Patent Right	Date	July 17, 2024	Court	Intellectual Property High Court, Second Division
	Case number	2023 (Gyo-Ke) 10084, 10089		
- A case in which the court determined, concerning a patented invention titled "Electric impact fastening tool," that the request for correction in the trial for patent invalidation conforms to the correction requirements, but that a person ordinarily skilled in the art at the time of the priority date could have easily conceived of the configuration of the patented invention after the correction related to the difference from the prior art based on the prior art and well-known art, and the court rescinded the trial decision to the effect that the request for trial for patent invalidation is groundless.				

Case type: Rescission of Trial Decision to Maintain

Results: Granted

References: Article 134-2, Article 126, paragraph (5), and Article 29, paragraph (2) of the Patent Act

Related rights, etc.: Patent No. 4362657

Decision of the JPO: Invalidation Trial No. 2021-800019

Summary of the Judgment

1. This is a lawsuit seeking rescission of a decision made by the JPO (the "JPO Decision") regarding Inventions 1 through 6 related to the patent of an invention titled "Electric impact fastening tool," where the Correction by the request for correction in the trial for patent invalidation was approved and the request for a trial for patent invalidation was determined to be groundless.

The outline of the JPO Decision is as follows: the Correction aims to narrow the claims, and therefore, it does not substantially fall under an expansion of or change to the claims and is within the scope of the matters stated in the Description, and therefore, it conforms to the correction requirements; a person ordinarily skilled in the art at the time of the priority date could not have easily conceived of the configuration of Corrected Invention 1 related to the difference between Corrected Invention 1 and the primary prior art based on the prior art and well-known art, etc.; and the same applies to Corrected Inventions 2 through 6 where the particulars for identifying the invention are added to Corrected Invention 1.

2. The statements in the claims related to Invention 1 and Corrected Invention 1 are as follows.

[Claim 1 before the Correction] (Invention 1)

Concerning an electric impact fastening tool that transmits the rotation of the output unit of an electric motor to an impact generating unit and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit, an electric impact fastening tool characterized in that the electric motor is an outer rotor-type electric motor comprised of a stator having magnetic pole units, magnets attached to the outer peripheral side of the stator with a gap, and a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface.

[Claim 1 after the Correction (corrected parts are underlined)] (Corrected Invention 1)

Concerning an electric impact fastening tool that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit, an electric impact fastening tool characterized in that the electric motor is an outer rotor-type electric motor comprised of a stator having magnetic pole units, magnets attached to the outer peripheral side of the stator with a gap, and a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface.

3. In this judgment, concerning the conformance to the correction requirements of the Correction, the court found the conformance to the correction requirements set forth in Article 134-2, paragraph (9) and Article 126, paragraph (5) of the Patent Act in the same way as in the JPO Decision. However, in this judgment, concerning an inventive step of Corrected Invention 1, the court rescinded the JPO Decision since there was an error in the determination of the JPO Decision which affirmed an inventive step.

(1) The summary of the determination in this judgment related to the conformance to the correction requirements is as stated below.

In the Description, it is stated that hydraulic pulse generating unit P that is filled with hydraulic oil and generates torque corresponds to the impact generating unit, but there is no other statement to further limit the configuration of the hydraulic pulse generating unit P. Therefore, it is reasonable to find that the Correction where the statement in Claim 1 in the claims is corrected to "transmits the rotation of the output unit of the electric motor to the impact generating unit that is the hydraulic pulse generating unit that generates torque by hydraulic oil" is within the scope of the matters stated in the description, the claims, or drawings attached to the application form.

Based on the above, the Correction conforms to the correction requirements set forth in Article 134-2, paragraph (9) and Article 126, paragraph (5) of the Patent Act.

(2) The summary of the determination in this judgment related to an inventive step of

Corrected Invention 1 is as stated below.

A. Findings of difference between Corrected Invention 1 and the primary prior art

(Difference I)

Concerning an electric motor, in Corrected Invention 1, it is "an outer rotor-type comprised of a stator having magnetic pole units, and a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface," while in the primary prior art, it is not an outer rotor-type but "an inner rotor-type comprised of a stator and a rotor on the inner peripheral side of the stator."

(Difference II)

Concerning the form to hold magnets, in Corrected Invention 1, magnets are "attached to the outer peripheral side of the stator with a gap," while in the primary prior art, the form to hold magnets is not defined.

B. Whether Difference I could have been easily conceived of by a person ordinarily skilled in the art

(A) Findings of a secondary prior art

It is found that the invention of "an outer rotor-type electric motor comprised of a stator providing a coil to each tooth, sintered rare-earth magnets provided on the outer peripheral side of the stator with a gap, and a cylindrical rotor to hold the sintered rare-earth magnets on the inner peripheral surface" is stated in a secondary cited document.

(B) Application of the relevant secondary prior art to the primary prior art

Based on the above, when considering Difference I, the primary prior art is related to "an electric impact fastening tool" (a type of electric hand tools) and the secondary prior art is related to "an electric motor" that is applied to a "power hand tool." Therefore, technical fields of these two prior arts are related. In addition, at the time of the Priority Date, in the technical field of "electric impact fastening tools" to which the primary prior art belongs, torque was an important element for performance and increasing torque is found to have been a publicly known and obvious problem. Moreover, at the time of the Priority Date, it is found to have been publicly known that it is easier to increase torque with an outer rotor-type motor like the secondary prior art than with an inner rotor-type motor.

Therefore, there is a motive to apply the secondary prior art to the primary prior art to solve the publicly known problem of increasing torque and it should be said that it was easy for a person ordinarily skilled in the art to conceive of applying the outer rotor-type electric motor in the secondary prior art to the primary prior art to form the configuration regarding Difference I.

C. Whether Difference II could have been easily conceived of by a person ordinarily

skilled in the art

(A) Findings of well-known art

In Document A, it is stated that multiple magnets are provided on the outer peripheral side of a stator (inner peripheral side of a rotor) mutually with a gap in the outer rotor-type electric motor as a form to hold magnets. In addition, in Documents B and C, it is stated respectively that magnets are usually attached by being fixed with epoxy or acrylic adhesives in the adhesive fixing method.

(B) Application of well-known art to the primary prior art

Based on the above, when considering Difference II, it is found to have been well-known art in an outer rotor-type electric motor to place multiple magnets along the outer peripheral side of a stator (inner peripheral side of a rotor) and to "attach" them by the adhesive fixing method, etc. in order to hold the magnets.

Therefore, the configuration regarding Difference II could have been easily conceived of by a person ordinarily skilled in the art by applying the aforementioned well-known art.

Judgment rendered on July 17, 2024
2023 (Gyo-Ke) 10084 (Case 1), 2023 (Gyo-Ke) 10089 (Case 2)
Case of seeking rescission of the JPO decision
Date of conclusion of oral argument: April 24, 2024

Judgment

List of parties: as specified in Attachment 1 "List of Parties" of this judgment

Main text

1. The decision made by the Japan Patent Office (JPO) on June 21, 2023, concerning the case of Invalidation Trial No. 2021-800019, shall be rescinded.
2. The Defendant shall bear the court costs.

Facts and reasons

No.1 Request (Case 1, Case 2)

Same as the main text.

No. 2 Outline of the case

1. Summary of the case

This case is a lawsuit to seek rescission of a trial decision made by the JPO that approved a request for correction of the patent and determined that a request for trial for invalidation of a patent is groundless. The issues are whether there were any errors in the JPO's findings and determinations as to the conformance to the correction requirements, an inventive step, and description requirements (support requirements and clarity requirements).

2. History of the procedures at the JPO

The Defendant is a patentee of a patent for an invention titled "Electric impact fastening tool" (Patent No. 4362657: Exhibits Ko 50 and 52; priority date: September 7, 2005; application filing date: January 31, 2006; hereinafter the patent shall be referred to as the "Patent" and descriptions and drawings attached to the application form of the Patent shall be collectively referred to as the "Description").

The Plaintiffs requested a trial for patent invalidation of the Patent (hereinafter referred to as the "Trial for Invalidation") against the Defendant, who is set to be a demandee, on March 16, 2021, and the JPO examined it as Invalidation Trial No. 2021-800019. The Defendant submitted a correction request form (Exhibit Ko 51) dated April 28, 2022, and requested to correct the claims of the Patent and statements of the Description (hereinafter referred to as the "Correction").

The JPO rendered a trial decision on June 21, 2023, that "Correction of the description and claims of Patent No. 4362657 shall be approved as stated in the

corrected description and claims attached to the correction request form concerning Claims [1 through 6] after the correction. The request for the trial in question is groundless." (hereinafter referred to as the "JPO Decision") A certified copy of the JPO Decision was served to the Plaintiffs on June 29, 2023.

The Plaintiff in Case 1 filed a lawsuit on July 26, 2023, and the Plaintiff in Case 2 on August 8, 2023, to seek rescission of the JPO Decision, respectively. On October 30, 2023, Case 2 was consolidated with Case 1.

3. Statement of the claims, etc.

(1) The statements in the claims before the Correction are as stated below.

[Claim 1]

Concerning an electric impact fastening tool that transmits the rotation of the output unit of an electric motor to an impact generating unit and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit, an electric impact fastening tool characterized in that the electric motor is an outer rotor-type electric motor comprised of a stator having magnetic pole units, magnets attached to the outer peripheral side of the stator with a gap, and a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface.

[Claim 2]

The electric impact fastening tool stated in Claim 1 characterized in that the outer rotor-type electric motor is comprised of a support body having a cylindrical unit, a rotary shaft provided in the cylindrical unit via a pair of bearings, and a rotor flange unit closely fitted to the rotary shaft.

