Trial decision

Invalidation No. 2012-800212

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The decision on the case of the patent invalidation trial between the above parties on Japanese Patent No. 4453017, entitled "Method for manufacturing a quartz crystal unit," came with a court decision (2013 (Gyo-Ke) 10347, October 9, 2014) of revocation of the trial decision dated November 18, 2013 on the invention according to Claim 1 at the Intellectual Property High Court, the case was proceeded further on the invention according to the claims corresponding to the revocation, and another trial decision was handed down as follows.

Conclusion

The correction shall be approved as requested.

The patent for the invention according to Claim 1 of Japanese Patent No. 4453017 shall be invalidated.

The costs in connection with the trial shall be borne by the demandee.

Reason

No. 1 History of the procedures

The Japanese Patent Application No. 2005-49697, which is an application regarding Japanese Patent No. 4453017, is a divisional application filed on January 27, 2005 from Japanese Patent Application No. 2003-38962 (Internal priority date: January 11, 2002, Application to be a basis of internal priority: Japanese Patent Application No. 2002-40795) filed on January 10, 2003, and the establishment of patent right was

registered on February 12, 2010 for the inventions regarding Claims 1 and 2 (hereinafter referred to as "Patent invention 1" and "Patent invention 2").

Against this, a trial for invalidation of the case was demanded by the demandant on December 26, 2012. The demandee submitted a written correction request on March 25, 2013, and demanded the correction.

The history of procedures in the trial for invalidation of the case is outlined below.

December 26, 2012	Demand for invalidation trial of the case (Evidences A No. 1 to 10)
March 25, 2013	Request for correction
March 25, 2013	Written reply
June 19, 2013	Written refutation (Evidences A No. 11 to 15)
July 11, 2013	Notification of trial examination
August 29, 2013	Oral proceedings statement brief (demandant) (Evidence A No. 16)
August 29, 2013	Oral proceedings statement brief (demandee)
September 12, 2013	First oral proceeding
September 12, 2013	Written statement (demandant) (Evidence A No. 17)
September 12, 2013	Written statement (demandee) (Evidence B No. 1)
September 20, 2013	Written statement (demandant) (Evidences A No. 18-19)
September 20, 2013	Written statement (demandee)
November 18, 2013	The first trial decision
October 9, 2014	Revocation of the first trial decision at the Intellectual Property High Court
December 12, 2014	Advance notice of the trial decision

No additional correction request was made within a designated period from the day when the advance notice of the trial decision was delivered.

No. 2 Request for correction dated on March 25, 2013 (hereinafter referred to as "Correction request")

1 The contents of the Correction request

(1) Correction A

The Correction A is to correct, regarding Claim 1 of the Patent of the case, the description,

"Grooves are formed on each of obverse and reverse faces of the first tuning fork tine and the second tuning fork tine" to the description,

"Grooves are formed on each of obverse and reverse faces of the first tuning fork tine and the second tuning fork tine at both sides of a central line so that a part width including the portion the central line of the tines is less than 0.05 mm" (the underlines indicate corrections, the same applies hereafter).

(2) Correction B

The Correction B is to delete Claim 2 of the Patent of the case.

2 Judgment by the body about the Correction request

(1) Regarding the Correction A

The correction in the Correction A adds limitation, "at both sides of a central line so that a part width including the central line is less than 0.05 mm" to the description, "grooves are formed on each of obverse and reverse faces of the first tuning fork tine and the second tuning fork tine," which are the matters specifying the invention before correction, and is obviously intended for restriction of the scope of claims.

Claim 2 in the scope of claims before correction includes the following matter:
"The method for manufacturing a quartz crystal unit, in Claim 1, configured so that the grooves formed on each of obverse and reverse faces of the first tuning fork tine and the second tuning fork tine of the quartz crystal tuning fork resonator are formed at both sides of central lines of the obverse and reverse faces of the first and second tuning fork tines, a part width including the central line being formed less than 0.05 mm."
Paragraph [0048] of the patent specification includes the following matter:
"In this example, the grooves are formed on the tuning fork tines across (including) the central lines, however, this invention is not limited by this configuration, and the grooves may be formed at respective side of the central lines without including the lines. In this case, a part width W7 including the central line of the tuning fork tine is formed to be less than 0.05 mm."

Thus, the above correction is within the matters described in the description, scope of claims, or drawings originally attached in the application, without adding new technical significance, and does not expand or alter the scope of claims substantially.

(2) Regarding the correction B

The Correction B is to delete Claim 2, and is obviously intended for restriction of the scope of claims. The correction is within the matters described in the description, scope of claims, or drawings originally attached in the application, and does not substantially expand or alter the scope of claims.

(3) Summary

Thus, the above corrections are recognized to be intended for restriction of the scope of claims prescribed in (i) of the proviso Article 134-2(1) of the Patent Act, within the matters described in the description, and do not substantially expand or alter the scope of claims. Since the corrections fall under the proviso to Article 134-2 of the Patent Act and Article 126(5) and (6) of the Patent Act which is applied mutatis mutandis to Article 134-2(9), the corrections shall be approved as legal corrections.

No. 3 Corrected invention of the case

As described above, the Correction request is recognized. The invention relating to Claim 1 is as follows, specified by the matters described in Claim 1 in the scope of claims of the corrected specification (hereinafter referred to as "Corrected invention").

"The method for manufacturing a quartz crystal unit having a quartz crystal resonator, a case, and a lid,
the quartz crystal resonator including a tuning fork base and at least a first tuning fork tine and a second tuning fork tine connected to the tuning fork base, and comprising electrodes terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from the first electrode terminal,
includes: a step of determining the tuning fork shape and dimentions of grooves , and electrodes so that figure of merit M_1 of fundamental mode vibration of the resonator becomes larger than figure of merit M_2 of second harmonic mode vibration of the resonator, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration;
a step of forming a tuning fork shape having the section of the tuning fork base and the first and second tuning fork tines;
a step of forming grooves on each of obverse and reverse faces of the first and second tuning fork tines at both sides of a central line so that a part width including the portion of the central line is less than 0.05 mm;
a step of arranging an electrode on a side face of the first tuning fork tine and an electrode of the groove of the second tuning fork tine so that the electrodes have the same polarity, in order to form the first electrode terminal in the two electrodes terminal;
a step of arranging an electrode of the groove of the first tuning fork tine and an electrode on a side face of the second tuning fork tine so that the electrodes have the same polarity, in order to form the second electrode terminal in the two electrodes terminal;
a step of fixing with a conductive adhesive to a mounting portion of the case for housing the quartz crystal tuning fork type resonator including the two electrodes terminal;
and a step of coupling the lid to the case in order to configure the quartz crystal unit having the quartz crystal tuning fork type resonator, the case, and the lid."

