Trial decision

Invalidation No. 2010-800162

Kanagawa, Japan Demandant	AMADA COMPANY LIMITED
Tokyo, Japan Patent Attorney	MIYOSHI, Hidekazu
Tokyo, Japan Patent Attorney	TOYOOKA, Shizuo
Tokyo, Japan Patent Attorney	SAKURAI, Yoshihiro
Tokyo, Japan Patent Attorney	HIROSE, Fumio
Tokyo, Japan Attorney	SUEYOSHI, Wataru
Tokyo, Japan Attorney	TAKAHASHI, Motohiro
Tokyo, Japan Demandee	MITSUBISHI DENKI KABUSHIKI KAISHA
Tokyo, Japan Attorney	KONDO, Keiji
Tokyo, Japan Patent Attorney	NAKATSURU, Kazutaka
Tokyo, Japan Patent Attorney	UCHIKI, Tatsuya
Tokyo, Japan Patent Attorney	NAKANE, Takayuki

The decision on the case of the patent invalidation trial between the above parties on Japanese Patent No. 3138613, entitled "LASER MACHINING APPARATUS," dated April 14, 2011 came with a court decision of "revocation of the trial decision made on April 14, 2011 with regard to the case of Invalidation trial No. 2010-800162 by the Japan Patent Office" (2011 (Gyo-Ke) 10168, on October 7, 2011) at the Intellectual Property High Court, the case was proceeded further, and another trial decision was handed down as follows.

Conclusion

The correction shall be approved.

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 of the invention according to Patent No. 3138613 was filed on May 24, 1995, the establishment of the patent right relating to the invention according to Claims 1 to 7 was registered on December 8, 2000 (Japanese Patent No. 3138613), after that an opposition to the patent was submitted (Opposition No. 2001-72301), and a decision on the opposition, "The correction shall be approved. The patent according to Claims 1 to 3 and 5 of Japanese Patent No. 3138613 is maintained," was made as of February 20, 2002, and the above decision has become final and binding.

The demandant requested a trail for invalidation on September 14, 2010 to invalidate the patent regarding the invention according to Claim 1. The demandee submitted a written reply and made a correction request (hereinafter referred to as "the First correction request") on December 7, 2010. Both parties submitted oral proceedings statement briefs on February 16, 2011. An oral proceeding was held on March 2, 2011.

In light of the above, a decision, "The correction shall be approved. The patent according to Claim 1 of Japanese Patent No. 3138613 shall be invalidated," (hereinafter referred to as "the First trial decision") was made as of April 14, 2011. The demandee brought an action for revocation of the trial decision, and demanded a trial for correction (Correction No. 2011-390096) aiming at restriction of the scope of claims of the Patent. The case was reviewed at the Intellectual Property High Court as 2011 (Gyo-Ke) 10168. A judgment was made to revoke the first trial decision as of October 7, 2011, and the case of trial regarding the invalidation of the patent was remanded to the administrative judge.

In response, the body notified about subsequent examination in writing as of October 14, 2011, and designated a period for filing a demand for correction under the provisions of Article 134-3 (2) of the Patent Act. However, the demandee did not file a demand for correction in accordance with Article 134-2 (1) of the Patent Act within the designated period. On October 28, 2011, which was the last day of the period, a demand for correction in accordance with Article 134-2 (1) of the Patent Act was deemed to be made, citing the corrected description attached to the written request for the trial for correction (Correction No. 2011-390096) under the provisions of Article 134-3 (5) (hereinafter the written request for the trial for correction and the corrected description are referred to as "the Written correction request" and "the Corrected description," respectively).

The First correction request is to correct the invention according to Claim 1 of the scope of claims. Since Claims 2 to 6 and Claim 12 directly or indirectly depend on Claim 1, when the invention according to Claim 1 is corrected by the First correction request, the inventions according to Claims 2 to 6 and Claim 12 are corrected, accordingly. Meanwhile, the correction for the inventions according to Claims 2 to 6 and Claim 12 by the First correct request became final and binding on April 22, 2011,

which is the date of delivery of the First trial decision. (See below (Reference) for the trial decision on Claims 2 to 6 and Claim 12.)

The demandant submitted a written opinion, as an opinion on the correction request, on December 13, 2011, and the demandee submitted a written statement on December 14, 2011.

No. 2 Propriety of Correction

1. Contents of correction

The correction request of the case is to correct the description for which decision on opposition and correction request are approved in the First trial decision as described in the Corrected description attached to the Written correction request, and the points corrected are as follows, as denoted with underlines.

(1) Correction A

Regarding Claim 1 corrected in the decision on opposition in the scope of claims, "[Claim 1] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; a solenoid valve for switching fluid supply pressure in stages or an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface," is corrected to

"[Claim 1] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a gas pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means arranged in the reflecting member supporting section and supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching gas supply pressure successively; and fluid discharge means arranged in the reflecting member supporting section and discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; wherein the gas passing through the fluid discharge path is discharged to the outside by the fluid discharge means; and wherein a gas pressure required for elastically deforming the laser beam reflecting member is applied, between the fluid supply means and the fluid discharge

means, to the opposite surface of the laser beam reflecting surface."

(2) Correction B

Regarding Claim 2 dependent on Claim 1 corrected in the First trial decision in the scope of claims,

"[Claim 1] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface" and

"[Claim 2] The laser machining apparatus described in claim 1, wherein a gas to be supplied for elastically deforming the laser beam reflecting member is discharged from the fluid discharge means and supplied into the laser beam transmission path, to be used as purge air for purging the inside of the laser beam transmission path" is corrected to

"[Claim 2] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface, "and wherein a gas to be supplied for elastically deforming the laser beam reflecting member is discharged from the fluid discharge means and supplied into the laser beam transmission path, to be used as purge air for purging the inside of the laser beam transmission path."

(3) Correction C

Regarding Claim 5 corrected in the First trial decision in the scope of claims,

"[Claim 5] The laser machining apparatus described in any of Claims 1 to 4, wherein multiple laser beam reflecting members which elastically deform with a fluid pressure

are arranged in a laser beam transmission path" is corrected to

"[Claim 5] The laser machining apparatus described in any of Claims 2 to 4, wherein multiple laser beam reflecting members which elastically deform with a fluid pressure are arranged in a laser beam transmission path."

(4) Correction D

Regarding Claim 6 corrected in the First trial decision in the scope of claims,
"[Claim 6] The laser machining apparatus described in any of Claims 1 to 5, including means of monitoring a supplied fluid pressure when controlling a pressure of a gas to be supplied into the space in the reflecting member supporting section, and giving an alarm or stopping operation when a predetermined difference is generated with a command pressure value" is corrected to

"[Claim 6] The laser machining apparatus described in any of Claims 2 to 5, including means of monitoring a supplied fluid pressure when controlling a pressure of a gas to be supplied into the space in the reflecting member supporting section, and giving an alarm or stopping operation when a predetermined difference is generated with a command pressure value."

(5) Correction E

Regarding Claim 12 corrected in the First trial decision in the scope of claims,
"[Claim 12] The laser machining apparatus described in any of Claims 1 to 11, wherein optimal laser beam diameters are registered as machining conditions in advance, and that the laser beam diameter is selected in accordance with a material or a plate thickness of a work to be machined" is corrected to

"[Claim 12] The laser machining apparatus described in any of Claims 2 to 11, wherein optimal laser beam diameters are registered as machining conditions in advance, and that the laser beam diameter is selected in accordance with a material or a plate thickness of a work to be machined."

(6) Correction F

Regarding Claim 5 dependent on Claim 1 corrected in the First trial decision in the scope of claims,
"[Claim 1] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the

laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface" and
"[Claim 5] The laser machining apparatus described in any of Claims 1 to 4, wherein a plurality of laser beam reflecting members which elastically deform with a fluid pressure are arranged in a laser beam transmission path" are corrected to

"[Claim 13] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface, and wherein a plurality of laser beam reflecting members which elastically deform with a fluid pressure are arranged in a laser beam transmission path."

(7) Correction G

Regarding Claim 6 dependent on Claim 1 corrected in the First trial decision in the scope of claims,
"[Claim 1] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface" and
"[Claim 6] The laser machining apparatus described in any of Claims 1 to 5, including means of monitoring a supplied fluid pressure when controlling a pressure of a gas to be supplied into the space in the reflecting member supporting section, and giving an alarm or stopping operation when a predetermined difference is generated with a command pressure value" are corrected to

"[Claim 14] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member

comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface, and including means of monitoring a supplied fluid pressure when controlling a pressure of a gas to be supplied into the space in the reflecting member supporting section, and giving an alarm or stopping operation when a predetermined difference is generated with a command pressure value."

(8) Correction H

Regarding Claim 12 dependent on Claim 1 corrected in the First trial decision in the scope of claims,

"[Claim 1] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface" and

"[Claim 12] The laser machining apparatus described in any of Claims 1 to 11, wherein optimal laser beam diameters are registered as machining conditions in advance, and that the laser beam diameter is selected in accordance with a material or a plate thickness of a work to be machined" are corrected to

"[Claim 15] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for

discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface, and wherein optimal laser beam diameters are registered as machining conditions in advance, and that the laser beam diameter is selected in accordance with a material or a plate thickness of a work to be machined."

(9) Correction I

Regarding paragraph [0006] corrected in the decision on opposition in the detailed description of the invention,

"[0006]

[Means for solving the problem]

The laser machining apparatus according to the present invention for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprises: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; a solenoid valve for switching fluid supply pressure in stages or an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface" is corrected to

"[0006]

[Means for solving the problem]

The laser machining apparatus according to the present invention for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprises: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a gas pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means arranged in the reflecting member supporting section and supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching gas supply pressure successively; and fluid discharge means arranged in the reflecting member supporting section and discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; wherein the gas passing through the fluid discharge path is discharged to the outside by the fluid discharge means; and wherein a gas pressure required for elastically deforming the laser beam reflecting member is applied, between the fluid supply means and the fluid

discharge means, to the opposite surface of the laser beam reflecting surface."

(10) Correction J

Regarding paragraph [0007] corrected in the decision on opposition in the detailed description of the invention,

"[0007]

A gas to be supplied for elastically deforming the laser beam reflecting member is discharged from the fluid discharge means and supplied into the laser beam transmission path, to be used as purge air for purging the inside of the laser beam transmission path" is corrected to

"[0007]

A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means for supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching fluid supply pressure successively; and fluid discharge means for discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface, and configured so that a gas to be supplied for elastically deforming the laser beam reflecting member is discharged from the fluid discharge means and supplied into the laser beam transmission path, to be used as purge air for purging the inside of the laser beam transmission path."

2. Allegations of the parties about the correction request of the case

(1) The demandee's allegation

A. Regarding Correction A (Written correction request p. 5 l. 19 to p. 8 l. 8)

Correction A is, as indicated in the following Corrections a. to f., to restrict the configuration described in Claim 1 corrected in the decision on opposition within the scope of the matters described in the patent description, which does not enlarge or alter the scope of claims.

