relative to frame 39 without disturbing the alignment of the transducer with the gravity vector.

Column 5, lines 5-31, then goes into great detail as to the gearing mechanism that makes up the transducer drive mechanism:

The transducer drive mechanism is powered by an intermediate drive mechanism consisting of sector gears 47 and 48, transfer gear 49 and top and bottom rack gears 50 and 51 respectively. Gears 47, 48 and 49 are locked to shaft 52 which is journaled for rotation in frame 39. The top and bottom rack gears are slidably mounted within the stem member 53 for up and down movement along a vertical path. Bottom rack gear 51 is mounted to rotate relative to top rack gear 59 [sic] so as to permit top rack gear 50 to remain meshed with the stationary tilt drive gear 54 (FIG. 2), and the bottom rack gear to remain meshed with the transfer gear 49 as frame 39 is rotated about its vertical of Z axis. The bottom rack gear is rigidly connected to rack pin 55 (FIG. 4) and the top rack gear 50 is slidably fitted over pin 55 and secured thereto by a locking pin 56. This arrangement permits both rack gears to be driven up and down by rotation of tilt gear 54 while frame 39 and bottom rack gear 51 are simultaneously being rotated. Tilt gear 54 is secured to the shaft of scan drive motor 63.

Sector gears 47 and 48 are meshed with the pinion gears 37 and 38 respectively. Thus, up and down movements of the rack gears cause rotation of the pinion gears. The pinion gears in turn rotate the ring gears and the transducer.

Furuno's Minohara patent (U.S. Letters Patent 4,144,518) discloses a completely different way to convey motion down to tilt the transducer. The Furuno device uses a universal joint. Specifically, column 3, lines 14-21 of the specification describes the way in which the Furuno unit is tilted:

In order to vary the elevation angle of the transducer 19 with respect to a vertical axis, the tilt control motor 11 is driven so that the tilt control shaft 10, tilt drive shaft 13 and the bevel gear 14 are rotated, thereby the sector gear 17 is rotated about the common horizontal axis of the shafts 22. Thus, the transducer 19 is turned around the horizontal axis and is maintained at a desired elevation angle.

The two devices use completely different gear mechanisms to convey motion down to tilt the transducer. The specifications of the Sublett (WESMAR) patent and the Minohara (Furuno) patent indicate that the two devices use substantially different means to perform the same function. This is also borne out by the fact that the Sublett patent discloses a device that is suspended along only one axis whereas the Minohara patent discloses a device that is freely suspended along many axes.

Furthermore, the same patent examiner issued both the Minohara patent and the Sublett patent. "The presumption from the grant of the letters patent is that there was a substantial difference between the inventions." Kokomo Fence Machine Co. v. Kitselman, 189 U.S. 8, 23 (1903). <sup>1/</sup> This is particularly true where the same examiner considered both the Sublett and Minohara patents and issued the Minohara patent over the Sublett patent. SAB Industry Co. v. Bendix Corp. 199 U.S.P.Q. 95 at 101 (ED. Va. 1978).

In concluding that the Furuno devices are not equivalent to those under the '638 patent, we have, of necessity, determined that Furuno's revised Models 106-107 do not infringe the '638 patent because, although they fall within the literal language of claim 14, they perform the same function in a substantially different way. We agree with respondents that this case is on

---

<sup>1/</sup> See also McCutchen v. Singer Co., 386 F.2d 82, 88, 156 USPQ 33, 38 (5th Cir. 1967). At first glance, Professor Chisum appears to disagree with this principle when he quotes Herman v. Youngstown Car Mfg., Co., 191 F. 579, 584-585 (6th Cir. 1911). However, the last part of the quote states: "As the necessary result of the fundamental principles, it seems that the existence of the later patent can have no tendency to disprove infringement, unless for other reasons, we have first reached the conclusion that the earlier patent is, as to the later structure, specific, and not generic." [Emphasis added.] Chisum Patents § 16.02 [1] [a]. In fact, we have determined that the '638 patent is not generic.



all fours with Westinghouse, supra, at 568, 569, 571 wherein the Supreme Court stated:

But even if it be conceded that the Boyden device corresponds with the letter of the Westinghouse claims, that does not settle conclusively the question of infringement. We have repeatedly held that a charge of infringement is sometimes made out, though the letter of claims be avoided. . . . The converse is equally true. The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent. . . .

