



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,343	09/25/2014	6,955.680 B2		1518

23446                      7590                      12/01/2016  
MCANDREWS HELD & MALLOY, LTD  
500 WEST MADISON STREET  
SUITE 3400  
CHICAGO, IL 60661

EXAMINER
----------

ENGL, PATRICIA LYNN

ART UNIT	PAPER NUMBER
----------	--------------

3993

MAIL DATE	DELIVERY MODE
-----------	---------------

12/01/2016

PAPER

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* Satou et al.

---

Appeal 2016-006041  
Reexamination Control No. 90/013,343  
Patent US 6,955,680 B2<sup>1</sup>  
Technology Center 3900

---

Before STEVEN D.A. McCARTHY, MICHAEL L. HOELTER, and  
BRETT C. MARTIN, *Administrative Patent Judges*.

MARTIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

The Patent Owner appeals under 35 U.S.C. § 134 from the Examiner's rejection of claims 1–4 and 7–11. Claims 5, 6, and 12 are not subject to reexamination. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

---

<sup>1</sup> Issued to Satou et al. on October 18, 2005 (hereinafter the '680 patent). The Appellant identifies the real party in interest as the patent owner, Stryker Corporation of Kalamazoo, Michigan.

## THE INVENTION

Appellants' claims are directed generally to "a complex vibration ultrasonic hand piece." Spec. col. 1, ll. 9-10. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A complex vibration ultrasonic hand piece, comprising an ultrasonic oscillation mechanism composed of a longitudinal vibration element, backing plates attached to both ends thereof and a front plate for generating an ultrasonic vibration of a predetermined frequency, a horn coupled with said ultrasonic oscillation mechanism for amplifying the vibration transmitted from said ultrasonic oscillation mechanism, a vibration conversion mechanism for converting the vibration transmitted from said ultrasonic oscillation mechanism into a composite vibration composed of a longitudinal vibration in the horn central axial direction and a torsional vibration having the horn central axis as a fulcrum, and a female portion provided with a working plane and disposed at said horn tip, wherein:

said vibration conversion mechanism, between said horn tip and an electrostrictive element of said ultrasonic oscillation mechanism, is composed of one or more groove portions formed on the external surface of any of the horn, the ultrasonic oscillation mechanism or a member interposed between the horn and the ultrasonic oscillation mechanism.

## REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Kleesattel	US 4,281,987	Aug. 4, 1981
Ams	US 5,116,343	May 26, 1992
Halaka	US 6,071,480	June 6, 2000
Boukhny	US 2001/0011176 A1	Aug. 2, 2001
Satou	US 6,497,715 B2	Dec. 24, 2002
Negoro ("JP '153")	JP S62-292153 A	Dec. 18, 1987

Appeal 2016-006041  
Reexamination Control No. 90/013,343  
Patent US 6,955,680

Ikeda (“JP ’584”)	JP H02-229584 A JP	Sept. 12, 1990
Tsujino (“JP ’673”)	JP H08-294673 A	Apr. 27, 1995
Sato (“JP ’248”)	JP P2000-248A	Jan. 7, 2000

Tsujino, Jiromaru, et al., “Vibration Characteristics of Longitudinal-Torsional Complex Vibration Converters with Diagonally Slitted Parts,” Technical Report of IEICE, pp. 27-34, 2001 (“Tsujino-2001”).

Tsujino, Jiromaru, et al., “Ultrasonic Welding of Metal Plates Using 27 kHz One-Dimensional Complex Vibration Welding Systems,” Technical Report of IEICE, pp. 15-22, 1994 (“Tsujino-1994”).

Koike, Yoshikazu, et al., “A Vibration Analysis of a Langevin Transducer with Oblique Slots for Exciting Longitudinal-Torsional Coupling Vibrator,” Technical Report of IEICE, pp. 15-20, 1997.

#### REJECTIONS

The Examiner made the following rejections:

Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by JP ’673. Ans. 2.

Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over JP ’673, JP ’584, and JP ’248. *Id.*

Claims 2 and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over JP ’673, JP ’584, JP ’248, and Kleesattel. *Id.*

Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over JP ’673, JP ’584, JP ’248, Kleesattel, and Boukhny. *Id.*

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over JP ’673, JP ’584, JP ’248, Kleesattel, and JP ’153. *Id.*

Claim 8 is rejected 35 U.S.C. § 103(a) as being unpatentable over JP ’673, JP ’584, JP ’248, Kleesattel, and Koike. *Id.*

Appeal 2016-006041  
Reexamination Control No. 90/013,343  
Patent US 6,955,680

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '673, JP '584, JP '248, Kleesattel, Tsujino-2001, JP '856, Tsujino-1994, and Halaka. Ans. 3.

Claims 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '673, JP '584, JP '248, Kleesattel, and Tsujino-1994. *Id.*

Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ams, JP '248, and Satou. *Id.*

Claims 2 and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ams, JP '248, Satou, Kleesattel, and JP '584. *Id.*

Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ams, JP '248, Satou, Kleesattel, JP '584, and Boukhny. *Id.*

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ams, JP '248, Satou, Kleesattel, JP '584, and JP '153. *Id.*

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ams, JP '248, Satou, Kleesattel, JP '584, Boukhny, and Koike. *Id.*

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ams, JP '248, Satou, Kleesattel, JP '584, Tsujino-2001, JP '856, Tsujino-1994, and Halaka. Ans. 4.

Claims 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ams, JP '248, Satou, Kleesattel, JP '584, and Tsujino-1994. *Id.*

## ANALYSIS

### *JP '673/The Tsujino Patent*<sup>2</sup>

Claim 1 is the sole independent claim on appeal. Claim 2 depends from claim 1; and the remaining appealed claims depend from claim 2. The preamble of claim 1 recites a “complex vibration ultrasonic hand piece, comprising . . . .” The words “hand piece” appear in the preamble of each dependent claim on appeal where the preambles refer back to, and thus incorporate by reference, the limitations of claim 1. The words do not appear in the body of any appealed claim.

The Examiner rejects claim 1 under § 102(b) as anticipated by the Tsujino patent or, in alternative, under § 103(a) as being unpatentable over the Tsujino patent in view of JP '584 and JP '248. The Patent Owner's initial argument is that all of the rejections over the Tsujino patent fail because the Tsujino patent fails to disclose a “hand piece.” *See, e.g.*, App. Br. 5–10. The Tsujino patent discloses a vibrational transducer very similar in overall structure to the claimed transducer, but the intended use disclosed therein is for a welding device. The Patent Owner's best argument regarding this element lies in the Reply Brief, wherein the Patent Owner analogizes the patent at issue to that patent at issue in *Poly-America v. GSE Lining Technology*, 383 F.3d 1303 (Fed. Cir. 2004). In that particular case, our reviewing court observed that “[t]he specification [was] replete with references to the invention as a ‘blown-film’ liner, including the title of the patent itself and the ‘Summary of the Invention,’” as well as that “the entire

---

<sup>2</sup> While there are two other non-patent references naming “Tsujino” as an author, JP '673 is the only Tsujino patent and will be referred to as such herein.

pre-amble ‘blown-film textured liner’ was restated in each of the patent’s seven claims.” *Id.* at 1310. Based on these observations, the court held that its “analysis show[ed] that the inventor considered that the ‘blown-film’ preamble language represented an important characteristic of the claimed invention.” *Id.* Unlike in *Poly-America*, we conclude that the term “hand piece” merely imparts an intended use of the invention and therefore, should not be given patentable weight.

“Whether to treat a preamble as a limitation is a determination resolved only on review of the entire[] patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.” *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989). Additionally, “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention,” such a preamble is not limiting. *Rowe v. Dror*, 112 F.3d. 473, 478 (Fed. Cir. 1997).