*Correction a.

The correction is to restrict the description, "a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure," to the description, "a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a gas pressure." The restriction is based on the descriptions in [0027] and [0043] in the patent description corrected in the decision on opposition.

*Correction b.

The correction is to restrict the description, "fluid supply means for supplying a gas into the space in the reflecting member supporting section," to the description, "fluid supply means arranged in the reflecting member supporting section and supplying a gas into the space in the reflecting member supporting section." The restriction is based on the descriptions in [0027] and [0029] and FIGS. 1 and 2 in the patent description corrected in the decision on opposition.

*Correction c.

The correction is to restrict the description, "a solenoid valve for switching fluid supply pressure in stages or an electropneumatic valve for switching fluid supply pressure successively," to the description, "an electropneumatic valve for switching gas supply pressure successively." The restriction is based on the descriptions in [0028], [0033], and [0043] and FIG. 2 in the patent description corrected in the decision on opposition.

*Correction d.

The correction is to restrict the description, "fluid discharge means for discharging the gas from the space in the reflecting member supporting section," to the description, "fluid discharge means arranged in the reflecting member supporting section and discharging the gas from the space in the reflecting member supporting section." The restriction is based on the descriptions in [0031] and FIGS. 1 and 2 in the patent description corrected in the decision on opposition.

*Correction e.

The correction is to restrict the description, "the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and ... to the opposite surface of the laser beam reflecting surface" to the description, "the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; wherein the gas passing through the fluid discharge path is discharged to the outside by the fluid discharge means, and ... to the opposite surface of the laser beam reflecting surface."

The restriction is based on the fact that the air is discharged from an air outlet, which is one example of the fluid discharge means, on the basis of the descriptions in [0031] of the patent description corrected in the decision on opposition, "a fluid operating circuit is structured in which the air 15 supplied from the air inlet 14 flows into an air passage 17 formed in the peripheral part of a circular holding plate 11 through air passages 16 arranged at equal intervals in the circular holding plate 11, then is discharged through an air outlet 18 formed in one place of the air jacket 13," and descriptions in FIGS. 1 and 2, and the fact that the air outlet is opened and nothing is connected thereto obviously, as depicted in FIGS. 1 and 2.

*Correction f.

The correction is to restrict the description, "a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface," to the description, "a gas pressure required for elastically deforming the laser beam reflecting member is applied, between the fluid supply means and the fluid discharge means, to the opposite surface of the laser beam

reflecting surface." The restriction is based on the description in [0031] of the patent description corrected in the decision on opposition.

B. Regarding Corrections 2 to 8 (Written correction request p. 3 l. 6-l. 15)

For Claims 2 and subsequent claims in the scope of claims, the correction request dated December 7, 2010 was approved, and letters patent was issued on June 7, 2011. The sections dependent from Claim 1 in Claims 2, 5, 6, and 12 are described as independent claims, Claims 2, 13, 14, and 15.

C. Regarding Corrections 9 and 10 (Written correction request p. 8 l. 9-l. 12, and p. 5 l. 14-l. 16)

The corrections are made so that inconsistent and ambiguous parts in the detailed description of the invention in the patent description, due to the restriction of the scope of claims, may correspond to the scope of claims, and fall under clarification of an ambiguous statement.

(2) The demandant's allegation

Regarding Correction A (Written opinion p. 4 l. 17 to p. 7 l. 19)

*Correction a.

In Claim 1 before correction, the material to be supplied into a space and discharged from the space is defined as a gas. It is obvious that the "fluid pressure" in Claim 1 before correction means "gas pressure." The correction is only clarifying an ambiguous description, and does not fall under the restriction of the scope of claims.

*Correction b.

This correction assumes that the fluid supply means is the "air inlet 14" in the detailed description of the invention, and it is obvious that the air inlet is arranged in the air jacket, or the reflecting member supporting section. The correction is only describing obvious matters and does not fall under the restriction of the scope of claims.

*Correction c.

In the correction, the point of correcting the "fluid" to the "gas" is only clarifying an ambiguous description, and does not fall under the restriction of the scope of claims.

The correction to delete "a solenoid valve for switching ... in stages" falls under the restriction of the scope of claims.

*Correction d.

This correction assumes that the fluid discharge means is the "air outlet 18" in the detailed description of the invention, and it is obvious that the air outlet is arranged in the air jacket, or the reflecting member supporting section. The correction is only describing obvious matters and does not fall under the restriction of the scope of claims.

*Correction e.

FIGS. 1 and 2 illustrates only that the air 15 supplied from the air inlet 14 flows into the air passage 17 through the air passage 16, then is discharged from the air outlet 18 formed in one place of the air jacket 13, and does not describe or illustrate how the air 15 discharged from the air outlet travels at all.

The paragraph [0034] and FIG. 3 in the patent description corrected in the decision on opposition disclose that the air 15 discharged from the air outlet 18 is not discharged to the atmosphere but supplied to a purge air supply port 51.

It is reasonable to understand that the description "gas is discharged to the outside by the fluid discharge means" means that the gas flows from the air outlet to the outside of the space in the reflecting member supporting section. The correction is only describing obvious matters, and does not fall under the restriction of the scope of claims.

*Correction f.

In the correction, the point of correcting the "fluid" to the "gas" is only clarifying an ambiguous description, and does not fall under the restriction of the scope of claims.

The gas pressure required for elastically deforming the laser beam reflecting member is applied in the space in the air jacket 13, or obviously applied between the air inlet 14 and the air outlet 18. The air inlet 14 corresponds to the fluid supply means, and the air outlet 18 corresponds to the fluid discharge means. The correction to add the description, "between the fluid supply means and the fluid discharge means," is only describing obvious matters, and does not fall under the restriction of the scope of claims.

The correction to add "configuration," which is only for formalization, does not fall under the restriction of the scope of claims.

3. Suitability of the purpose of correction, and determination on the presence of new matter and existence of enlargement or alteration

(1) Regarding the correction according to Correction A

Correction A is formed of Corrections a. to f. alleged by the demandee. The body examines them individually and comprehensively determines the correction according to Correction A.

A. Regarding Correction a.

Correction a. is to correct the description in Claim 1 corrected in the decision on opposition, "a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure," to the description "a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a gas pressure." Since Claim 1 includes the descriptions, "supplying a gas into the space in the reflecting member supporting section" and "discharging the gas from the space in the reflecting member supporting section," the "fluid pressure" in Claim 1 means "gas pressure" obviously.

Thus, the correction according to Correction a., which is aimed at correction of errors and made within the scope of matters described in the patent description, does not substantially enlarge or alter the scope of claims, obviously.

B. Regarding Correction b.

Correction b. is to correct the description corrected in the decision on opposition, "fluid supply means for supplying a gas into the space in the reflecting member supporting section," to the description "fluid supply means arranged in the reflecting member supporting section and supplying a gas into the space in the reflecting member

supporting section." The location of the fluid supply means is limited in the reflecting member supporting section. The correction is aimed at restriction of the scope of claims.

Paragraph [0027] in the patent description corrected in the decision on opposition includes the description "14 is an air inlet arranged in the central part of the air jacket 13." This description indicates that the air inlet 14 serving as the fluid supply means is arranged in the air jacket 13 serving as the reflecting member supporting section. The correction is made within the scope of the matters described in the patent description.

Furthermore, the correction does not substantially enlarge or alter the scope of claims, obviously.

C. Regarding Correction c.

Correction c. is to correct the description corrected in the decision on opposition, "a solenoid valve for switching fluid supply pressure in stages or an electropneumatic valve for switching fluid supply pressure successively," to the description "an electropneumatic valve for switching gas supply pressure successively." Correcting the "fluid supply pressure" to the "gas supply pressure" is aimed at correction of errors for the same reasons as the above A.

The correction to delete "a solenoid valve for switching ... in stages" in the selective matters specifying the invention, "a solenoid valve for switching in stages or an electropneumatic valve for switching successively," to be limited to "an electropneumatic valve for switching fluid supply pressure successively," is aimed at restriction of the scope of claims.

The correction, which is made within the scope of matters described in the patent description, does not substantially enlarge or alter the scope of claims, obviously.

D. Regarding Correction d.

Correction d. is to correct the description corrected in the decision on opposition, "fluid discharge means for discharging the gas from the space in the reflecting member supporting section," to the description "fluid discharge means arranged in the reflecting member supporting section and discharging the gas from the space in the reflecting member supporting section." The location of the fluid discharge means is limited in the reflecting member supporting section. The correction is aimed at restriction of the scope of claims.

Paragraph [0031] in the patent description corrected in the decision on opposition includes the description, "air outlet 18 formed in one place of the air jacket 13," which indicates that the air outlet 18 serving as fluid discharge means is arranged in the air jacket 13 serving as the reflecting member supporting section. The correction is made within the scope of matters described in the patent description.

Furthermore, the correction does not substantially expand or alter the scope of claims, obviously.

E. Regarding Correction e.

(A) Regarding the technical matters specified by the description "discharged to the outside"

Correction e. is to correct the description in Claim 1 corrected in the decision on

opposition, "the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed, and ...to the opposite surface of the laser beam reflecting surface," to the description "the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; wherein the gas passing through the fluid discharge path is discharged to the outside by the fluid discharge means; and ... to the opposite surface of the laser beam reflecting surface."

Regarding the technical matters specified by the description "discharged to the outside" in "the gas ... is discharged to the outside by the fluid discharge means," the demandee alleges that the air outlet is opened, while the demandant alleges that the gas flows to the outside of the space in the reflecting member supporting section. Then, the technical matters specified by the description "discharged to the outside" are examined below.

Referring to the patent description corrected in the decision on opposition about the term "outside," paragraph [0018] includes the description "the space is sealed excluding a fluid feed path and a fluid discharge path thereof, a fluid path in which a fluid supplied into the space is discharged to outside thereof is defined by contacting with a laser beam reflecting surface," [0003] describing prior arts includes the description "In the curvature variable reflecting curved-face mirror (a concave mirror) constructed as described above, when the valve 7 is opened and the pump 8 is actuated, the air in the space 4 is discharged through the air path 6, so that the pressure inside of the vessel 1 becomes lower than that outside thereof" and "if it is arranged so that air can be supplied from outside into the space 4 of the vessel 1 by the pump 8, the pressure in the vessel 1 can be made higher than that outside thereof, so that the reflecting film 3a can be deflected toward outside thereof."