No. 4 Allegations of the parties
1 The demandant's allegation
The demandant alleges, according to the written demand for trial, written refutation, oral proceedings statement brief, and written statement, the following (1), and submitted Evidences A No. 1-19.

(1) The corrected invention could be easily invented by a person skilled in the art on the basis of a publicly worked manufacturing method of a quartz crystal unit mounted on "mova SH251i" (manufactured by Sharp Corporation) which is a cell phone sold prior to the application date of the patent, and the demandee should not be granted a patent for the invention under the provisions of Article 29 (2) of the Patent Act. Therefore, the corrected invention should be invalidated under the provisions of Article 123-1(ii) of the Patent Act.

(a) The patent application relates to a divisional application of Japanese Patent Application No. 2003-38962 (hereinafter referred to as "Original application"). The

Original application is based on Japanese Patent Application No. 2002-40795 (hereinafter referred to as "Underlying application") as a basis for internal priority. The underlying application does not include the descriptions relating to the corrected invention, "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration becomes larger than figure of merit M_2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration," "a step of forming grooves on each of obverse and reverse faces of the first and second tuning fork tines at both sides of a central line so that a part width including the central line is less than 0.05 mm," and "a step of fixing with a conductive adhesives to a mounting portion of the case for housing the quartz crystal tuning fork type resonator including the two electrodes terminal." Thus, the corrected invention cannot take advantage of the internal priority relating to the Original application, and the reference date for judgment on novelty and inventive step is January 10, 2003, which is the filing date of the Original application.

(b) The "mova SH251i" (manufactured by Sharp Corporation) including a quartz crystal unit is a cell phone sold on June 1, 2002 (Evidence A No. 2), the cell phone (manufacturing date: June 2002, serial number: NSHCC041469) used for proving the configuration of the quartz crystal unit was purchased on July 28, 2002 (Evidences A No. 3 and 4). It is obvious that the quartz crystal unit had been available to an unspecified large number of people at the filing date of the application, or the quartz crystal unit had been publicly worked. The configuration provided in the quartz crystal unit prior to the filing date can be proved by analyzing the quartz crystal unit mounted on the cell phone.

Meanwhile, the corrected invention is an invention of "method for manufacturing "; however, most of the configuration is formal addition of "steps" to the configuration of the quartz crystal unit. Thus, the existence of the "steps" in the method for manufacturing can be grasped only by grasping the configuration of the quartz crystal unit.

The corrected invention is considered to be a "method for manufacturing a quartz crystal unit" formally; however, substantial configuration thereof is only a configuration relating to the characteristics of a "quartz crystal resonator" equipped in the "quartz crystal unit." Therefore, it can be said that if the "quartz crystal unit" had been publicly worked, the method for manufacturing method of a quartz crystal unit could have been publicly worked.

(c) SH251i includes an resonator unit publicly worked (Evidence A No. 5).

Since the report of Evidence A No. 6 proves that an resonator stored in the resonator unit is quartz crystal, the resonator unit is a "quartz crystal resonator unit."

The resonator unit includes a lid, a case, and a quartz crystal tuning forkresonator.

(d) The quartz crystal resonator installed on the resonator unit is, as described in Evidence A No. 5, a quartz crystal tuning fork resonator having a first tuning fork tine, a second tuning fork tine, and a tuning fork base.

Grooves are formed on obverse and reverse faces of the first and second tuning fork tines.

(e) The back face of the base of the tuning fork resonator is fixed to the case with adhesive. The adhesive is silicon-based adhesives containing silver (Evidence A No. 7), and it is conductive adhesives.

(f) According to Evidence A No. 5, it is obvious that the quartz crystal resonator installed on the resonator unit includes the first and second tuning fork tine and has two polarities.

According to the description in the corrected specification, as shown in FIG.5, it is understood that the configuration in the corrected invention, "comprising a two electrodes terminal having a first electrode terminal and a second electrode terminal," means that the terminals E and E' extending from the outside of the first and second tuning fork tines have different polarities ([0018]).

In light of Evidence A No. 5, the quartz crystal resonator installed on the resonator unit has different polarities at the outside of the first and second tuning fork tines.

Therefore, the quartz crystal resonator of the resonator unit also satisfies the requirement, "comprising a two electrodes terminal having a first electrode terminal and a second electrode terminal."

(g) As is obvious from Evidence A No. 5, in the quartz crystal resonator installed on the resonator unit, an electrode on a side face of the first tuning fork tine and an electrode of the groove of the second tuning fork tine have the same polarity, and an electrode of the groove of the first tuning fork tine and an electrode on a side face of the second tuning fork tine have the same polarity.

(h) According to Evidence A No. 6, the quartz crystal resonator mounted on the resonator unit is cut so that a longitudinal direction is substantially aligned with a Y-axis of the quartz crystal and a thickness direction is located substantially on a Z-axis of the quartz crystal.

Meanwhile, as described in Evidence A No. 8, when electrodes are applied so that both ends of the width and vertical sides of the thickness have different polarities from the tines of the resonator which has been cut so that the thickness direction is substantially aligned with the Z-axis of the quartz crystal, strain occurs in different directions at both sides of the lateral center of the tine, so that the tines resonator in flexural mode.

When the electrodes are installed on the two tines of the tuning fork resonator in an opposite way, the tines resonator in opposite phases.

Thus, the arrangement of the electrodes of the quartz crystal resonator installed on the resonator unit and a quartz crystal axis of the quartz crystal are the same as those described in Evidence A No. 8. Therefore, the two tines of the quartz crystal resonator installed on the resonator unit perform flexural resonation in opposite phases.

(i) The figure of merit (fundamental mode vibration, second overtone mode vibration, and third overtone mode vibration) of the quartz crystal resonator installed on the resonator unit is as follows (Evidence A No. 9). The figure of merit in the fundamental mode vibration of the quartz crystal resonator installed on the resonator

unit is larger than the figure of merit in the second overtone mode vibration.