[Claim 3]

The electric impact fastening tool stated in Claim 2 characterized in that the impact generating unit and a rotor flange unit of the outer rotor-type electric motor are rotated integrally.

[Claim 4]

The electric impact fastening tool stated in any of Claims 2 and 3 characterized in that the rotor flange unit has a socket unit connected to the impact generating unit and the socket unit and the impact generating unit are connected.

[Claim 5]

The electric impact fastening tool stated in Claim 4 characterized in that the hexagonal unit of the liner upper plate of the impact generating unit is inserted into and connected with the socket unit.

[Claim 6]

The electric impact fastening tool stated in any of Claims 1 through 5 characterized

in that the electric motor has six magnetic pole units, two of which are excited to an S pole and an N pole, respectively, and the rotor is rotated by changing the excitation position by rotating it by 60 degrees.

(2) The statements of Claim 1 in the claims after the Correction are stated as follows (parts corrected by the Correction are underlined). Claims 2 through 6 that cite Claim 1 after the Correction were also corrected in the same way (hereinafter inventions related to the claims after the Correction shall be referred to as "Corrected Invention 1" or the like by respectively providing the claim number, and Corrected Inventions 1 through 6 shall be collectively referred to as the "Corrected Inventions").

[Claim 1]

Concerning an electric impact fastening tool that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit, an electric impact fastening tool characterized in that the electric motor is an outer rotor-type electric motor comprised of a stator having magnetic pole units, magnets attached to the outer peripheral side of the stator with a gap, and a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface.

4. Summary of the grounds for the JPO Decision

(1) Conformance to the correction requirements of the Correction

A. The Correction focuses on the matters listed in item (i) or item (iii) of the proviso to Article 134-2, paragraph (1) of the Patent Act and conforms to the provisions of Article 126, paragraph (5) and paragraph (6) of said Act as applied mutatis mutandis pursuant to Article 134-2, paragraph (9) of said Act (since the request for a trial for patent invalidation is made for claims, even in cases falling under item (i) of the proviso to Article 134-2, paragraph (1) of said Act, so-called independent patent requirements set forth in Article 126, paragraph (7) of said Act as applied mutatis mutandis following a deemed replacement of terms pursuant to Article 134-2, paragraph (9) of said Act are not applied).

B. The correction of Claim 1, which is corrected matter 1, from among the Correction limits the form of "an impact generating unit" by correcting "an impact generating unit" before the Correction to "an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil" and, therefore, its aim is a restriction of the claims (item (i) of the proviso to Article 134-2, paragraph (1) of the Patent Act).

The Correction aims for a restriction of the claims and limits the impact generating unit to one using a "hydraulic oil powered pulse type" (Embodiment 1) from among the

embodiments stated in the Description. Therefore, the Correction is not associated with changes to the category, coverage, or objective and does not substantially fall under the expansion of or change to the claims (Article 134-2, paragraph (9) and Article 126, paragraph (6) of the Patent Act).

According to the statements in paragraphs [0013] and [0014] of the Description (hereinafter numbers in parentheses [ ] refer to those in the Description unless otherwise specified), it is understood that impact generating unit P is a hydraulic pulse generating unit and hydraulic pulse generating unit P generates torque by hydraulic oil. Therefore, the Correction is within the scope of matters stated in the Description (Article 134-2, paragraph (9) and Article 126, paragraph (5) of the Patent Act).

C. All corrections of corrected matters 2 through 6 from among the Correction aim to explain unclear statements listed in item (iii) of the proviso to Article 134-2, paragraph (1) of the Patent Act, do not substantially fall under an expansion of or change to the claims, and are within the scope of matters stated in the Description. Therefore, they conform to the provisions of Article 126, paragraph (5) and paragraph (6) of said Act as applied mutatis mutandis pursuant to Article 134-2, paragraph (9) of said Act.

(2) Grounds for Invalidation 1 (Violation of clarity requirements)

A. Grounds for Invalidation 1-1 (Violation of clarity requirements by the Corrected Inventions)

It is obvious based on common general technical knowledge in the technical field of the Corrected Inventions that the term "a powerful torque" as used in Claim 1 indicates that the fastening force by the impact pulse is big enough to tighten a bolt, etc. Since it is not required to specify the degree of "a powerful torque" as a figure in the Corrected Inventions, it cannot be said that the Corrected Inventions are not clear.

B. Grounds for Invalidation 1-2 (Violation of clarity requirements by Corrected Inventions 5 and 6)

Concerning the term "the liner upper plate of the impact generating unit" as used in Claim 5, in consideration of the statements in Claims 1, 2, and 4 and statements in the Description and based on common general technical knowledge at the time of filing the application, it cannot be said to be unclear to the extent that the interests of a third party are unlawfully impaired. Therefore, the statements of Corrected Invention 5 and the statements of Corrected Invention 6 that cite Corrected Invention 5 are clear.

(3) Grounds for Invalidation 2 (Violation of support requirements)

Concerning the statement, "magnets attached to the outer peripheral side of the stator with a gap," as used in Corrected Invention 1, according to the statements in other particulars for identifying the invention, it is clearly specified that they are held in the

cylindrical can unit comprising a rotor and the details reflecting said interpretation are disclosed in the Description ([0013], etc.). Therefore, it cannot be said that the Corrected Inventions are not stated in the detailed explanation of the invention.

(4) Grounds for Invalidation 3 (Lack of an inventive step of the Corrected Inventions, based on Exhibit Ko 1 as the primary cited document)

A. Exhibit Ko 1 Document that is a publication distributed before the date of claiming the priority right of the Patent (B.C.Mecrow, A.G.Jack, D.J.Atkinson, P.G.Dickinson and S.Swaddle, International Conference on Power Electronics, Machines and Drives [Conf. Publ. No.487], Sante Fe, NM, USA, 2002, pp. 644-649, doi: 10.1049/cp: 20020192) contains an invention, "An outer rotor-type electric motor that is comprised of a stator where a coil is provided on each tooth, sintered rare-earth magnets provided on the outer peripheral side of the stator with a gap, and a cylindrical rotor to hold the sintered rare-earth magnets on the inner peripheral surface, and that is applied to power hand tools" (hereinafter referred to as "Exhibit Ko 1 Invention").

B. Exhibit Ko 2 Document (Unexamined Patent Application Publication No. 1996-267368) contains an invention, "Concerning a torque control pulse tool, wherein hydraulic-type pulse force generation device 16 is driven by electric motor 15 and torque is amplified and transmitted to tool output shaft 19 by impulse force generated by the pulse force generation device 16, an electric impact fastening tool wherein the electric motor is an inner rotor-type electric motor comprised of a stator and a rotor on the inner peripheral side of the stator" (hereinafter referred to as "Exhibit Ko 2 Invention").

C. Difference 1 from among the differences between Corrected Invention 1 and Exhibit Ko 1 Invention is a point where Corrected Invention 1 is "an electric impact fastening tool" "that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit," while Exhibit Ko 1 Invention is "an outer rotor-type electric motor that is applied to power hand tools" but not equipped with a technical matter, "that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit" as "an electric impact fastening tool." The motive to achieve "an electric impact fastening tool," which is a subgenus of "power hand tools," and further "an electric impact fastening tool" "that transmits the rotation of the output unit of an electric motor to an impact generating unit and generates a powerful torque on the

main shaft by the impact force generated in the impact generating unit" cannot be found from statements in Exhibit Ko 1 Document. Therefore, there is no motive to apply Exhibit Ko 2 Invention to an electric motor of Exhibit Ko 1 Invention, which is an electric motor that is only indicated to be applied to power hand tools. Even intending to apply Exhibit Ko 2 Invention to Exhibit Ko 1 Invention, since the form of the motor is different between Exhibit Ko 1 Invention and Exhibit Ko 2 Invention, it is not easy for a person ordinarily skilled in the art to conceive of Corrected Invention 1. Even if "an impact fastening tool" having "an impact generating unit" is well-known art, it is not easy for a person ordinarily skilled in the art to conceive of Corrected Invention 1 by applying such well-known art to Exhibit Ko 1 Invention.

D. Consequently, it is not easy for a person ordinarily skilled in the art to make Corrected Invention 1 and Corrected Inventions 2 through 6 where the particulars for identifying the invention are added to Corrected Invention 1, based on Exhibit Ko 1 Invention, Exhibit Ko 2 Invention, and well-known art.

(5) Grounds for Invalidation 4 (Lack of an inventive step of the Corrected Inventions, based on Exhibit Ko 2 as the primary cited document)

A. Exhibit Ko 2 Invention in (4) B. above is stated in Exhibit Ko 2 Document.

Corrected Invention 1 and Exhibit Ko 2 Invention are identical on the point that they are electric impact fastening tools that transmit the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generate a powerful torque on the main shaft by the impact force generated in the impact generating unit. Their difference is the point where the electric motor in Corrected Invention 1 is "an outer rotor-type electric motor comprised of a stator having magnetic pole units, magnets attached to the outer peripheral side of the stator with a gap, and a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface," while electric motor 15 in Exhibit Ko 2 Invention is "an inner rotor-type electric motor comprised of a stator and a rotor on the inner peripheral side of the stator."

B. Considering said difference, Exhibit Ko 2 Invention is related to an electric impact fastening tool and the electric motor is an inner rotor-type, but there are no statements or suggestions that the electric motor is an outer rotor-type. On the other hand, Exhibit Ko 1 Invention is the invention of an outer rotor-type motor itself and the application to power hand tools is indicated, but there are no suggestions about its application to an electric impact fastening tool, which is a subgenus of power hand tools. Therefore, there are no statements or suggestions in Exhibit Ko 2 Invention and Exhibit Ko 1 Invention to replace the inner rotor-type of an electric motor of an electric impact

fastening tool with an outer rotor-type, which means to reverse the inside and outside relationship between the stator and rotor. In addition, there is no motive for their replacement. Consequently, it is not easy for a person ordinarily skilled in the art to conceive of Corrected Invention 1 by applying Exhibit Ko 1 Invention to Exhibit Ko 2 Invention.