Referring to the descriptions in [0003] "the pressure inside of the vessel 1 becomes lower than that outside thereof" and "the pressure in the vessel 1 can be made higher than that outside thereof," it can be said that the matter represented by the term "outside" means a space, in FIG. 8 of the patent, which is opposite to the space 4, in contact with the reflecting film 3a, and generates a difference in pressure from the space 4, so as to deform the reflecting film 3a fixed to the vessel 1 in accordance with the pressure difference from the space 4 in the vessel 1, or "a peripheral space of the vessel 1 surrounding the space 4 (the opened space in FIG. 8 of the patent)." For example, in FIG. 8 of the patent, the space in the air passage 6 is only a space communicating with the space 4, and it is not a space in contact with the reflecting film 3a, or is not an opened space around the vessel 1 surrounding the space 4. Therefore, the above space, even when it is located outside the space 4, does not correspond to the term "outside."

If the description in [0018], "the space is sealed excluding a fluid feed path and a fluid discharge path thereof, a fluid path in which a fluid supplied into the space is discharged to outside thereof is defined by contacting with a laser beam reflecting surface" is considered on the assumption that the term "outside" in the description of the prior arts indicates an opened space around the vessel 1 surrounding the space 4, it can be interpreted that the "outside" in [0018] means a space surrounding a sealed space, and such interpretation does not derive a contradiction.

In light of the above, it can be said that the technical matter specified by the description "discharged to the outside" in Correction e. is discharging into a peripheral space surrounding a sealed space.

(B) Regarding the purpose of correction of Correction e.

As described in the above (A), the technical matter specified by the description "discharged to the outside" in Correction e. is discharging into a peripheral space surrounding a sealed space. Correction e. specifies with limitation that the gas in the sealed space is discharged by the fluid discharge means to the peripheral space surrounding the sealed space.

Therefore, the correction in Correction e. is aimed at restriction of the scope of claims.

(C) Regarding the presence of new matter and existence of enlargement or alteration of Correction e.

As described in the above (A), referring to FIGS. 1 and 2 on the assumption that the technical matter specified by the description "discharged to the outside" in Correction e. is discharging into a peripheral space surrounding a sealed space, there is no description indicating that piping is connected downstream of the "air outlet 18" or no particular reasons for transferring the gas downstream of the "air outlet 18." Thus, it can be said that FIGS. 1 and 2 illustrate that the gas in the "air jacket 13" is discharged from the "air outlet 18" into the peripheral space surrounding the "air jacket 13."

Therefore, Correction e. is made within the scope of matters described in the patent description.

Furthermore, Correction e. does not substantially enlarge or alter the scope of claims, obviously.

F. Regarding Correction f.

Correction f. is to correct the description in Claim 1 corrected in the decision on opposition, "a fluid pressure required for elastically deforming the laser beam reflecting member is applied to the opposite surface of the laser beam reflecting surface," to the description "a gas pressure required for elastically deforming the laser beam reflecting member is applied, between the fluid supply means and the fluid discharge means, to the opposite surface of the laser beam reflecting surface." Correcting the "fluid pressure" to the "gas pressure" is aimed at correction of errors for the same reasons as the above A.

The correction to add the description " a fluid pressure ... is applied between the fluid supply means and the fluid discharge means" further limits a position where a gas pressure is applied, in light of limiting the location of the fluid supply means as indicated in the above B., and limiting the location of the fluid discharge means as indicated in the above D.. Thus, the correction is aimed at restriction of the scope of claims.

The correction to add "configuration" is only addition of an obvious matter, and is aimed at correction of errors.

According to the description in [0031] in the patent description corrected in the decision on opposition, "the air 15 supplied from the air inlet 14, a fluid operating circuit is constructed so that the air ... then is discharged from the air outlet 18 provided on one place of the air jacket 13, and this fluid pressure deforms a shape of the curvature variable reflector 10 to a spherical one," it can be said at least that a gas pressure is applied between the air inlet 14 serving as fluid supply means and the air outlet 18 serving as fluid discharge means. Thus, the correction according to the

Correction f. is made within the scope of matters described in the patent description.

Furthermore, the correction does not substantially enlarge or alter the scope of claims, obviously.

G. Summary of the correction according to Correction A

The correction according to Correction A includes matters limiting the matters specifying the invention, at least for Corrections b. to f. Therefore, the correction is aimed at restriction of scope of claims.

The correction is, as indicated in the above A. to F., made within the scope of matters described in the patent description, and does not substantially enlarge or alter the scope of claims.

(2) Regarding Corrections B to H

Correction B is to form a new Claim 2 as an independent claim of Claim 2 dependent on Claim 1 corrected in the First trial decision. The correction according to Correction B is aimed at clarification of ambiguous statements.

Corrections C to H are to form independent claims as Corrections F to H from multiple dependent claims dependent on Claim 1 corrected in the First trial decision, and to form claims dependent on the new Claim 2, as Corrections C to E, from the multiple dependent claims further dependent on Claim 2, which is dependent on Claim 1 corrected in the First trial decision. Thus, Corrections C to H are aimed at clarification of ambiguous statements.

The corrections according to Corrections B to H are made within the scope of matters described in the patent description, and do not substantially enlarge or alter the scope of claims, obviously.

(3) Regarding Corrections I to J

Corrections I and J are to provide consistency between the descriptions in [0006] and [0007] in the detailed description of the invention and the description of the scope of claims, in accordance with Corrections A and B that correct Claims 1 and 2 of the scope of claims. Thus, the corrections are aimed at clarification of ambiguous description.

The corrections according to Corrections I and J are made within the scope of matters described in the patent description, and do not substantially enlarge or alter the scope of claims, obviously.

4. Closing

In light of the above, the above correction complies with the provision of the proviso to Article 134(2) of the Patent Act before the revision in 1994, and falls under the provisions of Article 126(2) of the Patent Act before the revision in 1994, which is applied mutatis mutandis pursuant to the provisions of Article 134-2(5) of the Patent Act. The correction shall be approved as a legal correction.

No. 3 Inventions according to claim 1 of the Patent

According to the descriptions of the Corrected description and drawings, the invention (hereinafter referred to as "Patent invention") according to Claim 1 of the patent of the case is recognized as follows, as described in Claim 1 of the scope of

claims.
"[Claim 1] A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a gas pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means arranged in the reflecting member supporting section and supplying a gas into the space in the reflecting member supporting section; an electropneumatic valve for switching gas supply pressure successively; and fluid discharge means arranged in the reflecting member supporting section and discharging the gas from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; wherein the gas passing through the fluid discharge path is discharged to the outside by the fluid discharge means; and wherein a gas pressure required for elastically deforming the laser beam reflecting member is applied, between the fluid supply means and the fluid discharge means, to the opposite surface of the laser beam reflecting surface."

No. 4 Allegations of the parties
1. The demandant's allegation

The demandant demanded the decision, in the written request for invalidation trial, that the patent for the invention according to Claim 1 before correction of the patent of the case shall be invalidated, and alleged, as reasons for invalidation, Reasons for invalidation 1 according to Article 29(1)(iii) of the Patent Act and Reasons for invalidation 2 according to Article 29(2) of the Patent Act. In the first oral proceedings, the demandant withdrew Reasons for invalidation 1 (see the record of the first oral proceeding Demandant 3).

According to the written request for invalidation trial, the oral proceedings statement brief, the record of the first oral proceeding, and the written opinion as of December 13, 2011, the Reason for invalidation 2 alleged by the demandant is that the Patent invention can be easily made by a person skilled in the art on the basis of the invention described in Evidence A No. 1, the well-known technical matters indicated in Evidences A No. 2 to No. 4, and the technical matters described in Evidences A No. 6 to No. 8, and that the patent according to the Patent invention falls under the invention in Article 123(1)(ii) of the Patent Act and shall be invalidated. The demandant especially alleges the following (1) and (2) in the written opinion.

(1) <Regarding Different feature 3 between the Patent invention and the invention described in Evidence A No. 1>
(Written opinion p. 8 l. 6-p. 12 l. 12)

It is reasonable that the description in the Patent invention, "the gas is discharged to the outside by the fluid discharge means," is considered to mean that the gas flows from the air outlet to the outside of the reflecting member supporting section, and the description does not mean non-circulation for limitation. Thus, Different feature 3 does not exist.

Even when Different feature 3 exists, the configuration of using the feed path

and the discharge path separately in using the gas as a pressure medium only, or discharging the gas for pressure control to the outside without circulation is a well-known technical matter as indicated in Evidences A No. 14 to No. 16. It is not difficult at all to, in the invention described in Evidence A No. 1, employ the gas as a pressure medium, and discharge the fluid from the fluid discharge means by applying a well-known matter, accordingly.

(2) <Regarding Different feature 4 between the Patent invention and the invention described in Evidence A No. 1>
(Written opinion p. 12 l. 13-p. 17 l. 2)

It is wrong that the fixed throttle 23 in Evidence A No. 1 is considered to correspond to the fluid discharge means. The device corresponding to the fluid discharge means in the corrected invention is a fluid conduit distinct from the fluid conduit 14, which is arranged in a mirror case 13. Thus, Different feature 4 alleged by the demandee does not exist.

(3) <Regarding evidences>

The demandant submitted, as means of proof, with the written request for invalidation trial, the following Evidences A No. 1 to No. 9, and submitted, with a written opinion as of December 13, 2011, the following Evidences A No. 16 to No. 20

Evidence A No. 1 German Utility Model Registration No. 9407288 (published on September 15, 1994)
Evidence A No. 2 Japanese Unexamined Patent Application Publication No. H1-166894
Evidence A No. 3 Japanese Unexamined Patent Application Publication No. H1-219801
Evidence A No. 4 Japanese Unexamined Patent Application Publication No. S61-159613
Evidence A No. 5 Japanese Unexamined Patent Application Publication No. S57-6804
Evidence A No. 6 "New edition Hydraulic and Pneumatic handbook" edited by Japan Hydraulics & Pneumatics Society, Ohmusha, First edition First copy published on September 25, 1989, p. 482-483 and p. 558-561
Evidence A No. 7 Japanese Unexamined Patent Application Publication No. H7-36551
Evidence A No. 8 Japanese Unexamined Patent Application Publication No. H4-356395
Evidence A No. 9 Japanese Patent Publication No. H5-63272
Evidence A No. 16 Japanese Unexamined Patent Application Publication No. S62-241663
Evidence A No. 17 Japanese Patent Publication No. H2-18678
Evidence A No. 18 "General rules for pneumatic system JIS B8370" edited by Masaki NISHIIE, Japanese Standards Association, the first impression published on August 31, 1988, p. 20-p. 21
Evidence A No. 19 "Hydraulic/pneumatic circuit design handbook" written by Eiichi MORITA, Kogyo Chosakai Publishing, the fourth impression of the first

edition published on July 20, 1991, p. 239-240, and p. 281
Evidence A No. 20 Japanese Unexamined Patent Application Publication No. H5-212060

The following Evidences A No. 10 to No. 15 submitted with the oral proceedings statement brief were used as reference materials in the oral proceeding (see the record of the first oral proceeding Demandant 2).