In the corrected specification, it can be understood that the tuning fork shape and dimentions of grooves and electrodes contributes to satisfying a relation where the figure of merit in the fundamental mode vibration is larger than the figure of merit in the second overtone mode vibration.

項目	容量比	フィガーオブメリット
基本波	6.12E+02	6.59E+01
２次高調波	9.55E+03	6.81E+00
３次高調波	-	1.04E+00

項目　Item
容量比　Capacitance ratio
フィガーオブメリット　　Figure of merit
基本波　Fundamental wave
２次高調波　　Second overtone wave
３次高調波　　Third overtone wave

Against this, if the corrected invention could achieve the relation $M_1>M_2$ only by determining specific the tuning fork shape and dimentions of grooves and electrodes, whether the relation $M_1>M_2$ can be satisfied or not ($M_1<M_2$) depends on the tuning fork shape and dimentions of grooves and electrodes. However, detailed description of the invention in the corrected specification does not include such description. As a result, it is unclear whether the relation $M_1>M_2$ is satisfied by determining the tuning fork shape and dimentions of grooves and electrodes, in the corrected invention. Thus, the description, "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration may becomes larger than the figure of merit M_2 of second overtone mode vibration, the tuning fork quartz crystal resonator having the fundamental mode vibration and the second overtone mode vibration," cannot be interpreted as the description, "a step where the relation $M_1>M_2$ is achieved (satisfied) by the tuning fork shape and dimentions of grooves and electrodes (or decision of dimentions)."

Technical objectivity is required in specifying the invention described in the scope of claims. In light of this point, the phrase "so that" in the steps in the corrected invention cannot specify technical causal connection between the relation "$M_1>M_2$" and "determining the tuning fork shape and dimentions of grooves and electrodes."

Thus, the description in the corrected invention, "a step of determining the tuning

fork shape and dimentions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration may becomes larger than the figure of merit M_2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration," satisfies the relation $M_1>M_2$, and can be understood as a step of determining the tuning fork shape and dimentions of grooves and electrodes.

Meanwhile, in the resonator unit, the tuning fork shape and dimentions of grooves and electrodes is determined and the quartz crystal tuning fork resonator satisfies $M_1>M_2$. Thus, the resonator unit has the configuration of the corrected invention, "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration may be larger than the figure of merit M_2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration."

(j) As described above, the method for manufacturing of the resonator unit has the same configuration as the corrected invention, except that grooves are not formed on both sides of the central lines on each of obverse and reverse faces of the first and second tuning fork tines so that a part width including the central line is less than 0.05 mm, unlike the corrected invention, and one groove is formed on each of the obverse and reverse faces of the first and second tuning fork tines.

(k) However, the constitution of the grooves formed as described in the corrected invention, "grooves are formed on each of obverse and reverse faces of the first tuning fork tine and the second tuning fork tine at both sides of a central line so that a part width including the central line is less than 0.05 mm," is broadly interpreted, including the shape or size of the grooves, and includes a constitution where one groove is formed substantially on one side of one tuning fork tine, or a constitution where no groove is formed, as well as a constitution where two grooves are formed on a tuning fork tine at respective sides of a central line without including the central line.

In addition, in the corrected invention, it cannot be understood that a working effect $M_1>M_2$ can be exerted only by forming grooves at both sides of the central line so that a part width including the central line is less than 0.05 mm.

No description is included in the corrected specification about a technical significance in limiting numerical values of the constitution of grooves specified in the corrected invention, and the technical significance cannot be recognized.

It cannot be recognized that the constitution of grooves specified in the corrected invention is a configuration having specific technical significance.

Meanwhile, according to Evidence A No. 10, it is understood that the constitution where two grooves are formed on each of thin vibrating rods (corresponding to the "tuning fork tine") of a tuning fork resonator is recognized by a person skilled in the art as a modified constitution showing the same effect as the constitution where one groove is formed on each of the oscillation thin vibrating rods. In the manufacturing method of the resonator unit, a person skilled in the art can easily achieve the constitution where two grooves are formed on a tuning fork tine in the

tuning fork resonator, on the basis of the matters described in Evidence A No. 10.

The constitution of the grooves in the corrected invention includes a constitution where one groove is formed on each of tuning fork tines, and can be understood as a constitution where one groove is formed on a surface of each of tuning fork tines fundamentally and a partition wall may be formed within a certain range of width located at the center. In light of the understanding, it can be said that a person skilled in the art can replace, as necessary, the one groove formed on the surface of each of the tines of the quartz crystal resonator installed on the resonator unit, with two grooves, without taking into consideration Evidence A No. 10.

(l) Regarding the motivation to replace the one groove formed on the surface of each of the tines of the quartz crystal oscillator installed on the resonator unit, with two grooves, according to the description in Evidence A no. 10, the constitution where two grooves are formed on the surface of each of the tines of the quartz crystal tuning fork resonator is known by a person skilled in the art as a constitution equivalent to the constitution where one groove is formed. A person skilled in the art can replace, as necessary, the one groove formed on the surface of each of the tines of the quartz crystal resonator installed on the resonator unit, with two grooves.

In light of the specification, "a part width including the central line is less than 0.05 mm," in the constitution of the grooves of the corrected invention, the constitution where one groove is formed on each of tuning fork tines is also included, as is the constitution where two grooves are formed on the surface of each of the tines definitely. Therefore, the constitution where two grooves are formed on the surface of each of the tines of the quartz crystal tuning fork resonator can be recognized as a modified constitution equivalent to the constitution where one groove is formed. Actually, it is realistic to understand that the constitution of the grooves specified in the corrected invention is a constitution where one groove is formed on the surface of each of the tuning fork tines fundamentally and a partition wall may be formed within a certain range of width located at the center. On the basis of the proper understanding of the corrected invention, a person skilled in the art can replace, as necessary, the one groove formed on the surface of each of the tines of the quartz crystal resonator installed on the resonator unit, with two grooves, without taking into consideration Evidence A No. 10.