C. Even if Exhibit Ko 2 Invention requires "electric motor 15, as a rotation driving source, generating a large torque" according to the statements in paragraph [0013] of Exhibit Ko 2 Document, it is not easy for a person ordinarily skilled in the art, only based on general requirements where there are many means of resolution as stated above, to select a specific means to replace the inner rotor-type motor with an outer rotor-type motor from among those means of resolution.

D. Consequently, it is not easy for a person ordinarily skilled in the art to make Corrected Invention 1 and Corrected Inventions 2 through 6 where the particulars for identifying the invention are added to Corrected Invention 1, based on Exhibit Ko 2 Invention, Exhibit Ko 1 Invention, and well-known art.

(6) Grounds for Invalidation 5 (Lack of an inventive step of Corrected Inventions 1 and 6, based on Exhibit Ko 3 as the primary cited document)

A. Exhibit Ko 3 Document that is a publication distributed before the date of claiming the priority right of the Patent (description of U.S. Patent No. 3804180) contains an invention, "Concerning an impact wrench that transmits the rotation of rotor 11 of an electric motor to hammer 2 fixed to rotor 11, impact jaws 5 on hammer 2, and impact jaws 6 fixed on the edge-face of anvil 3 facing hammer 2 (hereinafter collectively referred to as "hammer 2, etc.") and that sends kinetic energy of hammer 2 and rotor 11 to spindle 4 by impact blow generated in the hammer 2, etc., an impact wrench wherein an electric motor is comprised of stator 8 and rotor 11, which includes the stator 8" (hereinafter referred to as "Exhibit Ko 3 Invention").

B. Difference 2 from among differences between Corrected Invention 1 and Exhibit Ko 3 Invention is the point where the impact generating unit in Corrected Invention 1 is "a hydraulic pulse generating unit to generate torque by hydraulic oil," while in the impact generating unit in Exhibit Ko 3 Invention, the impact force generated (torque) is the kinetic energy of hammer 2 and rotor 11 transmitted to spindle 4 by an impact blow generated in hammer 2, etc., but not "a hydraulic pulse generating unit to generate torque by hydraulic oil."

C. Considering Difference 2 above, in Exhibit Ko 3 Document, locking means 19 is disclosed, but adopting an impact generating unit other than one using an impact blow is not assumed at all. Therefore, it is found to be an essential configuration for Exhibit

Ko 3 Invention to adopt a configuration to transmit the rotation of rotor 11 of an electric motor to hammer 2, etc. and to send the kinetic energy of hammer 2 and rotor 11 to spindle 4 by the impact blow generated in hammer 2, etc. Contrary to the aforementioned Exhibit Ko 3 Invention, if any of the well-known art stated in Exhibits Ko 2, 25, and 29 through 33 or any of the inventions stated in Exhibits Ko 2, 25, and 29 through 33 is applied and the impact generating unit related to Difference 2 is replaced with a hydraulic pulse force generation device, a blow impact will not be involved in the process of generating impact, and this impairs the essential configuration. Therefore, the problem to be solved by Exhibit Ko 3 Invention, that is, to increase the impact energy of one impact blow and to minimize energy loss for engagement between the impact jaws of the hammer and the anvil, cannot be solved by replacing the impact generating unit with a configuration of a hydraulic pulse force generation device, which is well-known art or is publicly known. It is impossible to find a motive to conceive of Corrected Invention 1 through the aforementioned application. Rather, there is a disincentive in the application. Even if there is the common general technical knowledge stated in Exhibits Ko 2, 25, and 29 through 33 and there is a disadvantage to using a pulse force generation device to generate an impact force mechanically in Exhibit Ko 3 Invention, since Exhibit Ko 3 Invention aims to effectively use the impact energy from impact blow, which is mechanical impact force, it is impossible to find room to replace it with a hydraulic type pulse force generation device wherein the impact force is generated by hydraulic oil but does not increase the mechanical impact force.

D. Consequently, it is not easy for a person ordinarily skilled in the art to make Corrected Invention 1 and Corrected Invention 6 where the particulars for identifying the invention are added to Corrected Invention 1, based on Exhibit Ko 3 Invention and the common general technical knowledge stated in Exhibits Ko 2, 25, and 29 through 33, well-known art, and any of the inventions stated in Exhibits Ko 2, 25, and 29 through 33.

(7) Grounds for Invalidation 6 (Lack of an inventive step of the Corrected Inventions, based on Exhibit Ko 4 as the primary cited document)

A. Exhibit Ko 4 Document that is a publication distributed before the date of claiming the priority right of the Patent (description of EP Patent No. 1015185) contains an invention, "Concerning a resonant oscillating mass-based torquing tool that transmits the rotation of pulsed oscillation of flywheel rotor 4 of an electric motor to the inertia mass spring system (or mass spring system) and adds the fastening torque of a fastener to collet type socket 5 by oscillating energy under resonant conditions generated by the

inertia mass spring system (or mass spring system), an electric impact fastening tool wherein an electric motor is comprised of internal stator 20 with electromagnetic coils 6, permanent magnets 9 that oscillate and rotate around the internal stator 20 with a gap, and flywheel rotor 4 wherein permanent magnets 9 are stored in slot 2 in the inner diameter" (hereinafter referred to as "Exhibit Ko 4 Invention").

B. Difference 1 from among the differences between Corrected Invention 1 and Exhibit Ko 4 Invention is a point where what generates a powerful torque on the main shaft by the rotation of the output unit of an electric motor in Corrected Invention 1 is "an impact force generated in the impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil" to which the rotation is transmitted, while in Exhibit Ko 4 Invention, it is oscillation energy under resonant conditions generated in the inertia mass spring system (or mass spring system) to which the rotation of pulsed oscillation of flywheel rotor 4 is transmitted. Therefore, the tool is "an electric impact fastening tool" in both inventions, but it is an electric impact fastening tool in Corrected Invention 1 while it is a resonant oscillating mass-based torquing tool in Exhibit Ko 4 Invention.

C. Considering Difference 1 above, oscillation energy under resonant conditions generated in the inertia mass spring system (or mass spring system), which is a generation source of torque for a resonant oscillating mass-based torquing tool in Exhibit Ko 4 Invention, is generated by the resonant frequency of the inertia mass spring system (or mass spring system) or its adjacent oscillation and the rotation to be added to the rotor is also the rotation of pulsed oscillation to generate the resonant frequency of the inertia mass spring system. Therefore, the electric motor stated in Corrected Invention 1 only rotates and has a totally different principle of torque generation than one that generates torque with a large impact force using hydraulic oil that is separate from the electric motor. In addition, Exhibit Ko 4 Invention can be construed to show excellent effects compared with an impact tool (paragraph [0014] of Exhibit Ko 4 Document). Therefore, it is impossible to find a motive to apply the impact generating unit as a torque generation mechanism in Exhibit Ko 4 Invention. Installation of an impact generating unit rather impairs the technical meaning of Exhibit Ko 4 Invention, and there is a disincentive.

D. Consequently, it is not easy for a person ordinarily skilled in the art to make Corrected Invention 1 and Corrected Inventions 2 through 6 where the particulars for identifying the invention are added to Corrected Invention 1, based on Exhibit Ko 4 Invention, Exhibit Ko 2 Invention, and well-known art.

No. 4 Judgment of this court

1. This court determines that Grounds for Rescission 1 (error in the determination on the conformance to the correction requirements) are groundless, but Grounds for Rescission 4 (error in the determination on Grounds for Invalidation 4 [Lack of an inventive step of the Corrected Inventions, Based on Exhibit Ko 2 as the primary cited document]) have grounds from among the grounds for rescission in the JPO Decision argued by the Plaintiffs. The grounds are as stated below.

2. The Corrected Inventions

(1) The Description contains the statements shown in Attachment 3 "Patent Gazette" (Patent No. 4362657; Exhibit Ko 50). The Attachment shows the Patent Gazette before the Correction. The statements in the Description have been corrected by the Correction as shown in Attachment 4 "Corrected Parts of the Description."

(2) Outline of the Corrected Inventions

According to the statements in the Description, the Corrected Inventions are related to an electric impact fastening tool ([0001]). In a conventional electric impact fastening tool, usually, the rotation of the output shaft of an inner rotor-type electric motor is transmitted to an impact generating unit via a speed reducer, and a powerful torque is generated on the main shaft by the impact force generated in the impact generating part. In this case, whenever a high torque is generated, a large torsional force acts on the output shaft of the electric motor, which intends to rotate at a constant speed. In order to transmit force, it is necessary to increase the diameter of the output shaft and to use an electric motor that is one size or two sizes bigger. In cases of a small-size inner rotor-type electric motor that uses a brushless motor with high rotation speed, a relatively large speed reducer is necessary to decrease the rotation speed and increase torque by increasing the number of magnetic poles. It results in increases in the weight of the electric impact fastening tool for the portion of the speed reducer. In addition, in cases of an electric impact fastening tool using an inner rotor-type electric motor, output that increases for the portion of speed reduction is usually transmitted from an internal gear to the exterior case of the speed reduction mechanism (planetary gear mechanism). Therefore, there is a problem that operators feel the force transmitted to the case as a relatively big reaction force, and operators cannot use it for a long time due to resulting poor workability that increases fatigue ([0002] through [0008]).

