Trial decision

Invalidation No. 2012-800212

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The case of trial regarding the invalidation of Japanese Patent No. 4453017, entitled "MANUFACTURING METHOD OF CRYSTAL UNIT," between the parties above has resulted in the following trial decision.

Conclusion

The correction shall be approved as requested.

The trial of the case was groundless.

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

Reason

No. 1 History of the procedures

The application regarding Japanese Patent No. 4453017 is a divisional application filed on January 27, 2005 from Japanese Patent Application No. 2003-38962 (Priority date: January 11, 2002, 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)

No. 2 Request for correction dated 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 a limitation, "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" 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 manufacturing method of a crystal unit of Claim 1, configured so that the grooves formed on each of obverse and reverse faces of the first tuning fork tineand 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 portion the central line of the tines is less than 0.05 mm."
Paragraph [0048] of the patent specification includes the following matter:
"In addition, in the present embodiment, the grooves are constructed to include a portion of the central line of the tines, but the present invention is not limited to this, for example, the grooves may be constructed with the portion of the central line of the tines and at both sides thereof. In this case, a part width W_7 including the portion the central line of the tines is 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 expand or alter the scope of claims substantially.

(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 expand or alter the scope of claims substantially. 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 manufacturing method of a quartz crystal unit having a quartz crystal oscillator, a case, and a lid,

the quartz crystal oscillator including a tuning fork base and at least a first tuning fork tine and a second tuning fork tine couples to the section of the tuning fork base, and comprising a two electrode terminals 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 size 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 overtone 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 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 electrode 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 electrode terminal;

a step of fixing with conductive adhesives to a mounting portion of the case for housing the quartz crystal tuning fork resonator including the two electrode 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 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 have been 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 according to the following reasons.

(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 size of grooves and electrodes so that figure of merit M1 of fundamental mode vibration becomes larger

than figure of merit M2 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 moounting portion of the case for housing the quartz crystal tuning fork resonator including the two electrode terminal." Thus, the corrected invention cannot take advantage of the internal priority relating to the Original application, and the reference filing date is January 10, 2003, which is a filing date of the Original application.

(b) The "mova SH251i" (manufactured by Sharp Corporation) with a quartz crystal unit is a cell phone sold on June 1, 2002 (Evidence A No. 2), and a cell phone (manufacturing date: June 2002, serial number: NSHCC041469) used for proving the configuration of the quratz 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 quratz crystal unit prior to the filing date can be proved by analyzing the quartz crystal unit mounted on the cell phone.

The corrected invention is an invention of "manufacturing method"; 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 manufacturing method can be grasped only by grasping the configuration of the quartz crystal unit.

The corrected invention is considered to be a "manufacturing method of quartz crystal unit" formally; however, the 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 manufacturing method of the 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 oscillator unit is a "quartz crystal resonator unit."

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

(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 part of the tuning fork resonator is fixed to the case with adhesives. The adhesives 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 tines 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 electrode 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 electrode 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 quratz 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 quratz crystal, strain occurs in different directions at both sides of the lateral center of the tine, so that the tines resonate in a flexural mode.

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

The arrangement of the electrodes of the quratz 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 figures of merit (fundamental mode vibration, second overtone mode vibration, and third overtone mode vibration) of the quartz crystal resonator installed on the resonator unit are 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 size 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 obertone wave

Against this, if the corrected invention could achieve the relation M1>M2 only by determining the tuning fork shape and specific dimentions of grooves and

electrodes, whether the relation M>M2 can be satisfied or not (M1<M2) 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 M1>M2 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 M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration," cannot be interpreted as the description, "a step where the relation M1>M2 is achieved (satisfied) by the tuning fork shape and specific dimentions of grooves and electrodes (or decision of dimention)."