Evidence A No. 10 Japanese Patent Publication No. S62-2674
Evidence A No. 11 Japanese Unexamined Patent Application Publication No. S61-253194
Evidence A No. 12 Japanese Unexamined Patent Application Publication No. H5-8073
Evidence A No. 13 Japanese Utility Model Publication No. H7-19673
Evidence A No. 14 Microfilm of Japanese Utility Model Application No. S60-140785 (Japanese Unexamined Patent Application Publication No. S62-51411)
Evidence A No. 15 Japanese Unexamined Patent Application Publication No. H5-149859

2. The demandee's allegation

According to the written reply as of December 7, 2010, the oral proceedings statement brief, the record of the first oral proceeding, the written correction request, and the written statement as of December 14, 2011, the demandee demanded the decision that the request for trial of the case was groundless. The allegation is as outlined below.

(1) <Regarding the meaning of "Fluid" described in Evidence A No. 1>
(Written correction request p. 12 l. 12-p. 14 l. 3)

The German word "Fluid" is a foreign word derived from English, which should be interpreted depending on the context. The German "Fluid" is interpreted into Japanese as "fluid for resistance (teikouyou ryutai)," for example. The term "teikouyou ryutai" is not a well-known technical word in Japanese, and cannot be found in technical term dictionaries, or the like. However, an interpretation "sadouyou ryutai (fluid for actuation)" is found, which is an example closest in meaning. The "sadouyou ryutai" is a liquid to generate "agitation resistance of liquid," and the "teikouyou ryutai" is based on the existence of "sadouyou ryutai," which means a liquid to actuate a machine.

Evidence A No. 1 discloses only a technical spirit to use pressure water, which serves as a cooling medium, as a pressure medium. The term "Fluid" has only the meaning of "cooling liquid" at most.

(2) <Regarding the disclosed technology in Evidence A No. 1>
(Written correction request p. 14 l. 4-p. 15 l. 17)

The invention described in Evidence A No. 1 is based on a design concept that a curvature radius of a curvature-variable mirror is changed by use of pressure water, which serves as a cooling medium, always flowing in the back space of the curvature-variable mirror and a deflecting mirror 6, so as to cool the mirrors. As an assumption

of the invention, the pressure water as a cooling medium always flows and circulates at the back of the mirrors, it is obvious that a path for supplying the pressure water into the back space of the mirrors and a path for discharging the pressure water from the back space must be separately arranged.

In the invention described in Evidence A No. 1, there is a design concept in which the configuration of arranging the feed path and the discharge path separately and the fact that the pressure water is a cooling medium are inseparable and integral in supplying pressure water into the back space in the curvature-variable mirror and discharging the pressure water from this space.

(3) <Regarding different features between the Invention and the invention described in Evidence A No. 1>
(Written correction request p. 20 l. 19-p. 22 l. 4)

The different features between the Patent invention and the invention described in Evidence A No. 1 are as follows.

<Different feature 1>

As a pressure medium for changing a curvature radius of a curvature-variable mirror, a gas is used in the Patent invention, and pressure water is used in the invention described in Evidence A No. 1.

<Different feature 2>

As a valve for changing a pressure of the pressure medium, an electropneumatic valve is used in the Patent invention, and a solenoid valve is used in the invention described in Evidence A No. 1.

<Different feature 3>

The Patent invention is configured so that a gas serving as a pressure medium passes through a discharge path and is discharged to the outside from fluid discharge means. The invention described in Evidence A No. 1 is configured so that pressure water serving as a pressure medium passes through a discharge path then circulates to flow into the back space of the mirrors again.

<Different feature 4>

In the Patent invention, the discharge means which generates pressure is arranged in a reflecting member supporting section, or near the back space of the curvature-variable mirror. In the invention described in Evidence A No. 1, a fixed throttle 23 which generates pressure is arranged on a return path which is located downstream the pressure water passing through the back space of the other reflecting mirror, or in a position distant from the back space of the curvature-variable mirror.

(4) <Regarding the Different feature 3>
(Written correction request p. 22 l.5-l.18)

In the invention described in Evidence A No. 1, in discharging pressure water to the outside, a method of treating the discharged water is required.

In the invention described in Evidence A No. 1, there is almost no option to discharge the pressure water without circulation, substantially.

(5) <Regarding the Different feature 4>
(Written correction request p. 22 l.19-p. 24 l.12)

In the invention described in Evidence A No. 1, the pressure water is

incompressible, and it may be the case that the back of the mirror and the fixed throttle 23 are spaced from each other.

A gas is compressible, and responsiveness is higher when the amount of the gas existing between the fluid supply means and the fluid discharge means is smaller. In the Patent invention, the fluid discharge means is arranged near the space at the back of the curvature-variable mirror.

In the invention described in Evidence A No. 1, there is no motivation to arrange the fixed throttle near the adaptive mirror 7 at all.

(6) <Regarding the Different feature 1>
(Written correction request p. 24 l. 13-p. 37 l. 22)

The invention described in Evidence A No. 1 is based on the technical spirit that the pressure water is a pressure medium as well as a cooling medium, and a person skilled in the art does not isolate a cooling function from a pressure control function in understanding the invention described in Evidence A No. 1. What a person skilled in the art conceives on the basis of the invention described in Evidence A No. 1 is one which achieves both cooling function and pressure control function. This point eliminates motivation for the Invention from the invention described in Evidence A No. 1, and may be an obstructive reason.

(7) <Regarding the Different feature 2>
(Written correction request p. 37 l. 23-p. 38 l. 19)

There is no motive for substituting a gas for the pressure water in the invention described in Evidence A No. 1, and there is also a technical disincentive, such as cooling performance or responsiveness in pressure change. Therefore, it is impossible to apply an electropneumatic valve for controlling pressure of a gas to the invention described in Evidence A that uses a liquid as a pressure medium.

For reaching the Invention from the invention described in Evidence A No. 1, a first step of employing a gas as a pressure medium and a second step of employing an electropneumatic valve as pressure control means are required. It is extremely difficult for a person skilled in the art to conceive of maintaining a configuration that a feed path of the pressure water and a discharge path of the pressure water are distinct from each other, in addition to the above two steps.

[No. 5. Examination as to Reasons for invalidation]
1. The matters described in Evidence A No. 1 and the invention described in Evidence A No. 1

Evidence A No. 1 includes the following description. In Evidence A No. 1, (a) with umlaut, (u) with umlaut, and (o) with umlaut are referred to as ae, ue, and oe, respectively, and Eszett is referred to as ss. The portions in brackets are interpretations with corrections added by the body on the basis of the attachment to Evidence A No. 1 by the demandant. Underlines are added to the corrections.

(1) Description in Evidence A No. 1 p. 1 the eighth line from the bottom to p. 2 l. 2

「Die Erfindung betrifft eine Laserschneidmaschine mit einem Lasergenerator sowie mit einem Laserschneidkopf, welcher mittels eines durch eine numerische Steuerung gesteuerten Antriebs relativ zu dem Lasergenerator und/oder relativ zu einem zu bearbeitenden Werkstueck in einer Ebene im wesentlichen parallel zu dem Werkstueck verschiebbar ist und eine Fokussieroptik fuer den Laserstrahl sowie eine Stelleinrichtung zur Einstellung der Fokuslage des Laserstrahls durch Verlagerung des Fokus' gegenueber dem Laserschneidkopf im wesentlichen senkrecht zu dem Werkstueck aufweist. 」

(This device relates to a laser cutting device having a laser oscillator and a laser cutting head, the laser cutting head being movable in a plane substantially parallel to a member to be machine, with respect to the laser oscillator and/or the member to be machined, by use of a power to be controlled by a numerical control device, and comprising a converging optical system for laser beam and an adjustment device for adjusting a focusing position of a laser beam by moving a focal point for the laser cutting head substantially perpendicularly to the member to be machine.)

(2) Description in Evidence A No. 1 p. 3 the fourth line from the bottom to p. 3 the last line

「Der Erfindung liegt nun die Aufgabe zugrunde, eine unter Werkstattbedingungen funktionstuechtige und fuer den automatisierten Betrieb geeignete Laserschneidmaschine bereitzustellen, die eine funktionssichere optische Einstellung der Fokuslage erlaubt. 」

(This device is based on a problem to provide a laser cutting device suitable to a functional automated operation under the condition of a work place, functionally reliable, and allowing for optical adjustment of a focusing position.)

(3) Description in Evidence A No. 1 p. 4 l. 1 to l. 13

「Diese Aufgabe wird erfindungsgemaess dadurch geloest, dass bei einer Laserschneidmaschine der eingangs genannten Art die numerische Steuerung zur Einhaltung einer senkrecht zu dem Werkstueck gleichbleibenden Fokuslage zusaetzlich die Stelleinrichtung zur Einstellung der Fokuslage in Abhaengigkeit von der Position des Laserschneidkopfs in dessen Bewegungsebene parallel zu dem Werkstueck steuert. Mittels der numerischen Steuerung wird zunaechst die Position des Laserschneidkopfs stellvertretend fuer die Laenge des Laserstrahls erfasst. Jeder Position des Laserschneidkopfs und somit jeder Laserstrahllaenge ist eine bestimmte Einstellung der Stelleinrichtung zur Variierung der Fokuslage zugeordnet. Durch die numerische Steuerung gesteuert, wird die Stelleinrichtung in die jeweilige Solleinstellung gebracht. 」

(According to the device, the problem is solved by a numerical control device, which maintains the focusing position perpendicular to the member to be machined unchanged, in the case of a laser cutting device of the above type, controlling the adjustment device for adjusting a focusing position, in accordance with a location of the laser cutting head with a moving surface parallel to the member to be machined. By use of the numerical control device, the location of the laser cutting head is grasped first instead of a length

of the laser beam. A predetermined adjustment value of the adjustment device for changing the focusing position is allocated to each of the locations of the laser cutting head, or each laser beam length. The adjustment device is controlled by the numerical control device and the locations thereof are target positions.)