Claims under reexamination are given their broadest reasonable interpretation consistent with the intrinsic evidence and any extrinsic evidence that might be pertinent. *In re American Acad. of Sci. Tech Center*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). This guidance applies to the preamble of the claim as well as to the body. A review of the claims shows that the entirety of the body of the claim refers only to components used to generate, amplify, and shape ultrasonic waves. Other than the preamble, there is nothing anywhere in the claims that arguably limits the claimed vibration transducer for use only in a surgical “hand piece.”

Additionally, the prior art of record specifically states that “[u]ltrasonic transducers of this type are widely used as an ultrasonic scalpel, an ultrasonic cutter, an ultrasonic welder, and the like.” JP ’584 translation p. 1. Given that the structure actually found in the claim body is known in the art to be used in a variety of devices from welders to scalpels and that the body of claim 1 recites a structurally complete vibrational transducer, we conclude that the term “hand piece” in the claim preamble is merely an intended use for the vibrational transducer claimed therein.

The Patent Owner points out that the words “hand piece” are used at least twenty times in the Specification, as well as in the preamble of each claim on appeal. The Patent Owner also quotes several such uses in its Appeal Brief. App. Br. 6–7. The Patent Owner has not shown that these uses prove that being a “hand piece” represents an important characteristic of the claimed subject matter, as was the case in *Poly-America*.<sup>3</sup> In determining whether a feature appearing in the preamble of a claim limits the claim, what matters is not a raw count of the number of times that the feature is mentioned. Instead, what matters is an analysis of how the feature relates to the problem to be solved by the claimed subject matter and the solution that the Patent Owner seeks to claim. *Cf. Catalina Marketing Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801 (Fed. Cir. 2002) (“Further, when reciting additional structure or steps underscored as important by the

---

<sup>3</sup> The prosecution history of Application 10/118,572, which issued as the patent under reexamination, is not illuminating. The Examiner allowed the claims as filed in a preliminary amendment designed to conform the foreign-originating claims to U.S. practice. We note that the Examiner’s reasons for allowance did not rely on the claimed subject matter being a “hand piece.”

specification, the preamble may operate as a claim limitation.”). The Patent Owner provides little if any explanation as to why the usages of the words “hand piece” cited in its brief might underscore the importance of this feature in view of the problems addressed and the solutions sought to be claimed. Therefore, the Examiner reasonably construed the words “hand piece” as a non-limiting expression of a purpose or intended use of the claimed structure. In view of this holding, we need not address the Patent Owner’s argument on pages 8–10 of the Appeal Brief that the Tsujino patent fails to describe a hand piece.

The Patent Owner alternatively argues that the structure described in the Tsujino patent lacks “an ultrasonic oscillation mechanism [and] a horn coupled with said ultrasonic oscillation mechanism.” *See App. Br.* 10–11. The Examiner finds that the structure described by the Tsujino patent includes an ultrasonic oscillation mechanism 33 and an ultrasonic horn 34. *Ans.* 4–5. The Patent Owner disputes the Examiner’s finding that the ultrasonic horn 34 described by the Tsujino patent is a horn because the ultrasonic horn 34 described in the Tsujino patent lacks a “cone” portion. *App. Br.* 12–13.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. *In re Van Geuns*, 988 F.2d 1181 (Fed. Cir. 1993). As the Examiner notes, however, “a text search of the ’680 patent resulted in zero occurrences of the term ‘cone’.” *Ans.* 5. The Specification does not describe or even use the term “cone,” but only shows a taper or “restriction portion” 13a in the horn of the preferred embodiment shown in the Figures. The Patent Owner provides no

evidence that one of ordinary skill in the art would have understood the term “horn” as being limited to a structure having a “cone” portion.