The problem to be solved by the Corrected Inventions is to provide a downsized and lightweight electric impact fastening tool with low reaction force and with durability. The Corrected Inventions relate to an electric impact fastening tool that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a

hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit, wherein the electric motor is an outer rotor-type electric motor with low speed and high torque characteristics (Corrected Invention 1). In relation to Corrected Invention 1, the electric impact fastening tool in this invention has an outer rotor-type electric motor with low speed and high torque characteristics (Corrected Invention 2). In relation to Corrected Invention 1 and Corrected Invention 2, the electric impact fastening tool in this invention is configured so that the impact generating unit and the rotor flange unit at the edge of the outer rotor-type electric motor rotate integrally (Corrected Invention 3) ([0009] and [0010]).

3. Grounds for Rescission 1 (Error in the determination on the conformance to the correction requirements)

The Plaintiffs argue that adding the phrase "that is a hydraulic pulse generating unit to generate torque by hydraulic oil" after "the impact generating unit" in Claim 1 by the Correction is not considered to be made within the scope of the matters stated in the description, claims, or drawings attached to the application form, and therefore, it does not conform to the correction requirements (Article 134-2, paragraph (9) and Article 126, paragraph (5) of the Patent Act).

Considering the argument, according to the Description ([0013] and [0014]), it is stated that the electric impact fastening tool in Embodiment 1 generates a powerful torque on main shaft 107 by the impact pulse generated in hydraulic pulse generating unit P, and liner 102 provided in liner case 101 of hydraulic pulse generating unit P is filled with hydraulic oil to generate torque. In addition, in the Description ([0042]), it is stated that "The electric impact fastening tool in Embodiment 1 (omitted) is one of the examples. If a tool has a form to transmit the rotation of the output unit of the outer rotor-type electric motor to the impact generating unit and to generate a powerful torque on the main shaft by the impact force generated in the impact generating unit, it belongs to the technical scope of this invention." There are no other statements in the Description suggesting to limit the configuration of "hydraulic pulse generation device P." Based on the above, in the Description, it is stated that hydraulic pulse generating unit P that is filled with hydraulic oil and generates torque corresponds to the impact generating unit, but there is no other statement to further limit the configuration of the hydraulic pulse generating unit P. Therefore, it is reasonable to find that the Correction where the statement in Claim 1 in the claims is corrected to "transmits the rotation of the output unit of the electric motor to the impact generating unit <u>that is the hydraulic pulse generating unit that generates torque by hydraulic oil</u>" (corrected parts are

underlined) is within the scope of the matters stated in the description, the claims, or drawings attached to the application form.

The Plaintiffs argue that the specific "hydraulic pulse generation device P" (vane method) alone is disclosed in the Description ([0013] and [0014]), but that the Correction specifies it as a "hydraulic pulse generating unit that generates torque by hydraulic oil" and changes the statement in the Description to cover oil pulse units in general as a high-level concept. However, as stated above, in the Description, there is no statement suggesting to limit the configuration of "hydraulic pulse generation device P" to a specific one in Embodiment 1. It is construed that if it is "a hydraulic pulse generating unit that generates torque by hydraulic oil," other forms may be adopted. Therefore, it is impossible to construe that the Correction is beyond the scope of the matters stated in the description, the claims, or drawings attached to the application form and the aforementioned argument of the Plaintiffs cannot be accepted.

Based on the above, the Correction was made within the scope of the matters stated in the description, the claims, or drawings attached to the application form and conforms to the correction requirements set forth in Article 134-2, paragraph (9) and Article 126, paragraph (5) of the Patent Act. There are no other arguments or evidence sufficient to find that the Correction is against the provisions of Article 134-2 of said Act. Consequently, there is no error in the determination of the JPO Decision that approved the Correction.

4. Grounds for Rescission 4 (Error in the determination on Grounds for Invalidation 4 [Lack of an inventive step of the Corrected Inventions, based on Exhibit Ko 2 as the primary cited document])

In consideration of the case in question, Grounds for Rescission 4 argued by the Plaintiffs are examined below.

(1) Statements in Exhibit Ko 2 Document

A. Exhibit Ko 2 Document is a publication before examination of a patent application for an invention titled "Torque control type pulse tool" published on October 15, 1996 and has the following statements.

[0001]

[Industrial field of application] The present invention relates to a torque control pulse tool, such as a screw tightening tool.

[0007] … The present invention houses in its casing an electric motor as a rotation driving source, a means of generating pulse force driven by the electric motor, a means of detecting torque that is generated by the means of generating pulse force and is transmitted to the tool output shaft, and a means of controlling the electric motor based

on the output of the means of detecting torque.

[0011]

[Embodiment] FIGs. 1 through 3 show screw tightening tool 11 as an example of a pulse tool. The screw tightening tool 11 is configured as a hand-held tool and its casing 12 is comprised of main body unit 13 and handle unit 14. Electric motor 15 as a rotation driving source and hydraulic pulse force generation device 16 driven by electric motor 15 are installed inside main body unit 13.

[0012] Pulse force generation device 16 converts continuous torque provided by electric motor 15 to impulse torque and can amplify torque from electric motor 15 to 50 to 100 times as a peak value. Details of the aforementioned hydraulic pulse force generation device 16 are published, for example, in Unexamined Utility Model Application Publication No. 1984-140173 and Unexamined Patent Application Publication No. 1987-246481. Alternatively, in place of the aforementioned hydraulic type, a device that generates mechanical impact force can be used as pulse force generation device 16.

[0013] A DC motor generating a large torque is often used as electric motor 15, but a high-speed AC servo motor or DC servo motor can also be used. In addition, in order to make a small-capacity motor available for use and, thereby to enable downsizing of a tool, a speed reduction mechanism can be installed for amplifying torque. Angle sensor 17 is mechanically connected to electric motor 15.

[0014] Non-contact magnetostrictive torque sensor shaft 18 is coaxially connected to the output side of pulse force generation device 16, and further, tool output shaft 19 is coaxially connected to the end of torque sensor shaft 18. The tool output shaft 19 can be used for required screw tightening since its edge protrudes from casing 12.

[0025] In this configuration, when electric motor 15 is operated by operating on/off switch 34, an impulse force is generated by pulse force generation device 16 in response to the operation, and output shaft 19 is rotated by the impulse force, so that a predetermined screw tightening operation can be performed. The applied torque at that time is detected by torque sensor 21.

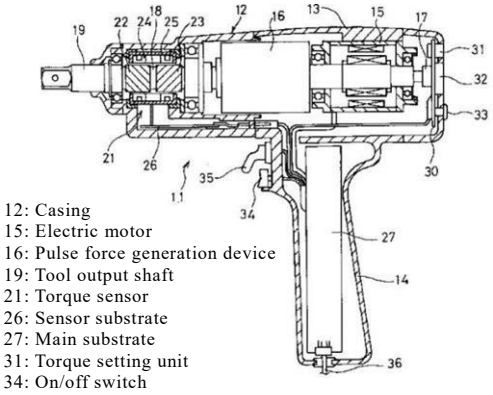
[Brief description of the drawings]

[FIG. 1] A cross-sectional view of a torque control type pulse tool that is an embodiment of the present invention.

[Explanation of codes]

12: Casing; 15: Electric motor; 16: Pulse force generation device; 19: Tool output shaft; 21: Torque sensor; 26: Sensor substrate; 27: Main substrate; 31: Torque setting unit; 34: On/off switch; 38: Communication line; 39: Data processor; 60: Fastening torque memory

[FIG. 1]



12: Casing
15: Electric motor
16: Pulse force generation device
19: Tool output shaft
21: Torque sensor
26: Sensor substrate
27: Main substrate
31: Torque setting unit
34: On/off switch

B. Exhibit Ko 2 Invention

According to [FIG. 1] in A. above, electric motor 15 in Embodiment [FIG. 1] in Exhibit Ko 2 Document has a rotor on the inner peripheral side of a stator. Therefore, it is considered to be an inner rotor-type electric motor. Based on the above, it is found that Exhibit Ko 2 Document contains Exhibit Ko 2 Invention in No. 2, 4. (4), B. above (an invention, "Concerning a torque control pulse tool, wherein hydraulic-type pulse force generation device 16 is driven by electric motor 15 and torque is amplified and transmitted to tool output shaft 19 by the impulse force generated by pulse force generation device 16, an electric impact fastening tool wherein the electric motor is an inner rotor-type electric motor comprised of a stator and a rotor on the inner peripheral side of the stator"; each code means as stated in [Explanation of codes] in [FIG. 1] in A. above) (concerning this finding, it is deemed that there are no disputes between the parties).

(2) Comparison between Corrected Invention 1 and Exhibit Ko 2 Invention

A. When dividing Corrected Invention 1 and Exhibit Ko 2 Invention, the following are found.

(A) Corrected Invention 1

"A. Concerning an electric impact fastening tool that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit,

C. an electric impact fastening tool wherein,

B. the electric motor is

B4. characterized in that it is an outer rotor-type electric motor comprised of

B1. a stator having magnetic pole units,

B2. magnets attached to the outer peripheral side of the stator with a gap, and
B3. a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface."
(B) Exhibit Ko 2 Invention
"a. Concerning a torque control pulse tool, wherein hydraulic-type pulse force generating device 16 is driven by electric motor 15 and torque is amplified and transmitted to tool output shaft 19 by the impulse force generated by the pulse force generation device 16,
c. an electric impact fastening tool, wherein
b. the electric motor is
b4. an inner rotor-type electric motor comprised of
b1. a stator and
b3. a rotor on the inner peripheral side of the stator."
B. Comparing Corrected Invention 1 and Exhibit Ko 2 Invention, as found in the JPO Decision in No. 2, 4. (5) A. above, Corrected Invention 1 and Exhibit Ko 2 Invention are identical on the point that they are "electric impact fastening tools that transmit the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generate a powerful torque on the main shaft by the impact force generated in the impact generating unit."