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 "M1>M2" 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 M1 of fundamental mode vibration becomes larger than figure of merit M2 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 M1>M2, 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 are determined and the quartz crystal tuning fork resonator satisfies M1>M2. 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 M1 of fundamental mode vibration becomes larger than figure of merit M2 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 manufacturing method 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 on one side of one tuning fork tine substantially, or a constitution where no groove is formed, as well as a constitution where two grooves are formed on a tuning fork tine at both sides of a central line without including the central line.

Besides, in the corrected invention, it cannot be understood that a working effect M1>M2 can be exerted only by forming grooves at both sides of the central line so that a partl 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 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 quartz crystal 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, 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 resonator 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 tinesof 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 well as 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 arms of the quaartz crystal tuning fork resonator can be recognized as a modification 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 M1>M2, etc., 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, in the corrected specification, paragraph [0048] describes only that "By like this, M1 becomes larger than M2." in connection with whether the relation M1>M2 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 M1>M2 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 M1>M2 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: Specifications 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 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 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 quzrtz crystal resonator), KYOCERA Crystal Device Yamagata Corporation, Tomoshige ISHIZUKA, December 25, 2012

Evidence A No. 10: International Publication No. Wo 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 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 be publicly worked prior to the filing of the application for the patent, not the manufacturing method but the product, quartz crystal resonator unit, was publicly worked actually, and in general, the manufacturing method was not disclosed to an unspecified large number of people in a factory of a company. Thus, it cannot be said that the manufacturing method of the quartz crystal resonator unit had been publicly worked prior to the filing of the application for the patent, and the manufacturing method 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 M1 of fundamental mode vibration becomes larger

than figure of merit M2 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 figure of merit M1 of the fundamental mode vibration becomes larger than figure of merit M2 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 tuning fork type bending crystal oscillator is related to figure of merit of fundamental mode vibration and harmonic mode oscillation, so that the figure of merit M1 of the fundamental mode vibration can be larger than the figure of merit M2 of the second overtone mode vibration M2 by determining the " tuning fork shape and dimentions of grooves and electrodes," and that frequency of fundamental mode vibration can be stably obtained while suppressing second overtone mode vibration, accordingly. As an example of M1>M2, 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, M1 and M2 of the quartz crystal tuning fork resonator are M1>65, and M2<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 M1>M2, 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 M1 in the fundamental mode vibration becomes larger than the figure of merit M2 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 occurred accidentally, 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 M1 in the fundamental mode vibration becomes larger than the figure of merit M2 in the second overtone vibration. It cannot be said that the quartz crystal unit includes the above step, including the manufacturing method 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 M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration " based on the clear technical idea that frequency of fundamental mode vibration can be stably 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 manufacturing method 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, as 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 manufacturing method 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 the "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 the 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 resonation energy between the grooves and allowing the figure of merit M1 in the fundamental mode vibration to be larger than the figure of merit M2 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 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 M1 in the fundamental mode vibration larger than the figure of merit M2 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 resonation thin bars," 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 M1 in the fundamental mode vibration larger than the figure of merit Mn 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 the 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 M1 in the fundamental mode vibration is larger than the figure of merit M2 in the second overtone mode vibration may be maintained. 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, accordingly.

(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 filing date 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 an 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 M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration, the quaratz 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 adhesives to a mounting portion of the case for housing the quartz crystal tuning fork resonator including the two electrode terminal."

Therefore, the corrected invention cannot take advantage of the internal priority

relating to the Original application. The reference filing date is January 10, 2003, which is a filing date of the Original application. The priority claim cannot be recognized.

2 Regarding public use invention

(1) According to Evidences A Nos. 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 the latest. According to Evidences A No. 3 and 4, it can be said that the serial number of the "mova SH251i" 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 filing date of the corrected invention.

(2) Since the "mova SH251i", serial number: NSHCC041469, manufactured by Sharp Corporation is an article public use prior to the reference filing date of the corrected invention, it can be said that the quartz crystal unit (hereinafter referred to as "public use article") removed from the article is an article public use prior to the reference filing date of the corrected invention.