(m) Regarding whether the relation $M_1>M_2$ can be maintained when the one groove formed on the surface of each of the tines of the quartz crystal resonator installed on the resonator unit is replaced with two grooves on the basis of the description in Evidence A No. 10, in the corrected specification, paragraph [0048] describes only that "By like this, M_1 becomes larger than M_n " in connection with whether the relation $M_1>M_2$ is satisfied when grooves specified by the constitution of the corrected invention are formed, and there is no concrete confirmation. Since the corrected invention describes as if the relation $M_1>M_2$ can be satisfied even when two grooves are formed on the surface of each of the tines without concrete evidence, there is no need to strictly consider the point as to whether the relation $M_1>M_2$ can be satisfied, which is a working effect lacking clear evidence, in examining whether or not the above different feature would have been easily conceived. It should be considered that the one groove formed on the surface of each of the tines of the quartz crystal resonator installed on the resonator unit can be easily replaced with two grooves.

(2) Submitted Evidences A No. 1 to No. 19 are as follows.

Evidence A No. 1: Specification of Japanese Patent Application No. 2002-40795

Evidence A No. 2: DOCOMO Tsushin (journal), Summer issue, vol. 13, NTT DOCOMO, INC, June 2002, cover and P. 11

Evidence A No. 3: "Application form for orders and packet communication service"

Evidence A No. 4: "Response on the application for disclosure of personal information"

Evidence A No. 5: "Experimental report (1) (Analysis of outer shape of oscillator and electrode structure)", KYOCERA Quartz crystal Device Yamagata Corporation, Tomoshige ISHIZUKA, December 25, 2012

Evidence A No. 6: "Report (Analysis of tuning fork type resonator)", Report No. H2AG09592, Toshiba Nanoanalysis Corporation, Kenta KOSAKAI, December 19, 2012

Evidence A No. 7: "Analysis of component of resonator adhesive Result report", KYOCERA Quartz crystal Device Yamagata Corporation, Koji UENO, December 21, 2012

Evidence A No. 8: Hirofumi KAWASHIMA, "Basic of quartz crystal resonator (the 9th)", Choonpa TECHNO (Ultrasonic technology), JAPAN INDUSTRIAL PUBLISHING CO., LTD., Published on January 15, 1995, cover, P.71-73 and p.76

Evidence A No. 9: "Experimental report (2) (Analysis of figure of merit of quartz crystal resonator), KYOCERA Quartz crystal Device Yamagata Corporation, Tomoshige ISHIZUKA, December 25, 2012

Evidence A No. 10: International Publication No. 2000/44092

Evidence A No. 11: Ryu TAKABAYASHI, "Patent Law From the Ground Up fourth edition", YUHIKAKU PUBLISHING CO.,LTD., December 18, 2011, p. 50

Evidence A No. 12: Tokyo High Court judged on June 7, 2004 (2002, (Gyo-ke) No. 196)

Evidence A No. 13: Tokyo High Court judged on February 10, 2005 (2003, (Wa) No. 19324)

Evidence A No. 14: Intellectual Property High Court judged on September 12, 2006 (2005, (Gyo-ke) No.10782)

Evidence A No. 15: Tokyo High Court judged on January 21, 2003 (2002, (Gyo-ke) No. 208)

Evidence A No. 16: "Written statement" Masahiko GOTO, August 20, 2013

Evidence A No. 17: "Invalidation No. 2012-800211 Invalidation No. 2012-800212 Explanatory material for oral proceeding"

Evidence A No. 18: Shuhei SHIOZUKI, "Interpretation of Supreme Court Decision, Civil affairs, year 1991", p. 28-50, Foundation of HOSOKAI

Evidence A No. 19: Toshiaki, IIMURA, "New Trends of Intellectual Property Law", p.35-51, SEIRIN SHOIN, November, 2000

2 The demandee's allegation

Meanwhile, the demandee alleges, in the written reply, oral proceedings

statement brief, and written statement, that there is no reason for invalidation alleged by the demandant, regarding the following (1), and submitted Evidence B No. 1.

(1) Regarding the absence of reason for invalidation
(a) Even if the cell phone "mova SH251i" (manufactured by Sharp Corporation) including a quartz crystal resonator unit is considered to have been publicly worked prior to the filing of the application for the patent, not the method for manufacturing but the product, the quartz crystal resonator unit, was publicly worked, and in general, a method for manufacturing is not disclosed to an unspecified large number of people in a factory of a company. Thus, it cannot be said that the method for manufacturing of the quartz crystal resonator unit had been publicly worked prior to the filing of the application for the patent, and the method for manufacturing of the quartz crystal resonator unit is not an invention publicly worked.

(b) The "step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration may be larger than the figure of merit M_2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration" in the corrected invention is, as described in [0027] and [0048] of the corrected specification, "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that the figure of merit M_1 of the fundamental mode vibration may be larger than the figure of merit M_2 of the second overtone mode vibration" on the basis of the clear technical ideas that the "tuning fork shape and dimentions of grooves and electrodes" in a quartz crystal tuning fork resonator is related to figure of merit of fundamental mode vibration and overtone mode vibration, so that the figure of merit M_1 of the fundamental mode vibration can be larger than the figure of merit M_2 of the second overtone mode vibration M_2 by determining the "tuning fork shape and dimentions of grooves and electrodes," and that, accordingly, frequency of fundamental mode vibration can be stably obtained while suppressing second overtone mode vibration. As an example of $M_1>M_2$, the corrected specification includes the description, "when the frequency of fundamental mode vibration is 32.768 kHz, W2/W=0.5, t1/t=0.34, and l1/l=0.48, M_1 and M_2 of the quartz crystal tuning fork resonator are $M_1>65$, and $M_2<30$, respectively (which vary depending on manufacture)"

Thus, it is inappropriate to understand that the step is "a step in which the tuning fork shape and dimentions of grooves and electrodes are determined, and the quartz crystal tuning fork resonator satisfies the relation $M_1>M_2$, accordingly."

In light of the above, none of Evidences A No. 2 to 10 describes or indicates the above technical ideas, and it cannot be said that there is a technical idea of determining "the tuning-fork shape and dimentions of grooves and electrodes" in order that the figure of merit M_1 in the fundamental mode vibration may be larger than the figure of merit M_2 in the second overtone mode vibration.

Therefore, even if, in the quartz crystal resonator installed on the quartz crystal unit, the figure of merit in the fundamental mode vibration is larger than the figure of merit in the second overtone mode vibration, it did not occur by design, and it cannot be said that the figure of merit in the fundamental mode vibration is larger than the figure of merit in the second overtone mode vibration due to completing the step of

determining "the tuning fork shape and dimentions of grooves and electrodes" so that the figure of merit M_1 in the fundamental mode vibration may be larger than the figure of merit M_2 in the second overtone vibration. It cannot be said that the quartz crystal unit includes the above step, including the method for manufacturing thereof.