The Patent Owner’s argument is not persuasive for three reasons. First, the translation of the Tsujino patent in the record describes the component 34 as an “ultrasonic horn.” (JP ’673, paras. 12–13). Second, neither claim 1 nor any other claim on appeal recites a “cone” portion. The Specification does not mention a “cone” portion. The Patent Owner merely extrapolates the limitation of a “cone” portion from the appearance of certain embodiments depicted in the drawing figures. This extrapolation seeks to import limitations into the claims rather than to give effect to limitations actually recited. Third, the Examiner correctly finds that neither the Specification nor any extrinsic evidence in the record supports a finding that a “horn” inherently must have a “cone” portion. Ans. 4–5.<sup>4</sup> The Examiner has proven that the Tsujino patent describes a structure satisfying each

---

<sup>4</sup> Although we do not rely on the fact in reaching our holding, we note that the ’680 patent describes the purpose of the “cone” portion or restriction portion 13a of the horn depicted in Figure 19 as “converg[ing] the longitudinal vibration transmitted in the axial direction and allow[ing] increasing the apparent speed.” (Col. 11, ll. 1–5). We note that Figure 1 of the Tsujino patent depicts the ultrasonic horn 34 as columnar (that is, solid) near its axial end portion facing the ultrasonic cone 32 and cylindrical (that is, hollow) near its end portion supporting the welding tip 4. Due to the reduction in transverse cross-sectional area, the configuration depicted in Figure 1 of the Tsujino patent necessarily will converge vibrations transmitted in the axial direction and tend to increase the speed of such vibrations. As such, the “ultrasonic horn” 34 described by the Tsujino patent is capable of functioning as a horn in the same manner as that depicted in Figure 19 of the ’680 patent.

limitation of claim 1. The Examiner correctly rejects claim 1 under § 102(b) as anticipated by the Tsujino patent.

*Obviousness over the Tsujino patent*

The Patent Owner argues that all of the obviousness rejections involving the Tsujino patent are flawed because “the Examiner erred by failing to identify any concrete reasons a skilled artisan would look to the teachings of the Welding References.” App. Br. 16–17. Contrary to this assertion, the Examiner specifically noted, as discussed above, that JP ’584 discloses that it was known in the art that vibrational transducers can be used in a variety of devices including both ultrasonic scalpels of the type described in the ’680 patent as well as ultrasonic welders of the type described in the applied references. *See* Ans. 5. *Cf. In re Bigio*, 391 F.3d 1320, 1327 (Fed. Cir. 2004).<sup>5</sup> Accordingly, we agree with the Examiner that ultrasonic welders and scalpels are analogous art.

Furthermore, with regard to claim 1, the Examiner, by way of the anticipation rejection over the Tsujino patent explains, and we agree, how all of the limitations of claim 1 are met. *See* Final Act. 3. Given our finding above that the preamble is not limiting, and that the “ultrasonic horn” 34 described in the Tsujino patent is a “horn” as recited in claim 1, the Tsujino patent anticipates claim 1. Even if the recitation of a “hand piece” in the preamble of claim 1 were given patentable weight, however, it is clear to us

---

<sup>5</sup> *Bigio* holds that structural and functional similarity is evidence that the subject matter of a claim and a prior art device are within the same field of endeavor. This holding is of greater significance here, where there is an express recognition in the art that similarly-constituted devices will serve both applications)

that JP '584 teaches that modifying a vibrational transducer to operate in a scalpel (i.e., a hand piece) rather than a welder was known in the art at the time of the invention, as stated by the Examiner. As such, we affirm the Examiner's obviousness rejection over the Tsujino patent, JP '584, and JP '248.

The Patent Owner also argues that "the Examiner failed to provide a clear articulation of the reasons why it would have been obvious to a skilled artisan to combine the teachings of the various references to arrive at the claimed complex vibration ultrasonic hand piece." App. Br. 15. In making this assertion, the Patent Owner does not cite to any specific portion of any rejection that is deficient, but merely refers generally to the Non-Final and Final Actions. *Id.* Contrary to this assertion, the Examiner points out that "Appellant states that the Examiner provided the rationale that it would have been obvious since it was a well-known configuration" as well as explaining that "[t]his rationale is a simple substitution of one known, equivalent element for another to obtain predictable results (See MPEP 2143)." Ans. 6.