Meanwhile, Corrected Invention 1 and Exhibit Ko 2 Invention are found to be different in the following points.
(Difference I)

Concerning an electric motor, in Corrected Invention 1, it is "an outer rotor-type comprised of a stator having magnetic pole units, and a rotor having a cylindrical can unit for holding the magnets on the inner peripheral surface," while in Exhibit Ko 2 Invention, it is not an outer rotor-type but "an inner rotor-type comprised of a stator and a rotor on the inner peripheral side of the stator."
(Difference II)

Concerning the form to hold magnets, in Corrected Invention 1, magnets are "attached to the outer peripheral side of the stator with a gap," while in Exhibit Ko 2 Invention, the form to hold magnets is not defined.
C. In this regard, the Defendant argues that when finding differences, it is reasonable to find a cohesive configuration as a unit from the perspective of solving technical problems of an invention, but that since configurations from B1 through B4 in Claim 1 of the Patent are the particulars for identifying the invention indicating a cohesive

technical idea related to B. the electric motor, it is unreasonable to extract the configuration of B2 alone as independent Difference II.

However, the issue of how magnets used in an electric motor are held can independently be a subject of consideration regardless of the type of electric motor. Therefore, when finding differences between Corrected Invention 1 and Exhibit Ko 2 Invention, it should be possible to find differences regarding electric motors by separating Difference I that relates to types of electric motors due to the positional relationship between the stator and the rotor that holds magnets (inner motor-type or outer rotor-type) and Difference II that relates to specific form of holding magnets that are matters not related to the types of electric motors. The Defendant argues that dividing differences is equivalent to requiring multiple steps for determining the easiness of conceiving of an idea, and therefore, it cannot be approved since it is considered to be a serial combination of prior arts. However, as stated above, it is construed that Difference I and the Difference II in this case can be separated as independent differences and the argument of the Defendant based on a different assumption cannot be accepted.

(3) Whether Difference I could have been easily conceived of by a person ordinarily skilled in the art

A. Matters stated in Exhibit Ko 1 Document

(A) Exhibit Ko 1 Document is a document published around 2002 and the following statements are contained on pages 644 to 649 of the Document.

[i] A high torque machine for application to a power hand tool (page 644, title)

[ii] Introduction (page 644, left column, line 1 through line 36)

For the application to a power hand tool, it generally requires torque at an appropriate speed and with high output. Products must be designed to be lightweight, small-size, and ergonomic. In order to achieve a necessary torque, a forced-air cooling DC motor or universal motor is usually used with a step-down gear box. (...)

This article reports on a study aiming to manufacture a good system by manufacturing an electric machine with very high torque density. (...) Two machines were manufactured. One of them is a radial direction field machine and another one is (...) a claw pole amateur machine. (...)

[iii] Specifications (page 644, left column, line 37 through the last line)

In these specifications, the machine is required to fulfill the following matters.

Table 1

Mechanical layout	Outer rotor
Outer diameter	50 mm
Shaft length including coil end	< 65 mm
Cooling	Exterior fan ventilation
Steady state rating	1.5 Nm
Speed	1500 revs/min

[iv] Lamination type machine (page 644, right column, line 1 through line 5)

An outer rotor-type lamination structure machine that has been manufactured has a three-phase brushless design and sintered rare-earth magnets are used to maximize magnetic loading. The following design features are considered.

[v] Number of poles (page 644, right column, line 6 through line 15)

In order to minimize the depth of the core back unit and the protrusion of the coil edge, the number of poles must be high. (...) Since the speed is relatively slow, a 16-pole design was selected (...).

[vi] Number of teeth per pole (page 644, right column, line 16 through page 645, right column, line 4)

An outer rotor-type machine using sintered rare-earth magnets has large magnetic fluxes for all air gaps, and therefore, it is difficult to design it. The magnetic fluxes must get through a stator with a far smaller radius. (...)

This problem is overcome by adopting a design that is different than normal. In this design, the span between each tooth is 240 degrees, which means that each covers two or more poles. Therefore, as shown in FIG. 2, this 16-pole machine has only 12 teeth. The reason why the magnetic flux flowing in one tooth becomes the same as a 24-tooth design is because a short pitch winding coefficient is the same regardless of whether the span between the teeth is 120 degrees or 240 degrees. Therefore, the tooth width must be the same in any design, but since the number of teeth is halved, the area available for winding wire increases drastically.

(...)

FIG. 2: 16-pole 12-tooth design where a wider slot area is available.

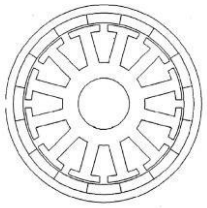


Figure 2. A 16 pole, 12 tooth design, permitting larger slot areas.

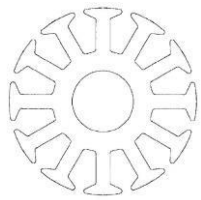


Figure 4. The final lamination profile, chosen for the demonstrator.

(...)

FIG. 4 shows a final lamination design with a stator outer diameter of 40mm.

FIG. 4: A final lamination profile selected for demonstration

[vii] Winding wire layout (page 645, right column, line 5 through line 29, page 646, left column, FIG. 5 and Table 2)

Concerning the winding wire process, (...) it is a natural winding method to place one coil per tooth, (...) a substitute layout is selected for simplification. In this layout, a winding wire is provided only to every other tooth, and therefore, there are only six coils in a 16-pole machine (...).

FIG. 5 is a photograph of this machine and shows winding wire and rotor configuration. Major dimensions are stated in Table 2.

(...)

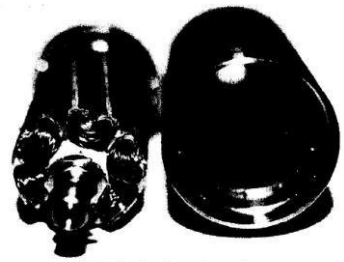


Fig 5 The laminated machine.

FIG. 5: Lamination-type machine

Table 2

Lamination type motor	
Number of poles	16
Number of phases	3
Number of stator teeth	12
Outer diameter	50 mm
Lamination stack length	50 mm
Full shaft length	65 mm
Magnet type	Sintered NeBFe
Depth in the magnet diameter direction	2.5 mm
Air gap length	0.5 mm
Stator outer diameter	40 mm
Tooth width	3.0 mm
Coils per phase	2
Turns per phase	190
Winding wire diameter	0.3 mm

Skew	1/2 slot pitch

[viii] Conclusion (page 649, left column, line 36 through line 50)

For the purpose of using high torque, two machines of fundamentally different types were designed, manufactured, and tested. Both machines generate significantly high specific output without forced cooling. (...) Neither machine can fulfill the ambitious specifications as required, but if the magnetic design is more sophisticated, a claw pole machine is projected to fulfill the specifications. (...)

(B) According to the statements in Exhibit Ko 1 Document and the entire import of oral arguments, it is found that Exhibit Ko 1 Document contains an invention "An outer rotor-type electric motor that is comprised of a stator providing a coil to each tooth, sintered rare-earth magnets provided on the outer peripheral side of the stator with a gap, and a cylindrical rotor to hold the sintered rare-earth magnets on the inner peripheral surface, and that is applied to power hand tools" (Exhibit Ko 1 Invention) is stated, as found by the JPO Decision.

B. Matters stated in other documents

(A) Exhibit Ko 24 Document ("Industrial Power Tools" prepared by the Plaintiffs) is the Plaintiffs' catalog for industrial tools published in 2004. In this document, there are the following statements: as "recommended torque for strength category 8.8 volts" of "a pulse tool," "4 to 450Nm" (page 8, upper middle column); "basic fastening technology" (page 9, middle column); "Recommendation regarding torque," "torque is important to ensure necessary clamping force." (page 9, upper left column, line 1 and line 2); and "Clamping capacity is a force to hold the joint together and to guarantee the function. Clamping force can be obtained practically by transmitting a specified torque. Approximately 10% of all torque applied to fastening is used for clamping force (...)." (page 9, lower left column, line 6 through line 15).

According to the following documents, it is also found to be common general technical knowledge that torque is an important element in specifications for hand-held electric fastening tool (impact wrench, etc.) and it is important to increase torque.

In other words, in Exhibit Ko 66 Document (Hattori Noriyasu, "*Saikin no Dendokogu no Doko* (Recent Trend of Electric Tools)," *Densetsu Shizai* (Electric Facility Materials), April 2003), there are the following statements: "On the other hand, the need for cordless tools (battery-powered electric tools) is increasing at plants where fastening is frequently performed using a compressor"; and "However, it is heard that a battery-powered tool has the disadvantage that it cannot provide the fastening torque as accurately as pneumatic tools." (page 30, line 13 through line 15, and line 22 through line 24). In addition, in Exhibit Ko 67 Document ("Machine tool & machine-

technology," November 1993), concerning "screw tightening tools" and the specifications of a hand-held power tool (impact wrench) used in the assembling process, fastening torque size based on screw thickness is stated (ASsde630 for M5 small screws and nuts [fastening torque: 6 to 65kg・cm/150W], ASs648-1 for M10 screws [maximum fastening torque: 500kg・cm/400W], etc.). In Exhibit Ko 68 Document (Konishi Junichi, "*Cordless ga Shuryu! Denkikojiyo Dendokogu no Shurui to Tokucho* (Cordless tools are mainstream! Types and Features of Electric Tools for Electrical Works)," *Densetsu Shizai* (Electric Facility Materials), April 1994), concerning the specifications of a cordless impact driver (WH12DE) which adopted an impact method and is used for "screw tightening," its performance, edge form, rotating speed, number of blow impacts, machine dimensions, weight, storage battery, charging time of battery charger, and fastening torque (900kg・cm) are stated.