It is described in Evidence A No. 5 that the 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 coupled 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 coupled to the tuning fork base, and comprises a two electrode terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from that of the first electrode terminal.

(3-2) The first electrode terminal of the two electrode 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 electrode 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 obveres and reverse faces of the first and second tuning fork tines.

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

(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 oscillates in bending 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 quartz crystal tuning fork resonator which resonates in bending mode.

(6) According to Evidence A No. 9, since the figure of merit M1 in the fundamental mode vibration of the crystal resonator of the public use article is 6.59E+0.1 and the figure of merit M2 in the second overtone mode vibration is 6.81E+00, it can be said that the figure of merit M1 in the fundamental mode vibration of the resonator is larger than the figure of merit M2 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 crystal resonator, a case, and a lid,the quartz crystal resonator 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 coupled to the tuning fork base, and comprises a two electrode terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from that of 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 M1 of the fundamental mode

vibration is larger than figure of merit M2 of the 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 electrode 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 electrode 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 oscillator with a conductive adhesive to a mounting portion of the case for housing the quartz crystal tuning fork resonator including the two electrode terminal,

and coupling the lid to the case."

3 Regarding Public use manufacturing method

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

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

"The manufacturing method of 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 coupled to the tuning fork base, and comprising a two electrode terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from that of 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 M1 of fundamental mode vibration is made larger than figure of merit M2 of second overtone mode vibration, the tuning fork type bending quartz crystal 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 configuring the first electrode terminal of the two electrode terminal 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;

a step of configuring the second electrode terminal of the two electrode terminal 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;

a step of fixing with a conductive adhesives to a mounting portion of the case for housing the tuning fork type bending quartz crystal resonator including the two electrode 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 resonator, the case, and the lid."

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

However, in the range of the manufacturing method 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 manufacturing method, although having been publicly worked, is the manufacturing method including a step which can be uniquely derived from the public

use article. It can be said that the public use manufacturing method is a publicly worked manufacturing method, accordingly.

4 Corresponding features and different features

In comparison of the corrected invention and the public use manufacturing method, they have the following corresponding features and different features.

(Corresponding features)

"A manufacturing method of a quartz crystal unit having a quartz crystal resonator, a case, and a lid,

the quartz crystal resonator 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 coupled to the tuning fork base, and comprises a two electrode terminal having a first electrode terminal and a second electrode terminal having an electrical polarity different from that of the first electrode terminal,

including: 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 configuring the first electrode terminal of the two electrode terminal 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;

a step of configuring the second electrode terminal of the two electrode terminal 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;

a step of fixing with a conductive adhesives to a mounting portion of the case for housing the quaartz crystal tuning fork resonator including the two electrode 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 resonator, the case, and the lid."

(The different feature 1)

The corrected invention includes the "step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M1 of fundamental

mode vibration becomes larger than figure of merit M2 of second overtone mode vibration." However, the public use manufacturing method, which includes the "step of determining the tuning fork shape and dimentions of grooves and electrodes" and the "step in which figure of merit M1 of fundamental mode vibration is made larger than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration," does not specify whether to "determine the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration."

(The different feature 2)

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

5 Judgment on the different feature 1

(1) Judgment by the body for the different feature 1

It can be recognized that the public use manufacturing method includes both "a step of determining the tuning fork shape and dimentions of grooves and electrodes" and "a step in which figure of merit M1 of fundamental mode vibration is made larger than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration." However, in the "step of determining the tuning fork shape and dimentions of grooves and electrodes," it cannot be recognized that the determination is made "so that figure of merit M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration." The possibility that "figure of merit M1 of fundamental mode vibration is made larger than figure of merit M2 of second overtone mode vibration" unintentionally as a result of "determining the tuning fork shape and dimentions of grooves and electrodes" cannot be excluded.

Even if the public use manufacturing method is considered to include both "a step of determining the tuning fork shape and dimentions of grooves and electrodes" and "a step in which figure of merit M1 of fundamental mode vibration is made larger

than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration," it should be said that there is no positive motivation, in the public use manufacturing method, to include the "step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration."