According to Evidences A No. 2 to 10, regarding the "step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration may be larger than the figure of merit M_2 of second overtone mode vibration" based on the clear technical idea that frequency of fundamental mode vibration can be obtained while suppressing second overtone mode vibration, no description or indication exists. It is difficult even for a person skilled in the art to conceive of the above step in the method for manufacturing of the quartz crystal unit.

(c) Regarding the "step of grooves on each of obverse and reverse faces of the first and second tuning fork tines at both sides of a central line so that a part width including the central line is less than 0.05 mm" in the corrected invention, so long as the specification in the step is properly understood, it is impossible that there is no part width (W7) including the central line or grooves formed at both sides thereof. As described in [0042]-[0043] in the corrected specification, in the method for manufacturing of the invention, the quartz crystal tuning fork resonator is formed, including the grooves formed on the tuning fork tines, by "photolithography and chemical etching based on semiconductor technology." When grooves are formed at both sides of a central line of a tuning fork tine by "photolithography and chemical etching," there is a limitation in lower limit values of the part width including the central line and the width of the grooves formed at both sides. This is ordinarily expected by a person skilled in the art. Thus, it is obvious that "a value just about zero" cannot be employed as "a part width (W7) including a central line" and "width of each of grooves."

The configuration, "a part width including the central line is less than 0.05 mm" has a technical significance of improving transmission efficiency of vibrational energy between the grooves and allowing the figure of merit M_1 in the fundamental mode vibration to be larger than the figure of merit M_2 in the second overtone mode vibration.

In light of Evidence A No. 10, there is no description that indicates replacing the grooves of the quartz crystal resonator installed on the quartz crystal unit with the two grooves shown in FIG. 10 of Evidence A No. 10, or description of the technical idea of the corrected invention that the frequency of fundamental mode vibration can be obtained, while suppressing second overtone mode vibration, by making the figure of merit M_1 in the fundamental mode vibration larger than the figure of merit M_2 in the second overtone mode vibration. Even if it is described that the constitution with the two grooves is "a modified constitution showing the same effect as the constitution where one groove is formed on each of the thin vibrating rods," it cannot be said that the constitution is the "modified constitution indicating the same effect" in view of the point of making the figure of merit M_1 in the fundamental mode vibration larger than the figure of merit M_n in the second overtone mode vibration. Thus, in Evidences A No. 2 to 9, there is no motivation to replace the grooves of the quartz crystal resonator installed on the quartz crystal unit with the two grooves shown in FIG. 10 of Evidence A No. 10.

(d) Even if each of the grooves formed including the central line on the tuning fork tines of the quartz crystal resonator installed on the quartz crystal unit is replaced with the two grooves shown in FIG. 10 of Evidence A No. 10, it is unclear whether or not the relation that the figure of merit M_1 in the fundamental mode vibration is larger than the figure of merit M_2 in the second overtone mode vibration may be maintained. Accordingly, a person skilled in the art cannot easily conceive of replacing the grooves of the quartz crystal resonator installed on the quartz crystal unit with the two grooves shown in FIG. 10 of Evidence A No. 10.

(2) Submitted Evidence B No. 1 is as follows.
Evidence B No. 1: "Written statement", Hirofumi KAWASHIMA, September 10, 2013

No. 5 Judgment by the body
1 Regarding the reference date for judgment on novelty and inventive step of the corrected invention

The demandant alleges that the patent application relates to a divisional application of the Original application, and the Original application is based on the Underlying application as a basis for internal priority. However, the Underlying application does not include the descriptions relating to the corrected invention, "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration may be larger than the figure of merit M_2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration," "a step of forming grooves on each of obverse and reverse faces of the first and second tuning fork tines at both sides of a central line so that a part width including the central line is less than 0.05 mm," or "a step of fixing with a conductive adhesive to a mouting portion of the case for housing the quartz crystal tuning fork resonator including the two electrodes terminal."

Therefore, the corrected invention cannot take advantage of the internal priority relating to the Original application. The reference date for judgment on novelty and inventive step is January 10, 2003, which is the filing date of the Original application. The priority claim cannot be recognized.

2 Regarding public use invention
(1) According to Evidences A No. 2 and 3, it can be said the cell phone "mova SH251i" manufactured by Sharp Corporation had been public use when purchased by TAKAHASHI, Hiroyuki on July 28, 2002, at least. According to Evidences A No. 3 and 4, it can be said that the serial number of the "mova 251i " manufactured by Sharp Corporation which was purchased by TAKAHASHI, Hiroyuki on July 28, 2002 and subscribed to packet communication service is NSHCC041469.

Therefore, according to Evidences A No. 2 to 4, it can be said that the "mova SH251i", serial number: NSHCC041469, manufactured by Sharp Corporation is an article public use prior to the reference date for judgment on novelty and inventive step of the corrected invention.

(2) Since the "mova SH251i", serial number: NSHCC041469, manufactured by Sharp Corporation is an article public use before the reference date for judgment on novelty

and inventive step of the corrected invention, it can be said that the quartz crystal unit (hereinafter referred to as "publicused article") removed from the article is an article public use before the reference date for judgment on novelty and inventive step of the corrected invention.

It is described in Evidence A No. 5 that a lid was removed by a cutter from the case of the resonator unit taken out from a cell phone used for analysis, and that then an resonator was removed from the case of the resonation unit. It can be said that the quartz crystal unit as the public use article includes a quartz crystal resonator, case, and lid, and that the lid and the case are connected to each other, accordingly.

(3) According to the description in Evidence A No. 5 about the overall shape and cross-sectional shape of the resonator and arrangement of electrodes, the resonator removed from the public use article can be considered to have the following configuration.
(3-1) The resonator includes a tuning fork base and first and second tuning fork tines connected to the tuning fork base, and comprises a two electrodes terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from the first electrode terminal.
(3-2) The first electrode terminal of the two electrodes terminal is configured by arranging the electrodes so that an electrode on a side face of the first tuning fork tine and an electrode of the groove of the second tuning fork tine have the same polarity, and the second electrode terminal of the two electrodes terminal is configured by arranging the electrodes so that an electrode of the groove of the first tuning fork tine and an electrode on a side face of the second tuning fork tine have the same polarity.
(3-3) Grooves are formed on each of obverse and reverse faces of the first and second tuning fork tines.