Regarding the Patent Owner's allegation of hindsight reasoning, we note that the Patent Owner merely recites case law and provides a conclusory statement that "the Examiner has used the claimed invention as a guide through the maze of prior art references so as to achieve the result of the claims in suit." App. Br. 16. The Patent Owner provides no explanation as to how the Examiner applied only hindsight reasoning and thus we find this argument unpersuasive.

*Kleesattel*

The Patent Owner further argues that the Examiner erred in finding that claims 2 and 7 are obvious over the combination discussed above with the addition of Kleesattel. App. Br. 21. Specifically, the Patent Owner argues that the Examiner erred because claim 2 requires “*a horn* of  $\frac{1}{2}$  wavelength or more,” while Kleesattel teaches only “that the body may ‘vary [in] size as an integral multiple of  $\frac{1}{2}$  wavelength.’” *Id.* The Examiner’s only response is to state that “it was known in the art at the time of the invention to vary the size as an integral multiple of  $\frac{1}{2}$  wavelength to be resonant for maximum vibration and to have at least one node of ultrasonic vibration” and thus, it would have been obvious “to make the horn of  $\frac{1}{2}$  wavelength or more.” Ans. 5-6. This response, however, does not address the Patent Owner’s argument that both JP ’584 and Kleesattel disclose that the body, of which the horn is only a part, may be  $\frac{1}{2}$  wavelength or more. Kleesattel only states, “[t]he whole vibrator is also an integral multiple of one-half the wavelength of the ultrasonic vibrations in the vibrator.” Kleesattel col. 1, ll. 26-29.

Also, even though the claim states that the horn may be  $\frac{1}{2}$  wavelength *or more*, we see no teaching that this must necessarily be accomplished in the cited art by changing the length of the *horn* to be  $\frac{1}{2}$  wavelength or more rather than other parts of the body. As the Patent Owner correctly points out, both Kleesattel and JP ’584 teach that this size is met by the entire body. As such, even if the size were expanded to more than a half wavelength, this could be done by maintaining the size of the horn as disclosed and increasing other parts of the body. These references simply are silent as to

Appeal 2016-006041  
Reexamination Control No. 90/013,343  
Patent US 6,955,680

any reason to tune the horn size specifically to  $\frac{1}{2}$  wavelength rather than to tune the body as a whole. Accordingly, we do not agree that the Examiner has sufficiently shown a teaching that the horn alone be  $\frac{1}{2}$  wavelength or more. As such, we do not sustain the Examiner's rejection of claim 2 as obvious over the Tsujino patent, JP '584, JP '248, and Kleesattel.

The Examiner also rejects claim 2 with Ams as the base reference while likewise relying on the JP '584/Kleesattel combination to teach the claimed horn of  $\frac{1}{2}$  wavelength or more. Neither Ams nor any of the other cited references in this rejection cures this deficiency and as such we do not sustain the Examiner's rejection of claim 2 over Ams, JP '248, Satou, Kleesattel, and JP '584. Because all of remaining claims 3, 4, and 7–11 depend either directly or indirectly from claim 2, we also do not sustain the Examiner's rejections of claims 3, 4, and 7–11.

#### DECISION

For the above reasons, we affirm the Examiner's decision to reject claim 1 based on each of the first two grounds of rejection listed on page 2 of the Answer; and reverse the Examiner's decisions to reject claims 2–4 and 7–11.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2009).

AFFIRMED-IN-PART

Appeal 2016-006041  
Reexamination Control No. 90/013,343  
Patent US 6,955,680

THIRD PARTY REQUESTOR  
JOHN D. VOIGHT  
5100 MACARTHUR BOULEVARD, NW  
SECOND FLOOR  
WASHINGTON, DC 20016

PATENT OWNER  
INTEL. PROP./R&D  
STRYKER CORPORATION  
4100 EAST MILHAM AVE.  
KALAMAZOO, MI 49001-6197