Thus, it cannot be said that the configuration of the corrected invention in the Different feature 1 can be easily conceived.

(2) Demandant's allegation and judgment by the body about the allegation

A The demandant's allegation

The demandant alleges, in the written statement as of September 20, 2013, as follows about the "step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration" (hereinafter referred to as "Constituent component C").

(a) The allegation that the constituent component C of the corrected invention is interpreted as a "step of determining the tuning fork shape and dimentions of grooves and electrodes with the intention of satisfying the relation M1>M2" and that "if "the tuning fork shape and dimentions of grooves and electrodes" is determined with a parameter different from figure of merit in the step of determining "the tuning fork shape and dimentions of grooves, and electrodes," it does not correspond to the matters specifying the invention C even if the figure of merit of the fundamental mode vibration is larger than the figure of merit of the second overtone mode vibration as a result," is wrong.

Even if the constitutional component C satisfies such requirement, in examining whether a certain manufacturing method A belongs to a technical scope of the corrected invention, it cannot be determined only by recognizing the manufacturing method A objectively, and the decision cannot be made unless the subjective intent of a person who implemented the manufacturing method A in designing "the tuning fork shape and dimentions of grooves and electrodes" is considered, thereby reducing foreseeability of interpreting the technical scope of patent invention. As a result, a

third person may suffer unpredictable disadvantage. Therefore, such interpretation cannot be accepted and should be recognized to be impossible.

(b) If the constituent component C of the corrected invention is interpreted as a "step where the relation M1>M2 is achieved (satisfied) by the specific tuning fork shape and dimentions of grooves and electrodes (or decision of size)," the constituent component C only means a subjective intent for "determining the tuning fork shape and dimentions of grooves and electrodes," or intention of "determining the tuning fork shape and dimentions of grooves and electrodes." No objective technical significance can be found for the constituent component C. The interpretation alleged by the demandant cannot be accepted.

(c) Considering that technical objectivity is required in specification of the invention in the description of the scope of claims, it cannot be understood that the phrase "so that" in the constituent component C of the corrected invention specifies a technical causal relationship between the relation "M1>M2" and "determining the tuning fork shape and dimentions of grooves and electrodes." Therefore, it is reasonable to understand that the constituent component C is a "step where the relation M1>M2 is satisfied and the tuning fork shape and dimentions of grooves and electrodes is determined."

B Judgment by the body about the allegations

(a) The above allegation (a) of the demandant is examined as follows.

If the demandant intends to satisfy the relation M1>M2 in determining the tuning fork shape and dimentions of grooves and electrodes, it is necessary to verify whether or not the intention has been achieved or, or whether the relation M1>M2 has been satisfied in the determined tuning fork shape and dimentions of grooves and electrodes. The objective determination about the belongingness can be made by the verification.

Accordingly, the allegation of the demandant that foreseeability of interpreting the technical scope of patent may be reduced when the constituent component C of the corrected invention is interpreted as the "step of determining the tuning fork shape and dimentions of grooves and electrodes with the intention of satisfying the relation M1>M2," is unreasonable.

(b) The above allegation (b) of the demandant is examined as follows.

Paragraph [0027] of the corrected specification includes the description, "a quartz crystal tuning fork resonator capable of vibrating in a flexural mode can be obtained with figure of merit M1 of a fundamental mode vibration larger than figure of merit M2 of a second overtone mode vibration by the above-described tuning fork shape and dimentions of grooves and electrodes." and, as a working effect thereof, "frequency stability of the fundamental mode vibration may be higher than the frequency stability of the second overtone mode vibration, and the second overtone mode vibration can be suppressed. Accordingly, the quartz crystal resonator configured of the bending quartz crystal resonator of the example allows for frequency of fundamental mode vibration as an output signal and high frequency stability (excellent time accuracy)." Thus, it can be said that the objective technical significance of the constituent component C is disclosed in the corrected specification.