(B) Exhibit Ko 18 Document (Ikebo Yasuhiro, "*Mota no Saishingijutsu Doko* (Motor Technology Update)," Sharp Technical Journal, No. 82, April 2002) indicates that inner rotor-types and outer rotor-types are adopted as brushless DC motors in the field of home electric appliances, and that the problem with inner rotor-types is the difficulty in increasing the diameter of rotors compared with outer rotor-types with the same outer shape, and as a result, a high driving current is required when a large torque is required. In addition, Exhibit Ko 19 Document (Sakurai Takanori, and other four, "*Autarotagata Burashiresu DC Mota no Kudohoshiki no Kento to Sono Oyo (Dai 1 po)* (Consideration of Driving Method of Outer Rotor-type Brushless DC Motor and its Application (First Report)," 2004 Tohoku-Section Joint Convention of Institutes of Electrical and Information Engineers) and Exhibit Ko 20 Document (Sakurai Takanori, and other three, "*Autarotagata Burashiresu DC Mota no Kudohoshiki niyoru Tokusei Hikaku* (Comparison of Features by Driving Method of Outer Rotor-type Brushless DC Motor)," Research Reports of Sendai National College of Technology, No. 35, [2005]) indicate that it is easier to increase torque with an outer rotor-type motor than with an inner rotor-type motor.

C. Based on the above, when considering Difference I, Exhibit Ko 2 Invention is related to "an electric impact fastening tool" (a type of electric hand tools) and Exhibit Ko 1 Invention is related to "an electric motor" that is applied to a "power hand tool." Therefore, technical fields of these two inventions are related. In addition, at the time of the Priority Date (September 7, 2005), in the technical field of "electric impact fastening tools" to which Exhibit Ko 2 Invention belongs, torque was an important element for its performance and increasing torque is found to have been a publicly known and obvious problem (paragraph [0013] of Exhibit Ko 2 Invention, and Exhibit

Ko 24). Moreover, at the time of the Priority Date, it is found to have been publicly known that it is easier to increase torque with an outer rotor-type motor than with an inner rotor-type motor (Exhibits Ko 18 through 20).

Therefore, there is a motive to apply Exhibit Ko 1 Invention to Exhibit Ko 2 to solve the publicly known problem of increasing torque and it should be said that it was easy for a person ordinarily skilled in the art to conceive of applying the outer rotor-type electric motor in Exhibit Ko 1 Invention to Exhibit Ko 2 Invention to form the configuration regarding Difference I.

D. In this regard, the Defendant argues that Exhibit Ko 2 Invention and Exhibit Ko 1 Invention have different technical fields since an electric impact fastening tool (B25B) and a motor (H02K) belong to different technical fields under International Patent Classification. However, it cannot be said that the relationship, etc. of the technical fields are always segmented only by International Patent Classification and, therefore, the aforementioned argument of the Defendant cannot be accepted.

The Defendant also argues as follows: Exhibit Ko 2 Invention and Exhibit Ko 1 Invention have different problems and there are no motives to combine them; in Exhibit Ko 2 Invention, it is suggested that the tool can be downsized by adopting a small capacity motor with a relatively small torque generated; and therefore, it is a disincentive to applying a high torque motor in Exhibit Ko 1 Invention to Exhibit Ko 2 Invention. However, as mentioned above, for a hand-held electric fastening tool, torque is valued in its specifications and it is considered to have been publicly known that increasing torque is important (Exhibit Ko 24). Therefore, increasing torque in the technical field of Exhibit Ko 2 Invention was a publicly known and obvious problem. In addition, in the description of Exhibit Ko 2 Invention (paragraph [0013]), it is explained not only that a "small capacity motor is used" as an electric motor, but also that a "DC motor with a large torque generated is used" in the preceding paragraph. Therefore, it is difficult to construe that there is a disincentive in applying a high torque outer motor to Exhibit Ko 2 Invention. Consequently, the aforementioned argument of the Defendant cannot be accepted.

The Defendant argues that since there are various kinds of means to increase torque, it is natural for a person ordinarily skilled in the art who accessed Exhibit Ko 2 Invention to consider increasing torque while maintaining an inner rotor-type, and that it is unreasonable logic to conceive of changing the type of motor fundamentally and applying Exhibit Ko 1 Invention that is an unfinished product. However, it is difficult to construe that the technology of the outer rotor-type in Exhibit Ko 1 Invention cannot be applied due to existence of substitute candidate means to increase torque. In addition,

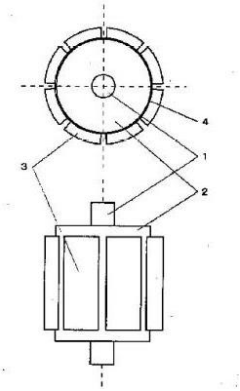
even if the motor in Exhibit Ko 1 Invention "could not fulfill the ambitious required specifications" in Exhibit Ko 1 Document, since it is found to have "generated significantly high specific power without forced cooling" on the other hand, it cannot be found that the motor in Exhibit Ko 1 Invention did not function as an electric motor and is an unfinished product where the applicability to the prior art is denied. Consequently, the argument of the Defendant cannot be accepted.

(4) Whether Difference II could have been easily conceived of by a person ordinarily skilled in the art

A. Matters stated in documents

(A) Exhibit Ko 70 Document is a publication before examination of a patent application for an invention titled "Fixing Structure and Method of Motor Magnets" published on March 23, 2001 (Unexamined Patent Application Publication No. 2001-78377). The technology stated in Exhibit Ko 70 Document is related to the bonding method of permanent magnets, particularly in apparatuses, parts, etc. using permanent magnets, such as motors (paragraph [0001] of Exhibit Ko 70 Document). For example, permanent magnets used in a motor, etc. are usually fixed to a yoke, etc. as shown in FIG. 1 of Exhibit Ko 70 Document. As a fixing method of these permanent magnets, there is the method to affix them mechanically or the method to affix them with an adhesive. The adhesive fixing method is a method to fix permanent magnets using an adhesive (paragraph [0002] of Exhibit Ko 70 Document). The adhesive fixing method usually uses an epoxy adhesive or an acrylic adhesive (paragraph [0003] of Exhibit Ko 70 Document). In addition, in the conceptual diagram showing the fixing configuration of a yoke and magnets of the motor in the present invention (FIG. 1 of Exhibit Ko 70 Document), it is stated that magnets 3 are attached to Yoke 2 mutually with a gap.

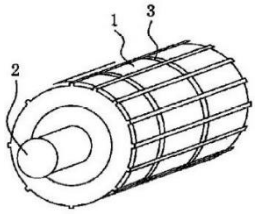
[FIG. 1]



(B) Exhibit Ko 71 Document is a publication before examination of a patent application of an invention titled "Motor and its Rotor" published on March 15, 2002 (Unexamined

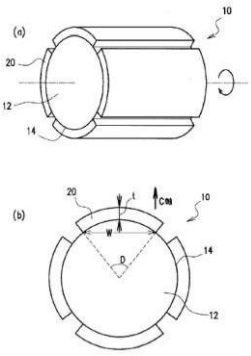
Patent Application Publication No. 2002-78257). The technology stated in Exhibit Ko 71 Document is related to a motor wherein permanent magnets are used in the rotor (paragraph [0001] of Exhibit Ko 71 Document). In Exhibit Ko 71 Document, it is stated that, in the rotor of the motor, a gap is provided between adjacent permanent magnets of a pole in a rotor having a plurality of poles (paragraph [0018] of Exhibit Ko 71 Document); in FIG. 1 of Exhibit Ko 71 Document, permanent magnets 1 are provided on the outer peripheral surface of rotor yoke 2, which is a rotor; for example, permanent magnets 1 are bonded to rotor yoke 2 using an adhesive; 3 is a gap between adjacent permanent magnets 1; for example, gap 3 is provided between permanent magnets 1 that are adjacent in the direction of the rotary shaft of rotor yoke 2 (paragraph [0019] of Exhibit Ko 71 Document); two-pack room temperature vulcanizing adhesive 5 that bonds permanent magnets 1 and rotor yoke 2 is an acrylic adhesive or an epoxy adhesive (paragraph [0024] of Exhibit Ko 71 Document).

[FIG. 1]



(C) Exhibit Ko 8 Document is a publication before examination of a patent application of an invention titled "Rotor and its Manufacturing Method" published on September 19, 2003 (Unexamined Patent Application Publication No. 2003-264963). The technology stated in Exhibit Ko 8 Document is related to a rotor wherein sintered magnets are fixed on the rotor shaft using adhesive and its manufacturing method (paragraph [0001] of Exhibit Ko 8 Document). It is stated that, in FIG. 1 (a) and (b) of Exhibit Ko 8 Document, rotor 10 is comprised of multiple magnet pieces 20 aligned in the circumferential direction on the outer peripheral surface of rotor shaft 12 and adhesive layer 14 that fixes multiple magnet pieces 20 on the outer peripheral surface (paragraph [0021] of Exhibit Ko 8 Document); and in FIG. 1 of Exhibit Ko 8 Document, multiple magnet pieces 20 are attached to rotor 10 mutually with a gap.