(4) According to Evidence A No. 7, it can be said that the publicuse article is configured by fixing the quartz crystal resonator to a mouting portion of the case for housing the quartz crystalresonator, with a conductive adhesive.

(5) In light of the arrangement of electrodes and electrode terminals clarified by Evidence A No. 5, the direction of an axis of the resonator clarified by Evidence A No. 6, and arrangement direction of the quartz crystal resonator which resonates in flexural mode and electrode configuration described in Evidence A No. 8, the quartz crystal resonator of the public use article can be considered to be a tuning fork resonator which resonates in flexural mode.

(6) According to Evidence A No. 9, since the figure of merit M_1 in the fundamental mode vibration of the quartz crystal resonator of the public use article is 6.59E+0.1 and the figure of merit M_2 in the second overtone mode vibration is 6.81E+00, it can be said that the figure of merit M_1 in the fundamental mode vibration of the oscillator is larger than the figure of merit M_2 in the second overtone mode vibration.

(7) Thus, it can be said that the public use article has the following configuration.

"A quartz crystal unit having a quartz crystalresonator, a case, and a lid,
the quartz crystal oscillator being a quartz crystal tuning fork resonator which includes a

tuning fork base and at least a first tuning fork tine and a second tuning fork tine connected to the tuning fork base, and comprises a two electrodes terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from the first electrode terminal,
the quartz crystal resonator being configured by determining the tuning fork shape and dimentions of grooves and electrodes,
the quartz crystal tuning fork resonator having fundamental mode vibration and second overtone mode vibration, wherein figure of merit M_1 of the fundamental mode vibration is larger than the figure of merit M_2 of second overtone mode vibration,
including the tuning fork base and the first and second tuning fork tines,
configured by forming one groove on each of obverse and reverse faces of the first and second tuning fork tines,
the first electrode terminal of the two electrodes terminal being configured by arranging the electrodes so that an electrode on a side face of the first tuning fork tine and an electrode of the groove of the second tuning fork tine have the same polarity,
the second electrode terminal of the two electrodes terminal being configured by arranging the electrodes so that an electrode of the groove of the first tuning fork tine and an electrode on a side face of the second tuning fork tine have the same polarity,
the quartz crystal unit being configured by fixing the quartz crystal resonator with a conductive adhesive to a mouting portion of the case for housing the quartz crystal tuning fork resonator including the two electrodes terminal,
and connecting the lid to the case."

3 Regarding method for manufacturing of Public use

The method for manufacturing belonging to substantially the same technical idea as the public use article publicly worked, for example, a method for manufacturing which can be uniquely derived from the configuration of an "object" for which a method for manufacturing is specified by adding a "step" formally to the configuration of the object, can be considered to also be publicly worked, as the public use article is publicly worked.

Thus, the following method for manufacturing (hereinafter referred to as " method for manufacturing of public use ") having a step uniquely derived from the public use article can be considered to have been publicly worked prior to the reference date for judgment on novelty and inventive step of the corrected invention.

"The method for manufacturing of a quartz crystal unit having a quartz crystalresonator, a case, and a lid,
the quartz crystal resonator including a tuning fork base, and at least a first tuning fork tine and a second tuning fork tine connected to the tuning fork base, and comprising a two electrodes terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from the first electrode terminal,
includes:
a step of determining the tuning fork shape and dimentions of grooves and electrodes;
a step in which figure of merit M_1 of fundamental mode vibration is made larger than the figure of merit M_2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode

vibration;
a step of forming a tuning fork shape having the tuning fork base and the first and second tuning fork tines;
a step of forming one groove on each of obverse and reverse faces of the first and second tuning fork tines;
a step of arranging electrodes so that the electrode on a side face of the first tuning fork tine and the electrode of the groove of the second tuning fork tine have the same polarity, in order to form the first electrode terminal in the two electrodes terminal;
a step of arranging electrodes so that the electrode of the groove of the first tuning fork tine and the electrode on a side face of the second tuning fork tine have the same polarity, in order to form the second electrode terminal in the two electrodes terminal;
a step of fixing with a conductive adhesive to a mouting portion of the case for housing the quartz crystal tuning fork resonator including the two electrodes terminal;
and a step of connecting the lid to the case in order to configure the quartz crystal unit having the quartz crystal tuning fork resonator, the case, and the lid."

The demandee alleges, "Even if the cell phone "mova SH251i" (manufactured by Sharp Corporation) including a quartz crystal resonator unit is considered to have been publicly worked prior to filing of the application for the patent, in actuality not the method for manufacturing but the product, the quartz crystal resonator unit, was publicly worked, and in general, a method for manufacturing is not disclosed to an unspecified large number of people in a factory of a company. Thus, it cannot be said that the method for manufacturing of the quartz crystal resonator unit had been publicly worked prior to filing of the application for the patent, and the method for manufacturing of the quartz crystal resonator unit is not an invention publicly worked."

However, in the range of the method for manufacturing which can be uniquely derived from the configuration of an "object" belonging to substantially the same technical idea as the publicly worked public use article, as described above, the public use method for manufacturing, although it has been publicly worked, is the method for manufacturing including a step which can be uniquely derived from the public use article. Accordingly, it can be said that the public use method for manufacturing is a publicly worked method for manufacturing.

4 Corresponding features and different features

(1) Regarding the interpretation of "determining the tuning fork shape and dimentions of grooves and electrodes so that ...M_1 may be larger than ... M_2"

The structure of the sentence, "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that ... M_1 may be larger than ... M_2," in the corrected invention is "a step of performing B so as to satisfy A." This sentence, generally in Japanese, has the following two interpretations: (A) a step of performing B for the purpose of A (A is a subjective purpose of B, and achievement of A is not necessarily caused); and (B) a step of performing B in order to obtain A as a result (there is a causal relationship where B inevitably causes A).

However, constituent components of the invention must be specified objectively. It cannot be accepted that the interpretation of the constituent components includes a subjective purpose. Thus, regarding the meaning of "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that ... M_1 may be larger than ...

M_2" in the corrected invention, the above interpretation (A) cannot be adopted.

Therefore, it should be said that the sentence in the corrected invention, "a step of determining the tuning fork shape and dimentions of grooves and electrodes so that ... M_1 may be larger than ... M_2" means "a step of determining the tuning fork shape and dimentions of grooves and electrodes in order to obtain $M_1>M_2$" as a result," on the basis of the above interpretation (B), unambiguously from the description of the scope of claims. There is no need to consider the contents of the detail description of the invention in the specification, because of the unambiguousness from the description of the scope of claims.