Accordingly, the allegation of the demandant that only the intention of "determining the tuning fork shape and dimentions of grooves and electrodes" is meant and no objective technical significance for the constituent component C can be found," is unreasonable.

(c) The above allegation (c) of the demandant is examined as follows.

Paragraph [0027] of the corrected specification includes the description, "In detail, a quartz crystal tuning fork resonator capable of vibrating in a flexural mode can be obtained with figure of merit M1 of a fundamental mode vibration larger than figure of merit M2 of a second overtone mode vibration by the above-described tuning fork shape and dimentions of grooves and electrodes." It can be said that the description discloses existence of causal relationship between the "tuning fork shape and dimentions of grooves and electrodes," figure of merit M1 of the fundamental mode vibration, and figure of merit Mn of the overtone mode vibration.

Paragraph [0048] includes the description, "In this case, a part width W7 including the portion the central line of the tines is less than 0.05 mm. Also, each groove width is less than 0.04 mm and a ratio (t1/t) of groove thickness t1, and tine thickness t is less than 0.79. By constructing like this, M1 becomes larger than Mn." The description discloses that the "part width W7" indicating a distance between two grooves, "groove width," and the "ratio of groove thickness t1 and tuning fork thickness t" are determined, to make M1 larger than Mn intentionally.

The "part width W7," "groove width," and "ratio of groove thickness t1 and tuning fork thickness t" are the requirements included in the "tuning fork shape and dimentions of grooves and electrodes." Therefore, it should be considered that a

person skilled in the art interprets, from the description, that the corrected specification determines the "tuning fork and dimentions of grooves and electrodes" so as to satisfy "M1>Mn."

Thus, the allegation of the demandant, "it cannot be understood that the phrase 'so that' in the constituent component C of the corrected invention specifies a technical causal relationship between the relation 'M1>M2' and 'determining the tuning fork shape and dimentions of grooves and electrodes,'" is unreasonable, and the interpretation alleged by the demadant is wrong.

(d) Thus, taking into consideration of the above (a) to (c) alleged by the demandant, it cannot be said that in the public use manufacturing method, a person skilled in the art can easily conceive of including the "step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M1 of fundamental mode vibration becomes larger than figure of merit M2 of second overtone mode vibration, the quartz crystal tuning fork resonator having the fundamental mode vibration and the second overtone mode vibration."

6 Judgment about the Different feature 2

(1) Judgment by the body about the Different feature 2

Evidence A No. 10 describes that two grooves are formed on each of thin vibrating rods (corresponding to the "first tuning fork tine" and "second tuning fork tine" in the corrected invention), but does not examine a difference in figure of merit when two grooves are formed on the tuning fork tines instead of one groove. According to Evidence A No. 16, it is natural to understand that the figure of merit M1 of the fundamental mode vibration and the figure of merit M2 of the second overtone mode vibration may be changed when the number of grooves formed on the tuning fork arms is changed.

Thus, it can be said that in the public use manufacturing method, even if the figure of merit M1 of the fundamental mode vibration is larger than the figure of merit M2 of the second overtone mode vibration, it is unclear how the relation between them is changed when two grooves are formed on the tuning fork arm. It should be said that in the public use manufacturing method, there is no positive motivation to configure the groove in the "step of forming grooves on each of obverse and reverse faces of the first and second tuning fork tines" to be located "at both sides of a neutral line so that a part width including the central line is less than 0.05 mm," and there is a disincentive, actually.

Therefore, it cannot be said that the configuration of the corrected invention in the Different feature 2 cannot be easily conceived.

(2) Demandant's allegation and judgment by the body about the allegation

A The demandant's allegation

The demandant alleges as follows in the written refutation as of June 19, 2013 about easily-conceived property of "the groove formed on each of obverse and reverse faces of the first and second tuning fork tines, which are defined in the corrected invention as grooves 'formed at both sides of the central line so that a part width including the central line is less than 0.05 mm,' and not specified as above in the public use manufacturing method," which is a different feature.

