

The opinion in support of the decision being entered today
is *not* binding precedent of the Board

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARTIN C. BAKER,
FEDERICO RENTERIA, THOMAS M. HUGHES,
and CLYDE R. TAYLOR

Appeal 2007-2618
Application 10/713,178
Technology Center 1700

Decided: September 26, 2007

Before CHUNG K. PAK, CHARLES F. WARREN, and
THOMAS A. WALTZ, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

DECISION ON APPEAL

Applicants appeal to the Board from the decision of the Primary Examiner finally rejecting claims 1 through 17 and 19 through 26 in the Office Action mailed February 7, 2006 (Office Action). 35 U.S.C. §§ 6 and 134(a) (2002); 37 C.F.R. § 41.31(a) (2005).

We affirm the decision of the Primary Examiner.

Claim 1 illustrates Appellants' invention of a hand-held laser fusion welding assembly which comprises a laser reflection shield, and is representative of the claims on appeal:

1. A hand-held laser fusion welding assembly for treating a workpiece, comprising:

a main body dimensioned to be grasped by a hand and adapted to couple to at least a laser delivery system;

a nozzle coupled to the main body and having an aperture through which laser light from the laser delivery system may pass; and

a laser reflection shield coupled to, and at least partially surrounding, either the nozzle or the main body, the laser reflection shield constructed at least partially of a material that reflects at least a portion of the laser light that passes through the nozzle aperture and is reflected by the workpiece, and configured such that no section thereof surrounds any portion of the laser light once the laser light passes through the aperture.

The Examiner relies upon the evidence in these references:

Ungar	US 2,074,629	Mar. 23, 1937
Messer Griesheim GMBH (Messer Griesheim)	GB 1 334 772	Oct. 24, 1973
Sugiyama ¹	JP 59-87999 A	May 21, 1984
Teeple, Jr. (Teeple)	US 5,151,095	Sep. 29, 1992
Onodera ²	JP 9-57482 A	Mar. 4, 1997

Appellants request review of the following grounds of rejection under 35 U.S.C. § 103(a) advanced on appeal (Br. 3):³

¹ We refer to the translation of Sugiyama prepared for the USPTO by FLS, Inc. (PTO 07-6234 August 2007).

² We refer to the translation of Onodera prepared for the USPTO by FLS, Inc. (PTO 07-6237 August 2007).

³ Appellants include claims "15-17" in the second ground of rejection. Br. 3. These claims were not included in this ground of rejection in the Office Action. Office Action 3. The Examiner informed Appellants that these claims were not included in the Office Communication mailed September 4, 2007.

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claims 1 through 17 and 19 through 26 as unpatentable over Onodera in view of Ungar and in view of Messer Griesheim (Answer 3);

claims 5 through 11 and 19 through 23 as unpatentable over Onodera in view of Ungar and in view of Messer Griesheim as applied, further in view of Sugiyama (*id.* 4); and

claims 12 through 14 and 24 through 26 as unpatentable over Onodera in view of Ungar and in view of Messer Griesheim as applied, further in view of Teeple (*id.*).

Appellants argue claim 1 as representative of the claims in the first ground of rejection which encompasses all of the appealed claims; argue the limitations of claim 15 as representative of the limitations of the claims in the second ground of rejection even though this claim is not included in that ground; and argue claims 12, 24, and 26 as representative of the third ground of rejection. Br. 5, 6, 7, 8, 9, 10, and 11. Thus, we decide this appeal based on independent claims 1, 15, and 26, and dependent claims 12 and 24 as representative of the grounds of rejection and Appellants' groupings of claims. 37 C.F.R. § 41.37(c)(1)(vii) (2005).

The issues in this appeal are whether the Examiner has carried the burden of establishing a prima facie case in each of the grounds of rejection advanced on appeal.

The plain language of claim 1 specifies a hand-held laser fusion welding assembly comprising at least, among other things, a laser reflection shield coupled to, and at least partially surrounding either the nozzle or the main body, and constructed at least partially of a material that reflects at least a portion, however small, of the laser light reflected by the workpiece, wherein the reflection shield is "configured such that no section thereof surrounds any portion of the laser light once the laser light passes through the aperture." The plain language of claim 15 specifies a laser shield for

reflecting laser light comprising at least any clamp adapted to mount in any manner on any hand-held laser welding wand and is selectable from a plurality of different clamps; and any shield plate coupled to any clamp in any manner that reflects at least a portion of the reflected laser light and is selectable from a plurality of different shield plates. Claim 15 does not require that the shield plate is configured so as not to surround portions of the laser light that has passed through the aperture of the nozzle of such hand-held laser welding wand.