(4) Description in Evidence A No. 1 p. 4 l. 14 to p. 5 l. 5

「Grundsaetzlich ist es moeglich, die Stelleinrichtung zur Einstellung der Fokuslage mittels der numerischen Steuerung stufenlos zu verstellen und jeder punktuellen Position des Laserschneidkopfs eine bestimmte Einstellung der Stelleinrichtung zuzuordnen. Zur Vereinfachung der Steuerung aber ist bei einer bevorzugten Ausfuehrungsform der erfindungsgemaessen Laserschneidmaschine vorgesehen, dass der Laserschneidkopf innerhalb eines in wenigstens zwei Teilbereiche unterteilten Bewegungsbereichs verschiebbar ist und dass jedem Teilbereich ein Verstellwert zur Einstellung einer gleichbleibenden Fokuslage zugeordnet ist. Die Anzahl der Teilbereiche wird zweckmaessigerweise in Abhaengigkeit von der Groesse der Flaeche gewaehlt, die mit dem Laserschneidkopf waehrend des Bearbeitungsvorgangs bestrichen wird. Auf der Grundlage des fuer jeden Teilbereich vorgegebenen Verstellwerts steuert die numerische Steuerung die Verstellung der Stelleinrichtung fuer die Fokuslage. Eine Verstellung der Stelleinrichtung wird stets dann veranlasst, wenn der Laserschneidkopf von einem Teilbereich seines Bewegungsbereichs in einen diesem benachbarten Teilbereich wechselt.」

(Basically, positions of the adjustment device for adjusting the focusing position can be adjusted smoothly by use of the numerical control device, and predetermined adjustment values of the adjustment device can be allocated to the locations of the laser cutting head. However, for easy control, in a preferable embodiment of a laser cutting device of the device, the laser cutting head can move in a moving area having at least two partial areas, and the adjustment values for adjusting the focusing position unchangeably are allocated to the partial areas. The number of the partial areas is preferably selected in accordance with the size of a surface swept during machining by the laser cutting head. On the basis of the adjustment values allocated to the partial areas, the numerical control device controls the adjustment values of the adjustment device for focusing position. The location adjustment of the adjustment device is always performed when the laser cutting head moves from a partial area of the moving area to an adjacent area.)

(5) Description in Evidence A No. 1 p. 5 l. 6 to p. 6 l. 10

「Eine weitere Ausfuehrungsform der Erfindung, bei der die Stelleinrichtung zur Einstellung der Fokuslage wenigstens einen der Fokussieroptik in Richtung des Laserstrahls vorgeschalteten Umlenkspiegel fuer den Laserstrahl aufweist, welcher an der seiner Spiegelflaeche abgewandten Flaeche von einem unter veraenderbarem Druck stehenden Fluid beaufschlagt und dadurch adaptiv gekruemmt wird, zeichnet sich dadurch aus, dass der Umlenkspiegel ueber eine stellbare Drosselanordnung mit Fluid beaufschlagt wird, mittels derer der Druck des Fluids veraenderbar ist und dass die numerische

Steuerung der erfassten Position des Laserschneidkopfs als Verstellwert zur Einstellung der Fokuslage einen Sollwert fuer den Druck des Fluids zuordnet und zur Einstellung dieses Sollwerts die stellbare Drosselanordnung steuert. Durch Regulierung des Durchflussquerschnitts der stellbaren Drosselanordnung wird der an deren Ausgangsseite anstehende Druck des Fluids reguliert. Dementsprechend kann die Spiegelflaeche des stromabwaerts der Drosselanordnung gelegenen Umlenkspiegels mit variablen Druecken beaufschlagt und in seiner Kruemmung veraendert werden. Von der Kruemmung der Spiegelflaeche abhaengig ist die Konvergenz bzw. die Divergenz des durch den Umlenkspiegel auf die Fokussieroptik reflektierten und von dieser auf das Werkstueck gebuendelten Laserstrahls. Infolgedessen Fuehrt eine Veraenderung des an der Ausgangsseite der stellbaren Drosselanordnung anstehenden und auf die Rueckseite der Spiegelflaeche des Umlenkspiegels wirkenden Fluiddrucks zu einer Aenderung der Fokussierungsverhaeltnisse an der Fokussieroptik und somit zu einer Einstellung der Fokuslage des Laserstrahls senkrecht zu dem Werkstueck. Mittels der numerischen Steuerung wird ueber den Verstellwert die Stelleinrichtung zur optischen Einstellung der Fokuslage derart gesteuert, dass sich ueber den gesamten Bewegungsbereich des Laserschneidkopfs in dessen Bewegungsebene parallel zu dem zu bearbeitenden Werkstueck bezogen auf letzteres eine einheitliche Fokuslage einstellt. ⌋

(In any further embodiment of the device, the adjustment device for adjusting the focusing position includes at least one deflecting mirror for laser beam located in a stage preceding the converging optical system in a laser beam direction. The deflecting mirror is pushed by a fluid under a variable pressure on a surface opposite a mirror surface thereof, and adaptively deformed. The fluid is applied to the deflecting mirror via an adjustable throttle device which can change fluid pressure. The numerical control device allocates a predicted fluid pressure value as an adjustment value for adjusting the focusing position to the location where the laser cutting head is grasped, and controls the adjustable throttle device for adjusting the predicted value. A flow-rate cross section of the adjustable throttle device is controlled, to control fluid pressure at an output side thereof. In response thereto, the mirror surface of the deflecting mirror arranged downstream of the throttle device is pushed by variable pressure, and a curvature radius thereof is changed. Convergence or diffusion of the laser beam reflected on the converging optical system by the deflecting mirror and converged on the member to be machined from the converging optical system depends on the curvature radius of the mirror surface. Accordingly, when the fluid pressure at the output side of the adjustable throttle device and acting on the back face of the mirror surface of the deflecting mirror changes, convergence ratio with respect to the converging optical system is changed, and the focusing position of the laser beam perpendicular to the member to be machined is adjusted. The adjustment device for optically adjusting the focusing position is controlled via the adjustment values by use of the numerical control device so that uniform focusing position based on the member to be machined may be adjusted in the whole of the moving area of the laser cutting head with the moving surface parallel to the member to be machined.)

(6) Description in Evidence A No. 1 p. 7 l. 6 to l. 15

「Wird eines der parallel geschalteten Drosselventile permanent von Fluid durchstroemt, so ist bei Verwendung eines als Kuehlmittel geeigneten Fluids stets eine hinreichende Kuehlung der Spiegelflaeche des Umlenkspiegels gewaehrleistet. Zweckmaessigerweise entspricht der Druck des Fluids, der sich an der Ausgangsseite der Drosselanordnung einstellt, wenn die uebrigen Drosselventile der Drosselanordnung in Schliessstellung geschaltet sind und lediglich das permanent geoeffnete Drosselventil von Fluid durchstroemt wird, einem einem Teilbereich der Laserschneidkopfbewegung zugeordneten Druck-Sollwert. 」

(When a fluid flows in one of throttle valves connected in parallel, the fluid being suitable as a cooling medium, satisfactory cooling of the mirror surface of the deflecting mirror can be secured. Preferably, when other throttle valves of the throttle device are switched to a closed position and a fluid flows only in always-open throttle valves, the fluid pressure adjusted at the output side of the throttle device corresponds to the predicted pressure value allocated to the moving partial area of the laser cutting head.)

(7) Description in Evidence A No. 1 p. 11 l. 1 to l. 8

「Wie Figur 1 zu entnehmen ist, wird bei Laserschneidmaschinen ein Laserstrahl 1 ausgehend von einem Lasergenerator 2 ueber Umlenkspiegel 3, 4, 5, 6, 7 zu einer als Sammellinse 8 ausgebildeten Fokussieroptik gelenkt. Die Sammellinse 8 buendelt den Laserstrahl 1 durch eine Duese 9 auf ein nicht dargestelltes Werkstueck. Die Duese 9 dient zur Aufgabe von Schneidgas in die Schneidspur des Laserstrahls 1. Bei dem Umlenkspiegel 7 handelt es sich um einen adaptiven Spiegel mit veraenderbarer Kruemmung. 」

(As shown in FIG. 1, in the laser cutting device, the laser beam 1 from a laser oscillator 2 is directed to a converging optical system constituted as a converging lens 8 via deflecting mirrors 3, 4, 5, 6 and 7. The converging lens 8 converges the laser beam 1 on a member to be machined (not shown) by means of a nozzle 9. The nozzle 9 is used for charging a cutting trajectory of the laser beam 1 with cutting gas. The deflecting mirror 7 treats an adaptive mirror with variable curvature radius.)

(8) Description in Evidence A No. 1 p. 12 the sixth line from the bottom to p. 13 l. 2

「Die Vorrichtung nach Figur 1 bedient sich zu diesem Zweck des adaptiven Spiegels 7. Der adaptive Spiegel 7 besitzt eine polierte Spiegelflaeche 12, die von der Oberflaeche einer duennen Metallscheibe gebildet wird. Diese duenne Metallscheibe ist mit ihren Raendern in den Fassungsring eines Spiegelgehaeuses 13 eingespannt. Von der Spiegelflaeche 12 wird der einfallende Laserstrahl 1 zu einer Sammellinse 8 reflektiert, die den Laserstrahl 1 auf die Werkstueckoberflaeche buendelt. 」

(The device in FIG. 1 is operated, for this purpose, by using an adaptive mirror 7. The adaptive mirror 7 includes a polished mirror surface 12 formed by a surface of a thin metal disk. The thin metal disk has an edge set in an attachment ring of a mirror case 13. The incident laser beam 1 is reflected by the mirror surface 12 to the converging lens 8 which converges the laser beam 1 onto a surface of the member to be machined.)

(9) Description in Evidence A No. 1 p. 13 l. 3 to l. 22

「An der der Spiegelflaeche 12 abgewandten Flaeche wird die Metallscheibe des Spiegels ueber eine Fluidleitung 14 mit Druckwasser beaufschlagt. Da die Metallscheibe des dargestellten Spiegels 7 bei einem Druck von 1,25 bar plan gefertigt worden ist, ergibt sich ein planer Verlauf der Spiegelflaeche 12 dann, wenn in der Fluidleitung 14 Druckwasser mit einem Druck von 1,25 bar ansteht. Sinkt der Druck in der Fluidleitung 14 unter diesen Wert ab, so nimmt die Spiegelflaeche 12 ein konkave Form an, wie dies in der rechten Teildarstellung der Figur 2 gezeigt ist. Entsprechend fuehrt eine Erhoehung des Drucks in der Fluidleitung 14 ueber 1,25 bar zu einer konvexen Verformung der Spiegelflaeche 12. Der Grad der Konvexitaet bzw. Konkavitaet der Spiegelflaeche 12 kann durch Steuerung des Drucks in der Fluidleitung 14 eingestellt werden. Wie bei Vergleich der linken und der rechten Darstellung von Figur 2 zu erkennen ist, fuehrt eine Veraenderung der Kruemmung der Spiegelflaeche 12 zu einer Veraenderung der Konvergenz bzw. Divergenz des von der Spiegelflaeche 12 reflektierten Laserstrahls 1. In Abhaengigkeit von der sich einstellenden Geometrie des Laserstrahls 1. variiert die Lage des von der Sammellinse 8 erzeugten Fokus des Laserstrahls 1 senkrecht zu dem Werkstueck. 」

(Pressure water is applied to the metal disk of the mirror on a surface opposite the mirror surface 12 via a fluid conduit 14. The metal disk of the mirror 7 shown in the figure is manufactured so as to form a plane with pressure of 1.25 bar. If pressure water with a pressure of 1.25 bar exists in the fluid conduit 14, a curved line of the mirror surface 12 is made flat. When the pressure in the fluid conduit 14 decreases below the value, the mirror surface 12 is concaved as shown in the right figure in FIG. 2. When the pressure in the fluid conduit 14 exceeds 1.25 bar, the mirror surface 12 is deformed in a convex shape, accordingly. The concave or convex degree of the mirror surface 12 can be adjusted by controlling the pressure in the fluid conduit 14. Comparing the right and left figures in FIG. 2, when the curvature radius of the mirror surface 12 changes, convergence or diffusion of the laser beam 1 reflected from the mirror surface 12 is changed. In accordance with a geometric configuration of the adjusted laser beam 1, the focusing position of the laser beam 1, which is perpendicular to the member to be machined, generated by the converging lens 8 is changed.)