(a) The configuration of the groove specified in the description, "formed 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 on one side of one tuning fork tine substantially, or a constitution where no groove is formed, as well as a constitution where two grooves are formed on a tuning fork tine at both sides of a central line without including the central line. It cannot be understood that a working effect M1>M2 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.

Thus, it cannot be understood that the configuration of the groove in the corrected invention has special technical significance.

(b) According to Evidence A No. 10, it can be understood that the configuration where two grooves are formed on each of thin vibrating rods (corresponding to the "tuning fork tines") of the 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 thin vibrating rods. In the public use manufacturing method, a person skilled in the art can easily form two grooves on the tuning fork tine in the tuning fork resonator, on the basis of the matters described in Evidence A No. 10.

Since there is no special technical significance in specific groove size in the corrected invention, it can be said that a person skilled in the art can easily achieve the configuration as just a design matter. Therefore, a person skilled in the art can easily implement the different feature on the basis of the matters described in Evidence A No. 10.

(c) 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, 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 public use article, with two grooves, without taking into consideration Evidence A No. 10.

(d) Regarding the demandee's allegation that the one groove formed on a surface of each of the tines of the public use article cannot easily be replaced with two grooves since it is unclear whether or not the relation M1>M2 can be maintained when the one groove formed on the surface of each of the tines of the public use article is replaced with two grooves on the basis of the description in Evidence A No. 10, paragraph [0048] in the corrected specification includes only the description, " By constructing like this, M1 becomes larger than Mn." in connection with whether the relation M1>M2 is satisfied when "grooves are formed at both sides of the central line so that a part width including the central line is less than 0.05 mm," and there is no concrete confirmation. Since the corrected invention describes as if the relation M1>M2 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 M1>M2 can be satisfied, in examining the easily-conceived property. It should be considered that the one groove formed on the surface of each of the tines of the public use article can be easily replaced with two grooves.

(e) Regarding the point alleged by the demandant in the written demand for trial that there is no technical meaning in the point of "a part width including the central line is less than 0.05 mm," since paragraphs [0027] and [0048] describe that all of the tuning fork shape and dimentions of grooves and electrodes are related to each other in order to satisfy the relation M1>M2, the demandee alleges that "there is a technical meaning of indirectly regulating 'the tuning fork shape and dimentions of grooves and electrodes' for making the figure of merit M1 of the fundamental mode vibration larger than the figure of merit M2 of the second overtone mode vibration by regulating the part width, since the 'step of determining the tuning fork shape and dimentions of grooves and electrodes so that figure of merit M1 of fundamental mode vibration becomes larger than the figure of merit M2 of second overtone mode vibration' is

additionally specified." Regarding the above point, in the corrected invention, since the relation "figure of merit M1 of fundamental mode vibration is larger than the figure of merit M2 of second overtone mode vibration" is maintained, the point "a part width including the central line is less than 0.05 mm" does not need to directly contribute to maintaining the relation. That clearly indicates absence of technical significance. Thus, the demandee's allegation clarifies absence of technical significance.

B Judgment by the body about the allegations

(a) The above allegation (a) of the demandant is examined as follows.

The demandant's allegation that the corrected invention includes "a constitution where one groove is formed on one side of one tuning fork tine substantially" is unreasonable, according to the description "grooves are formed at both sides of a central line so that a part width including the central line is less than 0.05 mm," which indicates that the grooves are formed "at both sides of the central line" and excludes the case of a part width of 0 mm for one groove.

The demandant's allegation that the corrected invention includes "a constitution where no groove is formed substantially" is unreasonable, according to the description "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 "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," which indicates that grooves are formed on the electrodes.

Thus, it should be said that the allegation assuming that the corrected invention "includes a constitution where one groove is formed on one side of one tuning fork tine substantially, or a constitution where no groove is formed" is wrong.