The plain language of claim 26 specifies a hand-held laser fusion welding assembly comprising at least, among other things, a laser reflection shield coupled to, and at least partially surrounding either the nozzle or the main body, and constructed at least partially of a material that reflects a portion of the laser light reflected by the workpiece, wherein the reflection shield has coupled thereto one or more proximity sensors “configured to sense a proximity of the laser reflection shield to the workpiece and operable” to provide a signal representative thereof. Claim 26 does not require that the shield plate is configured so as not to surround portions of the laser light that has passed through the aperture of the nozzle. Claim 12, dependent on claim 1, and claim 24, dependent on claim 15, further limit the respective independent claims with the same sensor limitation specified in claim 26.

We find Onodera would have disclosed to one of ordinary skill in this art a hand-held laser torch assembly for machining workpieces, including welding, wherein the front-end side of main torch unit 3 of hand-hand laser assembly 1 is equipped with protective shield 17 that covers the front of assembly 1 and the workpiece to protect the operator from reflected laser

light. Onodera, e.g., ¶¶ 0001-0003, 0005, 0006, 0017, 0018, and 0034, and Figs. 1 and 2. Protective shield 17 has mounting base 19 to which assembly 1 is attached and has first and second protective members 21,23 that are adjustable, are pushed against the workpiece, and are replaceable from a plurality of different protective members in accordance with the shape of the workpiece. *Id.*, e.g., ¶¶ 0007-0010, 0018, 0019, 0026, 0029, and 0033, and Figs. 1, 2, and 3A-C. Protective members 21,23 each have a sensor 31,33 for confirming whether the protective cover is in contact with the workpiece, and the assembly will be operable only after it is confirmed that the protective shield covers the workpiece and the front end of the assembly. *Id.*, e.g., ¶¶ 0011-0012, 0019-0023, and Figs. 1, 2, and 3A-C. Onodera discloses an embodiment of protective shield 17 has protective member 39 that is cylindrical in shape, can be detachably attached to torch main unit 3 via springs 41, and has multiple contact sensors 43 for confirming contact with the workpiece, wherein protective member 39 can be selected from various shapes of such protective members. *Id.*, e.g., ¶¶ 0030-0033 and Figs. 4A-B and 5A-B. The protective covers are attached to assembly 1 in a replaceable manner. *Id.*, e.g., ¶ 0037.

We find Ungar would have disclosed to one of ordinary skill in this art an electric hand tool for soldering wherein flange 3 coupled to and surrounding the main body is a heat barrier to protect the hand of the user who grips the tool back of the flange. Ungar, e.g., page 1, left col. ll. 46-54, and Figs. 1, 5, and 6.

We find Messer Griesheim would have disclosed to one of ordinary skill in this art a laser device for welding with means to protect humans from reflected laser light wherein the laser device has a hood for this purpose.

Messer Griesheim, e.g., 1:10-21 and 72-86. The hood is adjustable in position on the laser device as well as in height in relation to the outlet aperture, and is preferably in the form of a bell, cylinder, or disk with a rim directed toward the workpiece, that is, the hood can be circular. *Id.*, e.g., 2:41-57. In Fig. 1, hood 30 is attached to and extends beyond the aperture; in Fig. 2, disk 51 is attached to the aperture and its rim 53 extends beyond the aperture; and in Fig. 3, cylinder 60 is attached to outlet part 61 of the laser and the bottom of cylinder 60 extends slightly beyond the aperture. *Id.*, e.g., 2:103-3:30, and Figs. 1-3.

A discussion of Sugiyama and Teeple is not necessary to our decision. *See, e.g., In re Jones*, 958 F.2d 347, 349, 21 USPQ2d 1941, 1942 (Fed. Cir. 1992); *In re Kronig*, 539 F.2d 1300, 1302-04, 190 USPQ 425, 426-28 (CCPA 1976).

All of the claims stand rejected over the combined teachings of Onodera, Ungar, and Messer Griesheim in the first ground of rejection and two groups of the claims are further rejected over this basic combination in the second and third grounds of rejection. Thus, we consider the grounds of rejection and the claims separately argued by Appellants with respect to the combined teachings of these references.

With respect to the first ground of rejection, the Examiner determines that it would have been prima facie obvious to one of ordinary skill in this art in view of the combined teachings of Onodera, Ungar, and Messer Griesheim to position a laser reflection shield on the hand-held laser assembly of Onodera in any desired manner since protection shields surrounding the body of a hand held electric tool are known as shown in Ungar, and laser reflection shields are shown on the hand-held laser

assembly of Onodera, and around the nozzle of Messer Griesheim's laser. Answer 3-4. With respect to the second ground of rejection, the Examiner determines that it would have been prima facie obvious to one of ordinary skill in this art in view of the combined teachings of Onodera, Ungar, and Messer Griesheim, to use replaceable laser reflection shields on Onodera's hand-held laser assembly since replaceable shields are well known and economical. *Id.* 4. With respect to the third ground of rejection, the Examiner determines that it would have been prima facie obvious to one of ordinary skill in this art in view of the combined teachings of Onodera, Ungar, and Messer Griesheim to use sensors in the laser reflection shield of a hand-held laser assembly since Onodera discloses sensors in laser reflection shield that provide feedback. *Id.* 4-5 and 6.