(10) Description in Evidence A No. 1 p. 13 l. 23 to p. 14 l. 8

「Eingestellt wird der in der Fluidleitung 14 anstehende Druck mit Hilfe der numerischen Steuerung der Laserschneidmaschine. Diese steht mit einer Drosselanordnung 15 in Verbindung, wie sie in Figur 3 dargestellt ist. Die Drosselanordnung 15 ist dem adaptiven Spiegel 7 in Stroemungsrichtung des Druckwassers vorgelagert und umfasst vier parallelgeschaltete Drosselventile 16, 17, 18, 19. Das Drosselventil 16 wird permanent von Druckwasser durchstroemt. Der Durchfluss von Druckwasser durch die Drosselventile 17, 18, 19 kann durch steuerbare Magnetventile 20, 21, 22 gesperrt bzw freigegeben werden. Eine feste Drossel 23 ist im Ruecklauf des Druckwassers vorgesehen; ein Druckregler 24 und ein Feinstfilter 25 sind der Drosselanordnung 15 vorgeschaltet.」

(The pressure in the fluid conduit 14 is adjusted by use of the numerical control device of the laser cutting device. As shown in FIG. 3, the device is connected to the throttle device 15. The throttle device 15 is disposed in a stage preceding the adaptive mirror 7 in a flow direction of the pressure water, and includes the throttle valves 16, 17, 18 19 connected in parallel. In the throttle valve 16, pressure water always flows. The flow rates of the pressure water passing through the throttle valves 17, 18 and 19 can be shut off or opened by controllable magnetic valves 20, 21, 22. A fixed valve 23 is arranged in a return path of the pressure water. A pressure adjuster 24 and a fine filter 25 are arranged in a stage preceding the throttle device 15.)

(11) Description in Evidence A No. 1 p. 14 l. 9 to l. 23

「Das von einer Druckquelle bereitgestellte Druckwasser wird der Drosselanordnung 15 ueber den Feinstfilter 25 und den Druckregler 24 zugefuehrt. Mittels des Druckreglers 24 wird ein maximaler Systemdruck vorgegeben. Da die feste Drossel 23 einen unveraenderlichen Durchflussquerschnitt besitzt und infolgedessen einen konstanten Staudruck aufbaut, kann der in der Fluidleitung 14 des adaptiven Spiegels 7 anstehende Druck durch Steuerung der Drosselanordnung 15 eingestellt werden. Da das Drosselventil 16 permanent von Druckwasser durchstroemt wird, wird der adaptive Spiegel 7 sowie der diesem nachgeschaltete Umlenkspiegel 6 stets mit einer gewissen als Kuehlmittel fungierenden Druckwassermenge versorgt. Bei dem dargestellten Ausfuehrungbeispiel steht bei geschlossenen Magnetventilen 20, 21, 22 an der Ausgangsseite der Drosselanordnung 15 und somit auch an der Rueckseite der Spiegelflaeche 12 des adaptiven Spiegels 11 ein Druck von 0,5 bar an.」

(The pressure water prepared by a pressure source is supplied to the throttle device 15 via the fine filter 25 and the pressure adjuster 24. By use of the pressure adjuster 24, the maximum device pressure is provided. The fixed throttle valve 23 with invariable flow-rate cross section generates constant dynamic pressure, thereby adjusting the pressure in the fluid conduit 14 of the adaptive mirror 7 by controlling the throttle device 15. Since the pressure water always flows in the throttle valve 16, a predetermined amount of pressure water functioning as coolant is supplied always to the adaptive mirror 7 and the deflecting mirror 6 located in a stage posterior to the adaptive mirror 7. In the embodiment shown in the figure, when the magnetic valves 20, 21 and 22 are closed, a pressure of 0.5 bar exists at the output side of the throttle device 15 and

at the back side of the mirror surface 12 of the adaptive mirror 11.)

(12) FIG. 2 of Evidence A No. 1

In FIG. 2 of Evidence A No. 1, the "Spiegelgehaeuses 13" (mirror case 13) and the "Spiegelflaeche 12" (mirror surface 12) form a space on the side opposite the reflecting surface of the "Spiegelflaeche 12" (mirror surface 12), and the figure illustrates that the "Fluidleitung 14" (fluid conduit 14) leading to the space and a fluid conduit distinct from the fluid conduit 14 are arranged in the mirror case 13.

(13) FIG. 3 of Evidence A No. 1

In FIG. 3 of Evidence A No. 1, there are two paths, a path from the "Drosselventile 16, 17, 18, 19" (throttle valves 16, 17, 18, 19) to the "adativen Spiegels 7" (adaptive mirror 7), and a path from the adaptive mirror 7 to the "feste Drossel 23" (fixed throttle 23).

(14) The invention described in Evidence A No. 1

The matters described in the above No. 5. 1. (7) disclose a laser cutting device that converges a laser beam 1 output from a laser oscillator 2 by use of a converging lens 8, for cutting a work, and indicates that an adaptive mirror is arranged in a transmission path of the laser beam 1.

The matters described in the above No. 5. 1. (8) disclose that, in the adaptive mirror, a peripheral part of a metal disk having a mirror surface 12 is supported by a mirror case 13, and, referring to the drawings in No. 5. 1. (12), it can be said that a space is formed at the opposite side of the mirror surface 12 of the metal disk, by the mirror case 13 and the metal disk having the mirror surface 12.

The matters described in the above No. 5. 1. (9) disclose that pressure of pressure water is supplied to the opposite side of the mirror surface 12 of the metal disk, to elastically deform the metal disk having the mirror surface 12.

The matters described in the above No. 5. 1. (10) and (11) disclose means for supplying pressure water, and means for discharging the pressure water, or switching the pressure of the pressure water in four stagers by the magnetic valves 20, 21, 22.

Referring to the descriptions in the above No. 5. 1. (10) and (11) and the drawings in the No. 5. 1. (12) and (13), it can be said that there is a path for supplying pressure water via the fluid conduit 14 arranged in the mirror case 13, that another fluid conduit is arranged separately from the fluid conduit 14, and that there is a path for discharging the pressure water via the fluid conduit. Referring to the descriptions in the above No. 5. 1. (9) to (11) and the drawings in the No. 5 1. (12) and (13), it can be said that the space formed by the mirror case 13 and the metal disk having the mirror surface 12 is sealed excluding the paths. Thus, it can be said that a pressure of pressure water is applied between the fluid conduit 14 arranged in the mirror case 13 and the fluid conduit arranged separately from the fluid conduit 14 in the mirror case 13, at least.

In light of the matters described in No. 5. 1. (1) to (11) and the drawings in No. 5. 1. (12) and (13), it can be recognized that Evidence A No. 1 describes the following invention (hereinafter referred to as "Invention described in Evidence A No. 1").

"A laser cutting device for cutting a work by converging a laser beam 1 output from a laser oscillator 2 by means of a converging lens 8 comprising: a metal disk having a mirror surface 12 which is arranged in a transmission path of the laser beam 1 and elastically deforms with a pressure of pressure water; a mirror case 13 supporting the peripheral section of the metal disk and forming a space at the opposite side of the mirror surface 12 of the metal disk together with the metal disk; a fluid conduit 14 arranged in the mirror case 13 and supplying pressure water into the space in the mirror case 13; magnetic valves 20, 21, 22 for switching the pressure of the supplied pressure water in four stages; and another fluid conduit arranged in the mirror case 13 separately from the fluid conduit 14 to discharge the pressure water from the space in the mirror case 13, wherein the space, except for a pressure water supply path and a pressure water discharge path distinct from the pressure water supply path, is sealed; and wherein a pressure of the pressure water required for elastically deforming the metal disk is applied, between the fluid conduit 14 and the other fluid conduit, to the opposite side of the mirror surface 12 of the metal disk."

2. Described matters in Evidence A No. 2

p. 3 the upper right column l. 19 to the lower left column l. 7

"To change a curvature radius of the mirror (16) of the collimation part (11), a control signal (20) shown in FIG. 2 is transmitted to a pressure control device (19). In the pressure control device (19), a pressure generated in a pressure pump (18) is controlled to change a pressure of a gas (or liquid) to be applied to the back of the mirror (16). The curvature radius of the mirror (16) is changed, and the curvature radius of the collimation part (11) is changed, accordingly."

3. Described matters in Evidence A No. 3

p. 2 the upper left column l. 17 to the upper right column l. 9

"The variable-focus reflecting mirror (1) is formed of a shell (2), a chamber pressure adjustment device (3), and a reflecting mirror (4).

The shell (2) includes a pressure chamber (5) having an opening where a holding part (7) is formed which holds the reflecting mirror (4) airtightly with an O-ring (6).

A pressure meter (8) of the chamber pressure adjustment device (3) and piping (9) are connected to the pressure chamber (5) of the shell (2). The piping (9) has a compressor piping system (9a) and a vacuum pump piping system (9b), and is switched by electromagnetic operation valves (10a) and (10b) as necessary for a compressor (11a) and a vacuum pump (11b). The switching is performed by opening/closing the electromagnetic operation valves (10a) and (10b)."

4. Described matters in Evidence A No. 4

(1) p. 3 the upper right column l. 13 to the lower left column l. 3

"In the reflecting curved mirror thus configured, when a pump 8 is operated by opening a valve 7, the air in the space 4 is discharged, and the pressure in the container 1 decreases below an outside pressure, thereby generating a pressure difference between both sides of the film 3, and the film 3 bends inward. A reflection surface 3a, which is an outer surface of the film, forms a substantial paraboloid of revolution. Thus, when electromagnetic waves, such as beams, are made incident on the curved mirror from the above, the electromagnetic waves are reflected by the reflection surface 3a, and

converged in nearly one spot, which can be used as a concave mirror."

(2) p. 4 the lower left column l. 6 to l. 9
"In the above embodiments, a liquid can be substituted for a gas, which is a fluid to be supplied to or discharged from the space 4 in the container 1."

5. Described matters in Evidence A No. 6
(1) p. 482 the right column the fifth line from the bottom to p. 483 the left column l. 15
"2. 2. 6 Electric-pneumatic pressure control valve

This section shows a structure and performance examples of a valve which successively controls pneumatic output in accordance with an electric signal. As a valve embedded in a control valve, a spool valve, a poppet valve, a plate valve, and a nozzle flapper valve are known. In operating the valves electrically, a magnetic body, such as a solenoid, a torque motor, or a movable coil, or a dielectric body represented by a piezoelectric element is used.