(b) The above allegation (b) of the demandant is examined as follows.

Since Evidence A No. 10 does not include a description about the figure of merit of the fundamental mode vibration and the figure of merit of the second overtone mode vibration or the relationship between the effect of the invention described in Evidence A No. 10 and the figure of merit, it cannot be understood that the "the same effect as the constitution where one groove is formed on each of the thin vibrating rods" indicates the effect of "the figure of merit M1 of the fundamental mode vibration larger than the figure of merit M2 of the second overtone mode vibration."

Therefore, even if the same effect as the effect of "suppressing CI value and forming an easy-to-machine compact vibrator" in Evidence A No. 10 is achieved by

forming two grooves on the tuning fork tine of the public use article instead of one groove, the public use manufacturing method does not aim for M1>M2. It can be said that it is unclear whether the relation M1>M2 is maintained.

Thus, it can be said that the allegation that, in the public use manufacturing method, a person skilled in the art can easily form two grooves on the tuning fork tine in the tuning fork resonator, on the basis of the matters described in Evidence A No. 10, is wrong.

(c) The above allegation (c) of the demandant is examined as follows.

As examined in the above (b), Evidence A No. 10 does not include a description about the figure of merit of the fundamental mode vibration and the figure of merit of the second overtone mode vibration or the relationship between the effect of the invention described in Evidence A No. 10 and the figure of merit, and it is unclear, in the relation M1>M2, whether the configuration where two grooves are formed on the surface of each of the tines of the quartz crystal tuning fork resonator is equivalent to the configuration where one groove is formed. Accordingly, it should be said that the allegation that a person skilled in the art can easily replace as necessary the one groove formed on the surface of each of the tines of the public use article with two grooves on a premise that the configuration where two grooves are formed on the surface of each of the tines of the quartz crystal tuning fork resonator is equivalent to the configuration where one groove is formed, is wrong.

As examined in the above (a), the corrected invention excludes the case of a partial width of 0 mm for one groove. It should be said that the allegation premised on "including a configuration where one groove is formed on each of tuning fork tines substantially" is wrong.

(d) The above allegation (d) of the demandant is examined as follows.

Even if the corrected specification does not concretely prove that the relation M1>M2 is satisfied when "grooves are formed at both sides of a central line so that a part width including the central line is less than 0.05 mm," paragraph [0048] includes the description "By constructing like this, M1 becomes larger than Mn." for proving the corrected invention. It should be said that the allegation that the one groove formed on the surface of each of the tines of the public use article can be easily replaced with two grooves without strictly considering the point as to whether the relation M1>M2 can be satisfied.

(e) The above allegation (e) of the demandant is examined as follows.

It cannot obviously be said that the constituent component in the corrected invention "a part width including the central line is less than 0.05 mm," even if it does not deliver the technical significance alone, has no technical meaning if it delivers the technical significance in combination with another constituent component. Accordingly, the point "a part width including the central line is less than 0.05 mm" does not need to directly contribute to maintaining the relation, and it should be said that the demandant's allegation that there is no technical meaning is wrong.

(f) Thus, it cannot be said that a person skilled in the art can easily configure the grooves formed on each of obverse and reverse faces of the first and second tuning fork tines to be the grooves formed "at both sides of a central line so that a part width including the central line is less than 0.05 mm" in the public use manufacturing method, even if the demandant's allegations (a) to (e) are taken into consideration.

7 Summary

As described above, it should be said that the corrected invention cannot be easily invented by a person skilled in the art on the basis of the matters described in Evidences A No. 2 to 19, in light of the Different features 1 and 2.

No. 6 Closing

As described above, the patent for the corrected invention cannot be invalidated by the reasons and evidences alleged by the demandant.

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

November 18, 2013

Chief administrative judge:	KATO, Keiichi
Administrative judge:	SATO, Satoshi
Administrative judge:	MIZUNO, Yoshio