But, after all, even if the patent for a machine be a pioneer, the alleged infringer must have done something more than reach the same result. He must have reached it by substantially the same or similar means, or the rule that the function of a machine cannot be patented is of no practical value. To say that the patentee of a pioneer invention for a new mechanism is entitled to every mechanical device which produces the same result is to hold, in other language, that he is entitled to patent his function.  
[Emphasis added.]

In conclusion, Furuno models FH-105, 106, 107 and revised models 106 and 107 do not infringe the '638 patent because they either do not fall under the literal language of claim 14 or they use substantially different means to reach the same result.

#### VII. Domestic Industry

We have determined that WESMAR is not producing products under claim 12 or claim 14 of the '638 patent, and therefore there is no "industry . . . in the United States" within the meaning of section 337.

---

1/ We note that the Westinghouse case concerned a "functional" claim. See also Decca Ltd. v. United States, 420 F.2d 1010, 1014 (Ct. Claims 1970), cert. denied, 400 U.S. 865 (1970), where the court used the principle of Westinghouse to find no infringement of a means plus function claim which was construed to cover the structure disclosed in the specification and equivalents thereof; and Leeson Corp. v. United States, 530 F.2d 896, 906 (Ct. Claims 1976), cert. denied, 444 U.S. 991 (1979).

Under section 112 where a means plus function claim is used, it is construed to cover only the corresponding structure, material, or acts described in the specification and equivalents thereof. The specification of the '638 patent describes the exact gearing arrangement by which the transducer drive means in claim 14 uses a gear system operated by a motor located on a platform above the pendulum to send the motion down to control the tilt of the transducer.

In 1978, WESMAR found a motor which could be used "in the oil," i.e., in the dielectric liquid in the sound dome. Since 1978 WESMAR, has mounted the motor which controls the direction of the transducer on the pendulum itself, and the gearing mechanism which caused the motion to move down to tilt the transducer has been completely eliminated. The present WESMAR models use only a motor and two gears, i.e., the motor attached to the pendulum which is in turn attached through a slip clutch to gear 35 which in turn meshes with a gear attached to the transducer. (TR. 534.) 1/ This gear arrangement is not covered by the specification of the Sublett patent.

The motor in the oil concept is also not equivalent to the specification of the '638 patent because both the means and the operation are substantially different. The operation is no longer to transmit motion down from a motor on a platform to tilt the transducer without affecting the pendulous suspension of the transducer. The operation is now to convey motion from a motor in the oil on the pendulum to tilt the transducer without affecting the pendulous suspension. Furthermore, the means are substantially different because a

---

1/ See WESMAR exhibit 35 and physical exhibit S.

completely different gearing arrangement and a completely different motor are used in the two devices. Further, as the ALJ stated in her recommended determination:

The inventor did not consider the motor in the oil concept to be the same as the concept described in claim 14 nor did he believe that the '638 patent would teach someone of ordinary skill in the art how to practice claim 14 in any other way that that described in the specification. (TR 619). 1/

We disagree with WESMAR's assertion that the patent examiner determined in his final reexamination determination that claim 14 covers the motor in the oil. The patent examiner determined only that a combination of the Williams and Kessler patents did not render claim 14 obvious. Further, as Furuno has noted, it is beyond the examiner's authority to make any such determination. Thus, the examiner stated in his final determination:

No discussion is presented regarding the issue raised under 35 U.S. 112 in Exhibits B and C as to original claim 14, since this is outside the scope of the reexamination procedure. See 37 C.F.R. 1.552 and § 2258 M.P.E.P. 2/

We also believe that WESMAR is not producing products under claim 12 because it does not produce products in accordance with what was claim 1 but now exists as patented elements incorporated in claim 12. Claim 1 now incorporated in claim 12 states:

vertical scan drive means operably coupled to said transducer to rotate said transducer about a transverse axis for vertical scanning without affecting the independent pivotability of said transducer and support means.