[FIG. 1]



(D) In Exhibit Ko 9 Document (Haraga Kosuke, "*Kozosecchakugijutu no Oyotenkai to Saitekikagijutsu no Kochiku* (Application and Development of Structural Bonding Technology and Building the Optimized Technology)," Journal of the Adhesion Society of Japan Vol. 39, No. 9 [September 1, 2003]), concerning bonding magnets of a motor, FIG. 7 of Exhibit Ko 9 Document shows the structure of the rotor of the motor; the segment-form permanent magnets are bonded on a spider and thermally cured-type epoxy adhesive has been used conventionally for bonding magnets; however, since the linear coefficient of expansion of neodymium magnets is 0 or negative, heat stress is great under thermal curing and the heat cycle resistance is poor, and workability is poor under thermal curing; and therefore, the adhesive has recently been changed to a two-pack room temperature vulcanizing-type heat-resistance acrylic adhesive that has excellent productivity.

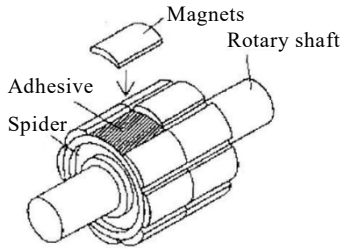


FIG. 7 Bonding of rotor magnets of a motor

(E) Exhibit Ko 5 Document is a publication before examination of a patent application of an invention titled "Rotor of Rotating Electric Machine" published on June 2, 2005 (Unexamined Patent Application Publication No. 2005-143248). The technology stated in Exhibit Ko 5 Document is related to a rotor used for a rotating electric machine, such as a power generator, motor, etc. (paragraph [0001] of Exhibit Ko 5 Document). It is stated that outer rotor 5 in FIG. 1 and FIG. 3 of Exhibit Ko 5 Document that is an

embodiment of the invention are comprised of rotor main body 50 and multiple pieces of magnet unit 7 fixed on rotor main body 50, and magnet unit 7 is formed with permanent magnets held in the circumferential direction in inner peripheral area 57 of ring unit 55 of rotor main body 50 with a gap (paragraphs [0030] through [0034] of Exhibit Ko 5 Document, and FIG. 3); magnet unit 7 is attached by adhesives, etc. to seating groove 61 that is formed in the circumferential direction with a gap (paragraph [0034] of Exhibit Ko 5 Document); and the aforementioned embodiment may be applied to an outer rotor and inner rotor of a motor served as a rotating electric machine (paragraph [0072] of Exhibit Ko 5 Document). In addition, in FIG. 1 of Exhibit Ko 5 Document, a cross-sectional view of a power generator in the embodiment is described; and in FIG. 3 of Exhibit Ko 5 Document, a partial cross-sectional view in a different direction of the outer rotor of a power generator wherein the ring unit holds the magnet unit is described, respectively (paragraph [0078] of Exhibit Ko 5 Document).

(F) In other words, in Exhibit Ko 5 Document, it is stated that multiple magnets are provided on the outer peripheral side of a stator (inner peripheral side of a rotor) mutually with a gap in the outer rotor-type electric motor as a form to hold magnets. In addition, in Exhibits Ko 8 and 9 Documents (since identical statements are found in Exhibits Ko 70 and 71 Documents, it is found to have been common general technical knowledge at that time), it is stated respectively that magnets are usually attached by being fixed with epoxy or acrylic adhesives in the adhesive fixing method.

B. Based on the above, when considering Difference II, it is found to have been well-known art in an outer rotor-type electric motor to place multiple magnets along the outer peripheral side of a stator (inner peripheral side of a rotor) and to "attach" them by the adhesive fixing method, etc., in order to hold the magnets (Exhibits Ko 5, 8, and 9).

Therefore, the configuration regarding Difference II could have been easily conceived of by a person ordinarily skilled in the art by applying the aforementioned well-known art.

C. In this regard, the Defendant argues that since the technical problems of Exhibit Ko 1 Invention in the primary cited document, and those in the secondary cited documents (Exhibits Ko 5, 8, and 9) are different even mutually, there is no room to affirm a motive to combine them. However, as stated above, the layout of magnets and the fixing method stated in these secondary cited documents (Exhibit Ko 5, 8, and 9) are found to have been well-known art, and therefore, it is not difficult to affirm a motive to apply them. Consequently, the argument of the Defendant cannot be accepted.

(5) Summary

As mentioned above, Corrected Invention 1 could have been easily conceived of by

a person ordinarily skilled in the art based on Exhibit Ko 1 Invention, Exhibit Ko 2 Invention, and well-known art. Consequently, the JPO Decision that denied the above contains an error in the determination on Grounds for Invalidation 4 [Lack of an inventive step of the Corrected Inventions, based on Exhibit Ko 2 as the primary cited document].

5. Conclusion

Based on the above, there is no error in the determination on the conformance to the correction requirements in the JPO Decision; however, there is an error in the determination on an inventive step for the Corrected Inventions. Consequently, the judgment shall be rendered as indicated in the main text.

Intellectual Property High Court, Second Division
Presiding judge: SHIMIZU Hibiku
Judge: KIKUCHI Eri
Judge: RAI Shinichi

(Attachment 1)

List of Parties

Plaintiff in Case 1: Atlas Copco Kabushiki Kaisha

Plaintiff in Case 2: Atlas Copco Industrial Technique AB

Defendant: YOKOTA INDUSTRIAL CO., LTD.

(Attachment 2)

Arguments of the Parties on Grounds for Rescission Other Than Grounds for Rescission 1 and Grounds for Rescission 4

1. Grounds for Rescission 2 (Error in the determination on Grounds for Invalidation 5 [Lack of an inventive step of Corrected Inventions 1 and 6, based on Exhibit Ko 3 Invention as the primary cited document])

(1) Argument of the Plaintiffs

Difference 2 between Corrected Invention 1 and Exhibit Ko 3 Invention that the JPO Decision found is related to "a hydraulic pulse generating unit to generate torque by hydraulic oil." The oil pulse unit and the pulse tool equipped with the oil pulse unit were well-known art or common general technical knowledge at the time of the Priority Date (Exhibits Ko 2, 10, 12, 25, and 29 through 32); it was also common general technical knowledge that they were publicly known or obvious means for solving the problem; and they were used for the publicly known purpose of solving the aforementioned problem in Corrected Invention 1 as well. Consequently, a motive to apply well-known art to Exhibit Ko 3 Invention is affirmed.

Adopting the configuration regarding Difference 1 between Corrected Invention 1 and Exhibit Ko 3 Invention is a matter that a person ordinarily skilled in the art could have easily conceived of by applying the configuration of an outer rotor-type rotating electric machine in Exhibit Ko 5 Document (Unexamined Patent Application Publication No. 2005-143248) to an outer rotor-type electric motor in Exhibit Ko 3 Invention. In Difference 1, correctly (Difference 1'), the "cylinder can unit" of a "rotor" of "an outer rotor-type electric motor" in Corrected Invention 1 "holds" "magnets attached on the outer peripheral side of a stator with a gap" on the "inner peripheral surface." On the other hand, concerning an electric motor in Exhibit Ko 3 Invention, it is not clear whether the cylindrical can unit of rotor 11 holds magnets attached on the outer peripheral side of stator 8 with a gap on the inner peripheral surface. Difference 1 (Difference 1') should be found to be more of a minor difference in this manner and it could have been easily conceived of by a person ordinarily skilled in the art.

Given the above, the JPO Decision contains errors in the findings and determinations as to the problem and purposes of Exhibit Ko 3 Invention and in the determination on Difference 2, and resulted in the false conclusion. Therefore, the JPO Decision related to Corrected Invention 1 and Corrected Invention 6 where the particulars for identifying the invention were added to Corrected Invention 1, should be considered to be unlawful and should be rescinded.

(2) Argument of the Defendant

Concerning Difference 1 between Corrected Invention 1 and Exhibit Ko 3 Invention, the technologies of Corrected Invention 1, Exhibit Ko 3 Invention in the primary cited document, and the secondary cited documents (Exhibits Ko 17 through 20) belong to different technical fields, and therefore, the logic of combining them is groundless. In addition, from the perspective of the technical fields and problems, etc. and the perspective of suggestions and disincentives, the logic that a person ordinarily skilled in the art could have conceived of the configuration regarding Difference 2 based on Exhibit Ko 3 Invention is groundless and there is a disincentive.

2. Grounds for Rescission 3 (Error in the determination on Grounds for Invalidation 3 [Lack of an inventive step of the Corrected Inventions, based on Exhibit Ko 1 as the primary cited document])

(1) Argument of the Plaintiffs

A. Different from the JPO Decision, Exhibit Ko 1 Document contains an invention, "Concerning a power hand tool that is equipped with an electric motor and requires a high torque, a power hand tool characterized in that an electric motor that is an outer rotor-type electric motor comprised of a stator providing a coil on each tooth, sintered rare-earth magnets provided on the outer peripheral side of the stator with a gap, and a cylindrical rotor to hold the sintered rare-earth magnets on the inner peripheral surface." Difference 1 between the aforementioned invention and Corrected Invention 1 (Difference 1') is found as follows: Corrected Invention 1 is "an electric impact fastening tool" "that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit," while Exhibit Ko 1 Invention is "a power hand tool," but is not specified as "an electric impact fastening tool" "that transmits the rotation of the output unit of an electric motor to an impact generating unit that is a hydraulic pulse generating unit to generate torque by hydraulic oil and generates a powerful torque on the main shaft by the impact force generated in the impact generating unit."