(2) Regarding whether or not the public use method for manufacturing includes "a step of determining the tuning fork shape and dimensions of grooves and electrodes in order to obtain $M_1>M_2$"

In light of the following technical common sense, it can be recognized that the public use method for manufacturing also includes "a step of determining the tuning fork shape and dimensions of grooves and electrodes in order to obtain $M_1>M_2$" as well as the corrected invention.

The factors that influence the characteristics of the quartz crystal funing fork resonator are (A) shape of tuning fork and groove, (B) size of electrode, (C) material of electrode, and (D) cutting method of quartz crystal (quartz crystal direction). In light of the fact that the corrected invention resonates only in flexural mode and a technical common sense that electrode material has little influence on a value of equivalent series resistance, the above (C) and (D) have little influence on the characteristics required for calculating M. In the quartz crystal tuning fork resonator in the corrected invention, the factors for obtaining the value of M and the relation $M_1>M_2$ are (A) and (B), inevitably resulting in the tuning fork shape and dimensions of groove and electrode.

Therefore, it can be said that the public use method for manufacturing where only the flexural mode is used and the relation $M_1>M_2$ is satisfied could obtain the relation $M_1>M_2$ as well as the corrected invention as a result of selecting a configuration of the tuning fork shape and dimensions of groove and electrodes, or includes "a step of determining the tuning fork shape and dimensions of grooves and electrodes in order to obtain $M_1>M_2$ as a result."

Comparing the corrected invention with the public use method for manufacturing, they are identical and different in the following points.

(Corresponding features)
"A method for manufacturing of a quartz crystal unit having a quartz crystalresonator, a case, and a lid,
the quartz crystal resonator being a quartz crystal tuning fork resonator which includes a tuningfork base and at least a first tuning fork tine and a second tuning fork tine connected to the tuning fork base, and comprises a two electrodes terminal having a first electrode terminal, and a second electrode terminal having an electrical polarity different from the first electrode terminal,
including:
a step of determining the tuning fork shape and dimensions of grooves and electrodes so that figure of merit M_1 of fundamental mode vibration may be larger than the figure of merit M_2 of second overtone mode vibration, the quartz crystal tuning fork resonator

having the fundamental mode vibration and the second overtone mode vibration;
a step of forming a tuning fork shape having the tuning fork base and the first and second tuning fork tines;
a step of forming grooves on each of obverse and reverse faces of the first and second tuning fork tines;
a step of arranging electrodes so that the electrode on a side face of the first tuning fork tine and the electrode of the groove of the second tuning fork tine have the same polarity, in order to form the first electrode terminal in the twoelectrodes terminal;
a step of arranging electrodes so that the electrode of the groove of the first tuning fork tine and the electrode on a side face of the second tuning fork tine have the same polarity, in order to form the second electrode terminal in the twoelectrodes terminal;
a step of fixing with a conductive adhesive to a mouting portion of the case for housing the quartz crystal tuning fork resonator including the two electrodes terminal;
and a step of connecting the lid to the case in order to configure the quartz crystal unit having the quartz crystal tuning fork resonator, the case, and the lid."

(Different feature)

In the corrected invention, the grooves formed on each of obverse and reverse faces of the first and second tuning fork tines are grooves "formed at both sides of a central line so that a part width including the central line is less than 0.05 mm." The public use method for manufacturing method does not include the above specification.

5 Judgment on the different feature
(1) Regarding the description of A-10 publication
A-10 publication (Evidence A No. 10) describes as follows.

A Technical field
"This invention relates to a structure of an resonator, such as a quartz crystal tuning fork resonator or a gyro sensor, and an electronic device including an resonator." (Specification p. 1 l. 6-l. 7)

B Background Art

"... the quartz crystal tuning fork resonator piece 10 needs to maintain stable oscillation frequency (for example, 32.768 kH) and to keep a low CI value (quartz crystal impedance or equivalent series resistance Rr) in order to suppress vibration loss of an thin vibrating rods 12.

On the other hand, clocks and electronic devices have been made compact recently, and a compact quartz crystal tuning fork resonation piece 10 is also required. In order to reduce the entire dimentions of the quartz crystal tuning fork resonation piece 10, the vertical size 2.4 mm of the thin vibrating rods 12 in FIG. 11 should be reduced further. If the thin vibrating rods 12 is made shorter, resonance frequency increases, resulting in higher frequency than a desired frequency.

Therefore, it has been necessary to reduce the width (0.23 mm in FIG. 11) of the thin vibrating rods 12 to prevent increase of resonance frequency.

However, if the width of the thin vibrating rods 12 is reduced, CI value, which is vibration loss of the thin vibrating rods 12, increases as a result. As shown in FIG. 13, if the width (lateral direction in the figure) of the thin vibrating rods 22 is reduced, the

width of the electrode 23a cannot be formed larger, thereby reducing the area where an electric field is applied. Thus, the electric field is weaker around the center as compared with FIG. 12. (Field intensity is indicated with the number of arrows in the figure, such that the greater the number of arrows, the larger the field intensity.)

Therefore, the electric field (arrows in the figure) generated between the electrode 23a and the electrode 23b is not formed entirely in the thin vibrating rods 22 as shown in the figure, and the resonation thereof is reduced, which is not the same as that of the thin vibrating rods shown in FIG. 12.

On the other hand, in order to prevent the increase of CI value, which is vibration loss, there is a need to reduce the vertical thickness of the quartz crystal tuning fork resonation piece 10 shown in FIG. 12, about 0.1 mm further, for example. However, machining may be complicated and product yield may be reduced.

This invention aims to provide a compact resonator of low CI value which can be easily machined." (Specification p. 2 l. 13-p. 3 l. 11)

C Disclosure of the Invention

"The above purpose is achieved, according to the invention of Claim 1 of the scope of claims, by an vibrator having at least one thin vibrating rods made of piezoelectric material, with grooves formed on one or both of upper and lower surfaces of the thin vibrating rods, the groove having an electrode formed therein.

In this configuration, grooves are formed on one or both of upper and lower surfaces of the thin vibrating rods, and the electrode is formed in the groove, thereby allowing easy machining. Stable and strong field intensity is generated in a depth direction of the thin vibrating rods, thereby preventing increase of CI value." (Specification p. 3 l. 13-l. 21)

"The reason why the characteristics are improved by the grooves 120a will now be described.