This refers to the drive mechanism used to tilt the transducer in column 5, lines 1-31 of the specification. Since under section 112 claim 1 must be

---

1/ RD at 53.

2/ CX 76 at 4.

construed to cover only the specification and equivalents thereof and since WESMAR no longer produces products in accord with the specification and equivalents thereof, WESMAR is no longer producing products under claim 12 which incorporates claim 1.

Section 337 requires that the Commission find that the unfair acts "destroy or substantially injure an industry, efficiently and economically operated, in the United States. . . ." Since WESMAR is not producing any products under claims 12 or 14 of the '638 patent, there is no industry which can be substantially injured. However, in order to reach all the issues of violation, we will assess efficient and economic operation and substantial injury against WESMAR's facilities that currently produce and sell stabilized hull units as if they were equivalent to the specification of the '638 patent.

#### VIII. Efficient and economic operation

If an industry were found to exist, we agree with the ALJ's determination that such domestic industry is efficiently and economically operated.

Most of WESMAR's facility is automated. It uses a modern structural foam machine to mold the plane housing for hull units (TR 96). Since 1979, WESMAR has had a fully operational computer-aided design and computer-aided manufacturing ("CAD/CAM") system which has decreased labor costs and increased quality control for the products which it makes (TR. 93, 316). Although the CAD/CAM system is not used to make the stabilized hull units at issue here, it is used to make components of sonar units and the hull units are sold in sonar units partly manufactured by the CAD/CAM system.

WESMAR's research and development expenditures have increased substantially from 1975 to the present (TR 91-92, Staff Ex. 8 at 10.) During the last two years, the engineering staff has increased from 4 to 12, with a good share of their effort being directed toward scanning sonar development. (TR 89.)

IX. Injury

We also agree with the ALJ's recommended determination that, if a domestic industry existed, the importation of the Furuno devices has caused substantial injury to the domestic industry and that there is a tendency for the imported Furuno devices to substantially injure the domestic industry.

Specifically, the ALJ found evidence of lost sales to the Furuno stabilized units 1/ and that the WESMAR units were directly competitive with the Furuno units. Furuno's share of U.S. sales of the relevant stabilized hull units has risen steadily since 1978; WESMAR's share of sales has declined proportionately. Thus the ALJ inserted a table 2/ in her RD to illustrate that the increase in total dollar sales by Furuno has led to a proportional drop in total dollar sales for WESMAR. There is also evidence that Furuno's increasing penetration of the U.S. market has been a factor in causing WESMAR to hold prices for its stabilized sonar units essentially steady over the last three years, despite increasing costs. Rising costs and steady prices have led to reduced profits. Profits have fallen each year since 1978. RD at 60.

Furuno's increased penetration of the U.S. market has also held in check not only WESMAR's prices and profits, but also its level of sales which had

---

1/ See RD at 58, Tr 385 - 389, 393-396.

2/ See table at p. 59 of the RD.

grown steadily in the years prior to Furuno's entry into the U.S. market. The ALJ in her recommended determination also noted that, although "an economic depression in the fishing industry has affected both WESMAR and Furuno" and both had reduced sales in 1980, Furuno continued to increase its share of the U.S. market. 1/ Notwithstanding a number of other factors which have partly caused WESMAR's declining sales, WESMAR's share of the market would not be declining if Furuno had not entered the market with a competing product.

WESMAR was the only one selling an inexpensive gravity stabilized sonar unit prior to Furuno's entry into the market, and WESMAR had 100 percent of that market. The ALJ found that both Furuno and WESMAR also have the capacity to supply the entire U.S. market, and the record fails to establish that the trend of increasing U.S. market penetration by Furuno will not continue. 2/

Furuno took no exception to the ALJ's determination regarding efficient and economic operation, substantial injury, or tendency thereto, and did not submit a brief on the economic issues to the Commission.

---

1/ RD at 60.

2/ Id. at 61.

\_\_\_\_\_



\_\_\_\_\_