[1] Proportional flow-rate control valve and pressure control valve ..... Meanwhile, FIG. 4. 115 introduces secondary pressure (load-side pressure) to a pressure reaction chamber of a valve, balances it with an electromagnetic force of a solenoid, to proportionally control a current of the solenoid and the secondary pressure. 9)"

(2) p. 558 the right column l. 23 to l. 30
"3. 6 Electric-pneumatic pressure control system
3. 6. 1 Control method using proportional valve, servo valve

Pneumatic control using a proportional valve has been applied to various fields. The proportional valve can be easily controlled by a microcomputer, and a position, pressure or force can be quickly changed by an external command. The proportional valve will be used increasingly as a control element of a robot driving system or a flexible automated system."

(3) p. 558 the right column the third line from the bottom to p. 560 the left column l. 2
"TANAKA 6) constitutes a pressure control servo mechanism with a pressure proportional valve to improve dynamic characteristics as compared with flow-rate control system, and confirms improvement in position control accuracy of a cylinder. A horizontal position control system of a cylinder using a pressure proportional valve is shown in FIG. 4. 279 7)."

6. Described matters in Evidence A No. 7

Paragraph [0001] to [0002]
"[0001]
[Industrial Application Field] This invention relates to a pressure control device for an electropneumatic regulator, more specifically to a pressure control device for an electropneumatic regulator that detects a pressure of a gas supplied to a pneumatic device, such as a cylinder, and controls the pressure of the gas at a set pressure.
[0002]
[Conventional art] Conventionally, for controlling a gas supplied to a pneumatic device at a desired pressure, an electropneumatic regulator including a primary valve is used. A technical idea of electrically controlling a pressure of a gas supplied to the pneumatic

device is disclosed in Japanese Unexamined Patent Application Publication No. H2-284213 'Electropneumatic regulator.'"

7. Described matters in Evidence A No. 8

Paragraph [0001] to [0003]

"[0001]

[Industrial Application Field] This invention relates to a laser machining device, specifically to gas pressure control of assist gas, or the like, to be supplied to a nozzle.

[0002] [Conventional Art] The laser machining device of this type is configured to emit a laser beam onto a work from a tip of a nozzle and jet a gas, such as assist gas, to cut the work. The pressure of the gas jetted from the nozzle is set and adjusted to an appropriate pressure in accordance with machining conditions, such as a material or thickness of the work.

[0003] The pressure of the gas supplied to the nozzle is adjusted by a regulator, such as an electropneumatic regulator, and the pressure of the gas discharged from the regulator is set on the basis of a gas pressure command from a controller, such as an NC device."

8. Comparison

The Patent invention is compared with the Invention described in Evidence A No. 1.

It is obvious that the "laser oscillator 2" and "laser beam 1" in the Invention described in Evidence A No. 1 correspond to the "laser oscillator" and "laser beam" in the Patent invention.

The "converging lens 8" in the Invention described in Evidence A No. 1, which converges the "laser beam 1," corresponds to the "converging optical member" in the Patent invention. The "laser cutting device" in the Invention described in Evidence A No. 1, which cuts a work, corresponds to the "laser machining apparatus for cutting/welding a work" in the Patent Invention.

The "pressure water" in the Invention described in Evidence A No. 1, which is a flowing continuous body, corresponds to the "fluid" in the Patent invention. The "pressure water" in the Invention described in Evidence A No. 1 is identical with the "gas" in the Patent invention in the point of "fluid" which is a flowing continuous body.

The "metal disk having a mirror surface 12" in the Invention described in Evidence A No. 1, which is arranged in a transmission path of the "laser beam 1," reflects the "laser beam 1," and elastically deforms with a pressure of the "pressure water," corresponds to the "laser beam reflecting member" in the Patent invention. The "mirror surface 12" of the Invention described in Evidence A No. 1 corresponds to the "laser beam reflecting surface" in the Patent invention.

The "mirror case 13" in the Invention described in Evidence A No. 1, which supports a peripheral part of the "metal disk" and forms a space together with the "metal disk" at the opposite side of the "mirror surface 12" of the "metal disk," corresponds to the "reflecting member supporting section" in the Patent invention.

The "fluid conduit 14" and "another fluid conduit arranged separately from the fluid conduit 14" in the Invention described in Evidence A No. 1, which supply the "pressure water" into the space formed by the "metal disk" and the "mirror case 13" and discharge it, are identical with the "fluid supply means" and "fluid discharge means" in the Patent invention, in the point of means for supplying or discharging the "fluid"

which is a flowing continuous body.

The "magnetic valves 20, 21, 22" in the Invention described in Evidence A No. 1, which switch a pressure of the supplied "pressure water" in four stages, is identical with the "electropneumatic valve" in the Patent invention, in the point of "a valve for switching fluid supply pressure" as a flowing continuous body.

The "pressure water supply path" and "pressure water discharge path" in the invention described in Evidence A No. 1, which are a path for supplying the pressure water and a path for discharging the pressure water, and can be a path for supplying a fluid as a flowing continuous body and a path for discharging a fluid as a flowing continuous body, thereby being identical with the "fluid feed path" and "fluid discharge path distinct from the fluid feed path" in the Patent invention.

In view of the above, the Patent invention and the Invention described in Evidence A No. 1 are identical to and different from each other in the following features.

<Corresponding features>

A laser machining apparatus for cutting/welding a work by collecting a laser beam output from a laser oscillator by means of a converging optical member comprising: a laser beam reflecting member which is arranged in a transmission path of the laser beam and elastically deforms with a fluid pressure; a reflecting member supporting section supporting the peripheral section of the laser beam reflecting member and, together with the laser beam reflecting member, forming a space on an opposite surface of a laser beam reflecting surface; fluid supply means arranged in the reflecting member supporting section and supplying a fluid into the space in the reflecting member supporting section; a valve for switching fluid supply pressure; and fluid discharge means arranged in the reflecting member supporting section and discharging the fluid from the space in the reflecting member supporting section, wherein the space, except for a fluid feed path and a fluid discharge path distinct from the fluid feed path, is sealed; and wherein a fluid pressure required for elastically deforming the laser beam reflecting member is applied, between the fluid supply means and the fluid discharge means, to the opposite surface of the laser beam reflecting surface.

<Different feature 1>

As the fluid to be supplied into the space of the reflecting member supporting section by the fluid supply means or the fluid discharged from the space of the reflecting member supporting section by the fluid discharge means, the Patent invention uses a "gas," while the invention described in Evidence A No. 1 uses "pressure water."

<Different feature 2>

Regarding the valve for switching the fluid supply pressure, the Patent invention uses "an electropneumatic valve for successively switching the fluid supply pressure," while the invention described in Evidence A No. 1 uses "a magnetic valve for switching the fluid supply pressure in four stages."

<Different feature 3>

The Patent invention is configured to "discharge the gas passing through the fluid discharge path to the outside from the fluid discharge means," while the invention

described in Evidence A No. 1 is not configured to discharge the gas passing through the fluid discharge path to the outside from the other fluid conduit arranged separately from the fluid conduit 14.

9. Judgment by the body

(1) Regarding Different feature 1

In examining <Different feature 1>, the configuration of employing a gas, as a fluid, in a reflecting mirror that changes a curvature radius with fluid pressure was, as described in Evidences A No. 2 to No. 4 indicated in the above No. 5. 2, No. 5. 3, and No. 5. 4. (1) and (2), a well-known matter before filing the application for the Patent invention. In addition, especially in Evidence A No. 2, it is indicated that a gas and a liquid are identical as a fluid that generates pressure, such as "pressure of a gas (or a liquid) (17)."

As described in the above No. 5. 1. (5), Evidence A No. 1 includes the term "Fluid." The following description is found in the item "fluid" in "Dictionary of Engineering and Scientific Terms (English, Germany, Japanese) the latest edition" (the first edition published by SANSHUSHA on November 1, 1985), according to the investigation by ex officio in the body ((u) with umlaut, and (o) with umlaut are referred to as ue and oe, respectively. The symbol "-" representing prolonged sound is added on "u" of "ryutai".).

"fluid ...(omitted)... /n [Phys] Fluid n (allgemeine Bezeichnung fuer stroemende Fluessigkeit oder stroemendes Gas) Ryutai ryutai [phys.]//Ryutai ryutai [chemistry, machine, marine]"

(interpretation: general name of a flowing liquid or a flowing gas)

Referring to the above dictionary, interpreting "Fluid" in Germany as "ryutai" in the field of physic or mechanical engineering was a well-known technical matter before filing the application for the Patent, and it is natural for a person skilled in the art in the field of physics or mechanical engineering in contact with Evidence A No. 1 to interpret and understand "Fluid" in Germany in Evidence A No. 1 as "ruitai," and to recognize that the meaning thereof includes a gas as well as a liquid. Thus, it can be said that Evidence A No. 1 indicates employing a gas as a fluid.

Referring to the description in Evidence A No. 1 indicated in the above No. 5. 1. (2) in order to examine the existence of disincentive for substituting pressure water for a gas in Evidence A No. 1, it can be said that the problem of the invention described in Evidence A No. 1 is to provide a laser cutting device which is suitable to a functional automated operation under the condition of a work place, functionally reliable, and allowing for optical adjustment of a focusing position. As means for solving the problem, as indicated in the above Evidence A No. 5. 1. (5), a metal disk which changes a curvature radius with pressure water is employed. The fact of changing a curvature radius with pressure water can be recognized independently of whether the pressure water has a cooling effect or not, and can solve the problem of the invention described in Evidence A No. 1 indicated in the above No. 5. 1. (2), independently of whether the pressure water has a cooling effect or not.

Meanwhile, the above No. 5. 1. (6) discloses that sufficient cooling of a mirror surface can be ensured when a fluid suitable as a coolant is used, but it only discloses a

secondary effect of ensuring sufficient cooling of a mirror surface. To ensure sufficient cooling of a mirror surface is not the problem of the invention described in Evidence A No. 1, accordingly. A person skilled in the art does not recognize only a fluid suitable as a coolant, as the fluid in Evidence A No. 1, on the basis of the above disclosure.

In light of the above, in a reflecting mirror that changes a curvature radius with fluid pressure, it is a well-known technical matter to employ a gas as a fluid, Evidence A No. 1 includes an indication of employing a gas as pressure water, and there is no disincentive for using a gas in place of pressure water. It cannot be said that it is significantly difficult for a person skilled in the art to employ a gas in place of pressure water in the invention described in Evidence A No. 1.

(2) Regarding Different feature 2

In examining <Different feature 2>, as indicated in the above No. 5. 1. (4), Evidence A No. 1 includes an indication of adjusting a focusing position smoothly, and it is obvious that a focusing position is adjusted smoothly in a reflecting mirror that changes a curvature radius with fluid pressure, by changing fluid pressure smoothly.