FIG. 2 is a cross-sectional view of the thin vibrating rods 120 of the vibrator 100 according to the embodiment.

In the thin vibrating rods 120 according to the embodiment, an electric field 160 is generated entirely in the depth direction of the thin vibrating rods 120. Since the electrode 140a is formed into the groove 120a, the electric field is likely to be formed to the depth direction. The groove 120a is preferably formed deeply." (Specification p. 9 l. 26-p. 10 l. 4)

"In this embodiment, the groove 220a is formed in the thin vibrating rods 220. The groove 220a may be a through-hole. In this case, the thin vibrating rods 220' having a through-hole is configured by arranging the electrodes 240a, 240b to face each other, for example, as shown in FIG. 7. FIG. 7 is a schematic diagram illustrating a cross-sectional view of the thin vibrating rods 220' having the through-hole." (Specification p. 13 l. 17-l. 21)

"In this embodiment, two grooves 220a, 220b are formed in the thin vibrating rods 220, and electrodes 240a are arranged on each of them. Unlike the electrode 23a of the conventional thin vibrating rods 220 shown in FIG. 13, a large electrode 240a can be formed, thereby generating a stable and strong electric field in the depth direction of the thin vibrating rods 220 as shown in FIG. 2 in the first embodiment, and suppressing vibration loss. The reduction of vibration loss is obvious from the CI value indicated in FIG. 8." (Specification p. 14 l. 24-p. 15 l. 1)

"In this embodiment, as shown in FIG. 6, two grooves 220a are formed in the thin vibrating rods 220. As shown in FIG. 10, two grooves may be formed on each of obverse and reverse parts of the thin vibrating rods 420, and an electrode 440a may be arranged on each of them." (Specification p.15 l. 14-l. 16)

(2) Regarding the configuration where two grooves are formed instead of one groove.
A As described in the above (1), A-10 publication describes in "Background art" that when the width of the thin vibrating rods 12 without groove is reduced, the electrodes 23a formed on upper and lower surfaces of the thin vibrating rods 12 cannot be formed wider, thereby reducing the area where an electric field is applied and reducing field intensity (FIG. 13), that the electric field (arrows in the figure) generated between the electrodes 23a formed on upper and lower surfaces of the thin vibrating rods 12 and the electrode 23b formed on the side surface is not formed entirely in the thin vibrating rods 22, thereby reducing vibration as compared with the wide thin vibrating rods (FIG. 12), and that, in "Disclosure of the invention," when the groove 120a is formed in the thin vibrating rods, the electrode 140a is formed into the groove 120a, thereby facilitating distribution of the electric field 160 in the depth direction, and preventing increase of CI value. FIG. 2 shows that the electric field generated due to the electrode formed into the groove is a linear and parallel electric field extending from the side surface of the groove to the side surface of the thin vibrating rods.

In light of the above description in the A-10 publication, it can be recognized that a person skilled in the art can easily understand that the linear and parallel electric field shown in FIG. 2 improves electromechanical conversion efficiency, thereby contributing to reduction of CI value.

Since the A-10 publication describes that two grooves are formed on each of upper and lower surfaces of the thin vibrating rods 420 and an electrode 440a is formed in each of them (FIG. 10), it can be recognized that a person skilled in the art can easily understand that the two grooves formed in the thin vibrating rods 420 can exert the same effect of reducing CI value, as that exerted by one groove.

Therefore, it can be said that a person skilled in the art can easily design the configuration where two grooves are formed instead of one groove, in the public use method for manufacturing.

B Even when two grooves are formed on the tuning fork tine in the public use method for manufacturing, the relation $M_1 > M_2$ can be guaranteed. It can be said that a person skilled in the art can predict this.

(3) Easily-conceived property of limiting a numerical value of the part width

Regarding the part width set to be less than 0.05 mm, the specification describes in [0048] that "in this example, the grooves are formed on the tuning fork tines across (including) the central lines; however, this invention is not limited by this configuration, and the grooves may be formed at both side of the central lines without including the lines. In this case, a part width W7 including the central line of the tuning fork tine is formed to be less than 0.05 mm. Each of the grooves has a width less than 0.04 mm. The ratio between the thickness t_1 of the groove and the thickness t of the tuning fork tine is configured to be equal to or less than 0.79. In this configuration, M_1 can be larger than M_n."

However, as is obvious from the description, the description indicates that "M_1 can be larger than M_n" when "a part width W7 including the central line of the tuning fork tine is formed to be less than 0.05 mm," "each of the grooves has a width less than 0.04 mm," and "the ratio between the thickness t_1 of the groove and the thickness t of the tuning fork tine is configured to be equal to or less than 0.79," but does not indicate that "M_1 can be larger than M_2" only by "configuring a part width W7 including the central line of the tuning fork tine to be less than 0.05 mm."

Since there is no description about technical significance of limiting a numerical value of the part width in the specification, it cannot be recognized that there is a special technical significance in limiting a numerical value of the part width in the corrected invention.

Thus, the configuration where the part width is formed to be less than 0.05 mm in the public use manufacturing method can be easily designed by a person skilled in the art.

(4) Summary

As described above, in the public use method for manufacturing , a person skilled in the art can easily design the configuration where two grooves are formed instead of one groove and the part width is formed to be less than 0.05 mm. Consequently, it can be said that a person skilled in the art can easily conceive of employing the configuration according to the different feature of the corrected invention, in the public use method for manufacturing.

6 Summary

As described above, it should be said that the corrected invention can be easily invented by a person skilled in the art, on the basis of the matters described in Evidences A No. 1-No. 19.

No. 6 Closing

As described above, the patent according to the corrected invention was granted in violation of the provision of Article 29 (2) of the Patent Act, and should therefore be invalidated as falling under Article 123 (1)(ii) of the Patent Act.

The costs in connection with the trial shall be borne by the demandee under the provisions of Article 61 of the Code of Civil Procedure which is applied mutatis mutandis in the provisions of Article 169 (2) of the Patent Act.

Therefore, the trial decision shall be made as described in the conclusion.

March 24, 2015

Chief administrative judge:	EGUCHI, Yoshihiro
Administrative judge:	TERATANI, Daisuke
Administrative judge:	YOSHIDA, Takayuki