In addition, adopting the configuration regarding Difference 1' could have been easily conceived of by a person ordinarily skilled in the art based on the following facts: a pulse tool is a subgenus of a power hand tool and was well-known art at the time of the Priority Date; the fact that the electric motor in Exhibit Ko 1 Invention is high-torque type suggests its intended use as a fastening tool; and when the Description is examined in detail, no grounds can be found to conclude that an outer rotor motor is particularly suitable for a pulse tool from among power hand tools and impact fastening

tools.
B. Een if the details of Exhibit Ko 1 Invention and Difference 1 are found as has been found in the JPO Decision, the following are found: the pulse tool was well-known art at the time of the Priority Date; it was clearly stated in the details of Exhibit Ko 1 Invention that an electric motor is used for a power hand tool and the torque has a high output force, and Difference 1 was thus suggested; and, in addition, there are no grounds in the Description to conclude that an outer rotor motor is particularly suitable for pulse tools from among "impact fastening tools." Therefore, a person ordinarily skilled in the art could have easily conceived of the configuration regarding Difference 1 by applying Exhibit Ko 2 Invention, which is a pulse tool, to Exhibit Ko 1 Invention.

In addition, concerning Difference 2, a means to hold magnets on the rotating rotor is required in Exhibit Ko 1 Invention, and it was well-known art or common general technical knowledge at the time of the Priority Date that an epoxy adhesive and acrylic adhesive are used (Exhibits Ko 8, 9, 70, and 71). Therefore, Difference 2 is not a substantive difference or it is a matter that could have been easily conceived of by a person ordinarily skilled in the art.
C. Based on the above, the JPO Decision contains an error in the determination on Difference 1 and resulted in the false conclusion. Therefore, the JPO Decision related to Corrected Invention 1 and Corrected Inventions 2 through 6 where the particulars for identifying the invention were added to Corrected Invention 1, should be considered to be unlawful and should be rescinded.
(2) Argument of the Defendant
A. Exhibit Ko 1 Document only discloses an electric motor. In addition, in order to find that Difference 1 between Corrected Invention 1 and Exhibit Ko 1 Invention could have been easily conceived of by a person ordinarily skilled in the art, as found by the JPO Decision, multiple steps are required as follows: to apply the electric motor in Exhibit Ko 1 Invention to an electric hand tool, to select an electric impact fastening tool, and to select one where the impact generating unit is hydraulic. Therefore, it cannot be approved since it is considered to be a serial combination of prior arts. Even if there is no common point in the problems between Corrected Invention 1 and Exhibit Ko 1 Invention and there is a suggestion in Exhibit Ko 1 Invention to apply an electric motor to some electric hand tool, there are no suggestion, etc. that a person ordinarily skilled in the art should have selected a hydraulic type electric impact fastening tool.
B. Difference 2 is a substantial difference and, as stated in No. 3, 2. (2) B. in the main text, it could not have been easily conceived of by a person ordinarily skilled in the art.
3. Grounds for Rescission 5 (Error in the determination on Grounds for Invalidation 6

[Lack of an inventive step of the Corrected Inventions, based on Exhibit Ko 4 as the primary cited document])

(1) Argument of the Plaintiffs

Difference 1 between Corrected Invention 1 and Exhibit Ko 4 Invention that was found by the JPO Decision could have been easily conceived of by a person ordinarily skilled in the art by applying Exhibit Ko 2 Invention (an electric impact fastening tool equipped with an oil pulse unit) that is a fastening tool equipped with a pulse unit to generate a larger torque than the torque generated by a motor's continued rotation, which is the same action and function as the inertia mass spring system in Exhibit Ko 4 Invention, and that belongs to the same technical field of fastening tools as Exhibit Ko 4 Invention, to Exhibit Ko 4 Invention. In addition, as stated in 2. (1) B. above, adoption of the configuration regarding Difference 2 could have been easily conceived of by a person ordinarily skilled in the art.

Based on the above, the JPO Decision contains an error in the determination on differences and resulted in the false conclusion. Therefore, the JPO Decision related to Corrected Invention 1 and Corrected Inventions 2 through 6 where the particulars for identifying the invention were added to Corrected Invention 1, should be considered to be unlawful and should be rescinded.

(2) Argument of the Defendant

Concerning Difference 1 between Corrected Invention 1 and Exhibit Ko 4 Invention that was found by the JPO Decision, it is impossible to assume the replacement of the specific configuration to solve the problem of Exhibit Ko 4 Invention with another means. Concerning Difference 2 as well, as stated in No. 3, 2. (2) B. in the main text above, it could not have been easily conceived of by a person ordinarily skilled in the art.

4. Grounds for Rescission 6 (Error in the determination on Grounds for Invalidation 1 (violation of clarity requirements) and Grounds for Invalidation 2 (violation of support requirements))

(1) Argument of the Plaintiffs

A. The term "a powerful torque" as used in Claim 1 of the Patent cannot be clarified even referring to the claims and the Description. In addition, both the numerical scope as an absolute value and the standard value for relative comparison cannot be supplemented even by common general technical knowledge. Therefore, concerning Corrected Invention 1 and Corrected Inventions 2 through 6 where the particulars for identifying the invention are added to Corrected Invention 1, statements in the claims are unclear.

B. The term "the liner upper plate of the impact generating unit" as used in Claims 5 and 6 of the Patent are not specified in the claims. Therefore, it is not clear what the following phrase is describing, "characterized in that the hexagonal unit of the liner upper plate of the impact generating unit is inserted into and connected with the socket unit." Even in consideration of the statements in the Description ([0014], [0026], and FIG. 1), it is not clear how the "liner upper plate" works in the "impact generating unit." The technical meaning of "the hexagonal unit of the liner upper plate of the impact generating unit is inserted into and connected with the socket unit" is not clear. Therefore, statements in Corrected Inventions 5 and 6 are unclear.

C. The statement in Claim 1 of the Patent should be literally construed as stating that "magnets" "are attached" to the "stator." The "magnets" in Corrected Invention 1 are "attached to the outer peripheral side of the stator with a gap," while "magnets" in [0013] in the Description are "attached" on "the inner surface of cylindrical can unit 60," which means that they are attached to "the cylindrical can unit" comprising the "rotor." Therefore, the Corrected Inventions are not identical to the invention stated in the Description and do not conform to the support requirements.

(2) Argument of the Defendant

A. The term "powerful" as used in Claim 1 and the term "liner upper plate" as used in Claims 5 and 6 of the Patent are all clear based on the claims, statements in the Description, and common general technical knowledge.

B. In consideration of all the constituent features of the Patent and based on the tenor of the claims, it is clear that the magnets are attached to the cylindrical can unit. Therefore, the Corrected Inventions conform to the support requirements.

End of document

(Attachment 3 Patent Gazette: Omitted)

(Attachment 4)

Corrected Parts in the Description

[0035]

Corrected Parts in the Descriptions

Details indicated in this field may apply in the same way in the following Reference Examples 1 and 2.

[Reference Example 1]

[0036]

Reference Example 1 is related to electric hammer wrench R1 having hammer type impact mechanism unit 8 from among the electric impact fastening tools in this invention.

[Reference Example 2]

[0039]

Reference Example 2 is related to electric hammer wrench R2 having hammer type impact mechanism unit 9 from among the electric impact fastening tools in this invention.

[0042]

Outer rotor-type electric motor M is also used in the electric hammer wrench R2 in the same way as Embodiment 1. Therefore, it is obvious that it has the same excellent functions.

(Other)

In addition, the electric impact fastening tool in Embodiment 1 above is one of the examples. If a tool has a form to transmit the rotation of the output unit of the outer rotor-type electric motor to the impact generating unit and to generate a powerful torque on the main shaft by the impact force generated in the impact generating unit, it belongs to the technical scope of the invention.

[Brief description of the drawings]

[0045]

[FIG. 1] A cross-sectional view of the main part of an electric impact fastening tool (electric impulse wrench) in Embodiment 1 of this invention

[FIG. 2] A transverse sectional view of an outer rotor-type electric motor embedded in the electric impulse wrench

[FIG. 3] A longitudinal sectional view of an outer rotor-type electric motor embedded in the electric impulse wrench

[FIG. 4] Illustration of operating principle of the outer rotor-type electric motor

[FIG. 5] Illustration of operating principle of the outer rotor-type electric motor

[FIG. 6] Illustration of operating principle of the outer rotor-type electric motor
[FIG. 7] Illustration of operating principle of the outer rotor-type electric motor
[FIG. 8] Illustration of operating principle of the outer rotor-type electric motor
[FIG. 9] A cross-sectional view of a hydraulic pulse generating unit
[FIG. 10] An A-A cross-sectional view of FIG. 9 of the hydraulic pulse generating unit in use status of the electric impulse wrench that shows the movement of one rotation from step 1 through step 5
[FIG. 11] An enlarged cross-sectional view of step 1 in the hydraulic pulse generating unit
[FIG. 12] An enlarged cross-sectional view of step 2 in the hydraulic pulse generating unit
[FIG. 13] A diagonal perspective view of the main shaft
[FIG. 14] A diagonal perspective view of the main shaft
[FIG. 15] Illustration of the rotor of the outer rotor-type electric motor in other embodiments
[FIG. 16] Illustration of the rotor of the outer rotor-type electric motor in other embodiments
[FIG. 17] A cross-sectional view of an electric impact fastening tool (an electric wrench equipped with a hammer blow impact mechanism unit) in Reference Example 1 in this invention
[FIG. 18] A cross-sectional view of an electric impact fastening tool (an electric wrench equipped with a clutch blow impact mechanism unit) in Reference Example 2 in this invention
[FIG. 19] A conceptual diagram of the electric wrench in the reference embodiment
[FIG. 20] A transverse sectional view of an inner rotor-type electric motor
[FIG. 21] A longitudinal sectional view of an inner rotor-type electric motor
[FIG. 22] A longitudinal sectional view of an outer rotor-type electric motor
[FIG. 23] Illustration of an outer rotor-type electric motor in other embodiments