As described in Evidences A No. 6 to No. 8 indicated in the above No. 5. 5. to 5. 7., in considering that the presence of an electropneumatic valve is a well-known technical matter as means for changing fluid pressure smoothly, it can be said that a person skilled in the art could easily conceive of employing an electropneumatic valve for adjusting a focusing position smoothly in a reflecting mirror that changes a curvature radius with fluid pressure.

(3) Regarding Different feature 3

In examining <Different feature 3>, the technical matter specified by the description, "the gas is discharged to the outside by the fluid discharge means" in the Patent invention is, as described in the above No. 2. 3. (1) E, (A) and (C), that the gas is discharged from the fluid discharge means to a space surrounding a sealed space. The gas can be quickly discharged by discharging the gas into the space surrounding the sealed space, and it can be said that a pressure in the sealed space can be quickly changed.

Meanwhile, Evidence A No. 1 includes no description or indication about discharging pressure water from a fluid conduit distinct from a fluid conduit 14 into a space surrounding a sealed space formed by a metal disk and a mirror case 13, nor does it indicate a point of "changing a curvature radius of the laser beam reflecting member at a high speed," which is a problem to be solved by the Patent invention.

The conduit configuration illustrated in FIG. 3 of Evidence A No. 1 can be considered, in considering the description "return path of pressure water" indicated in the above No. 5. 1. (10) and the fine filter 25 arranged in a stage preceding the throttle device 15, to indicate a piping configuration for circulating pressure water where the pressure water passing through the fixed valve 23 is supplied to the fine filter 25 via the return path, and filtered in the fine filter 25, then supplied to the throttle device 15. The fact of circulating pressure water conflicts with the fact of discharging the pressure water into the space surrounding the sealed space formed by the metal disk and the mirror case 13, accordingly.

FIG. 3 of Evidence A No. 1 illustrates that a deflecting mirror 6 is connected to

the downstream of the adaptive mirror 7 and the fixed valve 23 is arranged further downstream. As indicated in the above No. 5. 1. (11), in considering that a pressure in the fluid conduit 14 of the adaptive mirror 7 is generated by the fixed valve 23 arranged via the deflecting mirror 6 with the adaptive mirror 7, it must be said that the fluid in the conduit configuration illustrated in FIG. 3 of Evidence A No. 1 is a conduit configuration based on water which is an incompressible fluid.

As described in the above (1), Evidence A No. 1 indicates that a gas is employed as well as water, as a fluid that generates pressure, but does not specifically indicate that a gas employed is discharged from a fluid conduit distinct from the fluid conduit 14 to a space surrounding the sealed space formed by the metal disk and the mirror case 13. Since the conduit configuration illustrated in FIG. 3 of Evidence A No. 1 is a configuration using incompressible water as a fluid, there is no reason for a person skilled in the art to conceive of discharging a gas, which is a compressible fluid, from the fluid conduit distinct from the fluid conduit 14 to the space surrounding the sealed space formed by the metal disk and the mirror case 13, for the conduit configuration illustrated in FIG. 3.

(4) Summary of the judgment for the different features

According to Different feature 3 in the above (3), it cannot be said that the Patent invention could be easily made by a person skilled in the art, on the basis of the invention described in Evidence A No. 1, the well-known technical matters indicated in Evidences A No. 2 to No. 4, and the well-known technical matters indicated in Evidences A No. 6 to No. 8.

10. Examination on Demandant's allegation

The demandant alleges, as indicated in the above No. 4. 1. (1), regarding Different feature 3, that the configuration of arranging a supply path separately from a discharge path when a gas is used as a pressure medium only, and the configuration of discharging a gas for pressure control to the outside without circulation are well-known technical matters as described in Evidences A No. 14 to No. 16, and that it is not difficult at all to discharge a fluid from fluid discharge means to the outside by employing a gas as a pressure medium and applying well-known arts in the invention described in Evidence A No. 1. This allegation is examined below.

(1) Regarding Evidence A No. 14

Referring to the reference material Evidence A No. 14, FIG. 1 illustrates a solenoid valve 11 for supplying a gas into a vessel 1, and a discharge pump 3 discharging the gas in the vessel 1. However, the gas in Evidence A No. 14 is discharged by the discharge pump 3, which is not arranged in the vessel 1, while the fluid conduit distinct from the fluid conduit 14 in the invention described in Evidence A No. 1 is arranged in the mirror case 13. It cannot be said that the discharge pump 3 in Evidence A No. 14 is identical in configuration with the fluid conduit distinct from the fluid conduit 14 in the invention described in Evidence A No. 1. Therefore, it cannot be said that a person skilled in the art in contact with the invention described in Evidence A No. 19 has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence

A No. 1.

(2) Regarding Evidence A No. 15

Referring to the reference material Evidence A No. 15, FIG. 1 and the third column l. 21-l. 26 indicate an inlet 3 for supplying a gas into a main chamber 5 of a cylinder 2, an outlet 4 arranged in the cylinder 2 that forms the main chamber 5 to discharge the gas from the main chamber 5, and the gas being discharged from the outlet 4 to the space surrounding the main chamber 5. It can be said that Evidence A No. 15 describes that fluid discharge means arranged in a supporting section that forms a sealed space discharges a gas to the outside.

However, the invention described in Evidence A No. 15 is, as indicated in [0002] "Prior art" and [0003] "Problem to be solved by the invention," an invention according to a viscoelasticity measurement device which is to be used "in the oral cavity." It cannot be a general technology on pressure control and has no feature corresponding, in the main technical field, to the laser machining device indicated in Evidence A No. 1. In addition, there is no description about the problem to be solved by the Patent invention, "changing a curvature radius of a laser beam reflecting member at a high speed." In light of the above, it cannot be said that a person skilled in the art in contact with the invention described in Evidence A No. 15 has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

(3) Regarding Evidence A No. 16

Referring to Evidence A No. 16, FIG. 3 and p. 2 the upper left column l. 4 to l. 11 indicate a regulator 1 for supplying a gas into a cylinder 2, and a regulator 8 for discharging the gas from the cylinder 2, but there is no description or indication about discharging a gas from the regulator 8 to a space surrounding the cylinder 2. Consequently, it cannot be said that a person skilled in the art in contact with the invention described in Evidence A No. 16 has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

(4) Regarding Evidences A No. 2 to No. 9, No. 17 to No. 20

In examining the other documents submitted by the demandant, according to Evidences A No. 2 to No. 9, there is no description or indication about discharging a gas to the outside by fluid discharge means arranged in a supporting section that forms a sealed space. It cannot be said that a person skilled in the art in contact with the inventions described in Evidences A No. 2 to No. 9 or matters described therein has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

Referring to Evidence A No. 17, FIGS. 2 and 3 illustrate a cover 51 fixed on the back of a mirror 42, an air passage 55 for supplying a gas into a chamber 52 formed by the cover 51, an air outlet 53 arranged in the cover 51 to discharge a gas from the chamber 52, and the gas discharged from the air outlet 53 to a space surrounding the

chamber 52. Thus, it can be said that Evidence A No. 17 includes a description about discharging a gas to the outside by fluid discharge means arranged in a supporting section that forms a sealed space.

However, the invention according to Evidence A No. 17 is an invention relating to a cooling device of a laser machining device. The air passage 53 and the air outlet 53 in Evidence A No. 17 are means for supplying and discharging a gas for cooling the mirror 42, and there is no description or indication about controlling a pressure of the chamber 52 with the gas. Meanwhile, the invention described in Evidence A No. 1 applies a pressure to a space in the mirror case 13 with pressure water. As described in the above (1), even though Evidence A No. 1 includes an indication about employing a gas as well as water for a fluid which generates pressure, the gas indicated therein is not identical with the gas in the invention according to Evidence A No. 17. Thus, even though the invention described in Evidence A No. 17 is identical with the invention described in Evidence A No. 1 in technical field, laser machining device, it cannot be said that a person skilled in the art in contact with the invention described in Evidence A No. 17 has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

Referring to Evidence A No. 18, in p. 21 "7. 2. 2", there is a description, "Volume of the piping section The piping for connecting an operating device and a device controlling it only requires an aperture enough to supply a quantity of air required for operation set in the operating device and a required minimum length." This description does not indicate discharging a gas from piping. Thus, it cannot be said that a person skilled in the art in contact with the description has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

Referring to Evidence A No. 19, in p. 281 "Table 7. 3 Table for selecting pneumatic speed control circuit" "No. 3," there is a description, "a shorter distance between a cylinder and a directional control valve and a smaller volume between them may provide more favorable control" together with an illustration of discharging a gas into a space surrounding the cylinder with a throttle connected to the directional control valve.

However, the throttle illustrated in the "No. 3," which is arranged to be further connected to the directional control valve connected to the piping arranged in the cylinder, is not arranged in the cylinder. The fluid conduit distinct from the fluid conduit 14 in the invention described in Evidence A No. 1 is arranged in the mirror case 13. Thus, it cannot be said that the throttle illustrated in p. 281 "No. 3" in Evidence A No. 19 is identical in configuration with the fluid conduit distinct from the fluid conduit 14 in the invention described in Evidence A No. 1. Therefore, it cannot be said that a person skilled in the art in contact with the invention described in Evidence A No. 19 has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

Referring to Evidence A No. 20, there is no description or indication about discharging a gas to the outside by fluid discharge means arranged in a supporting

section that forms a sealed space. Therefore, it cannot be said that a person skilled in the art in contact with the invention described in Evidence A No. 20 has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

(5) Regarding the other reference materials

In examining Evidences A No. 10 to No. 13 in Evidences A No. 10 to No. 15 used as reference materials in the oral proceeding, there is no description or indication about discharging a gas to the outside by fluid discharge means arranged in a supporting section that forms a sealed space. Therefore, it cannot be said that a person skilled in the art in contact with the inventions described in Evidences A No. 10 to No. 13 and matters described therein has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1.

(6) Summary of the examination on Demandant's allegation

Therefore, in referring to Evidences A No. 14 to No. 16 alleged by the demandant, Evidences A No. 2 to No. 9 and No. 17 to No. 20, and the reference materials Evidences A No. 10 to No. 13, it cannot be said that a person skilled in the art in contact with the inventions or matters described in them has a motive to employ a configuration of discharging a gas from a fluid conduit distinct from the fluid conduit 14 to the space surrounding a sealed space formed by the metal disk and the mirror case 13, in the invention described in Evidence A No. 1. The allegation of the demandant on Different feature 3 does not reverse the judgment by the body indicated in the above No. 5. 9. (3) and (4).

11. Closing

As described above, the allegation and the means of proof of the demandant cannot invalidate the Patent according to Claim 1 on the Patent.

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.

(References)

January 24, 2012

Chief administrative judge: NOMURA, Toru
Administrative judge: CHIBA, Shigenari
Administrative judge: KARIMA, Hironobu