We determine the combined teachings of Onodera, Ungar, and Messer Griesheim, the scope of which we determined above, provide convincing evidence supporting the Examiner's case that the claimed invention encompassed by claims 1, 12, 15, 24, and 26, as we interpreted these claims above, would have been prima facie obvious to one of ordinary skill in the laser welding arts familiar with laser reflection shields for protection from reflected laser light as well as the application thereof to hand-held laser welding assemblies. The difference between hand-held laser welding assemblies with a coupled laser reflection shield encompassed by claim 1 and Onodera is that the laser reflection shield surrounding the body or nozzle area of Onodera extends beyond the nozzle. We determine that one of ordinary skill in this art armed with the knowledge that laser reflection shields coupled to the body or the nozzle of a laser, which can be used for welding, can be circular, mounted to the body or nozzle and adjusted in

these respects as disclosed by Onodera and by Messer Griesheim, and that shields to protect the user are known for hand-held electric soldering tools as disclosed by Ungar, would have reasonably modified a hand-held laser welding assembly, such as that shown by Onodera, with a circular laser reflection shield around the body or the nozzle of the assembly in the reasonable expectation of protecting the user. One of ordinary skill in this art would have recognized from these teachings that such a laser reflection shield need not extend beyond the nozzle of the assembly to provide at least partial protection to the user, which is all that the limitations of claim 1 require as we interpreted this claim above.

Considering now claim 15, which requires clamping a laser reflection shield plate coupled thereto to any part of any hand-held laser welding wand, wherein the shield plate and clamp are selected from a plurality of such parts, we determine one of ordinary skill in this art would have found in Onodera and Messer Griesheim the teachings that laser reflection shields can be selected from a variety of prepared shields which are suitable for a particular purpose, with Onodera disclosing the advantages of a variety of suitable shields. In this respect, Onodera would have suggested to this person that the laser reflective shields can be removably attached, and discloses a number of attachment methods. Thus, this person would have reasonably used known methods to attach the removable shields to the circular body of Onodera's hand-held laser welding assembly. We notice that one of ordinary skill in this art would have been aware of the well-known use of clamping means to attach an object to a circular device. Thus, attaching a laser reflective shield, selected from a number of such shields by any clamping means selected from a number of such means to a

hand-held laser welding wand, such as the laser welding assembly disclosed by Onodera, would have been within the ordinary skill in this art. This person would have had a reasonable expectation of solving the problem of attaching such a shield to that assembly, which is all that the limitations of claim 15 require as we interpreted this claim above.

Turning to claim 26 as well as claims 12 and 24, which specify the laser reflection shield contain sensors which sense the proximity of the shield to the workplace and produce a signal accordingly, one of ordinary skill in this art would have found such sensors providing a proximity feedback function on the laser reflective shields of Onodera regardless of the shape of the shield. Thus, this person would have reasonably used such sensors in laser reflection shields such as those disclosed by Onodera and Messer Griesheim, in the reasonable expectation of obtaining proximity information which is all that the limitations of claim 26 require as we interpreted this claim above. Indeed, we find that Onodera's Examples illustrating laser light reflective shields having proximity sensors attached to a hand-held laser welding assembly satisfy each of the limitations of claim 26, leading to the conclusion that the claimed hand-held laser fusion welding assembly encompassed by this claim lacks novelty which is the "ultimate obviousness." *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982). Claims 12 and 24 include the limitations of claims 1 and 15 on which they respectively depend, and thus in addition to our findings and determinations with respect to the independent claims, we further determine that the inclusion of proximity sensors in the laser reflection shields as reasonably suggested by Onodera would have been within the ordinary skill in the art.

Thus, on this record, we determine that one of ordinary skill in this art routinely following the combined teachings of Onodera, Ungar, and Messer Griesheim would have reasonably arrived at the claimed hand-held laser welding assemblies having laser reflection shields, means of attaching such shields to said assemblies, and sensors on the shields as encompassed by claims 1, 12, 15, 24 and 26, including all of the elements thereof, arranged as required therein, without recourse to Appellants' Specification. *See, e.g., KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1739, 82 USPQ2d 1385, 1395 (2007) (a patent claiming a combination of elements known in the prior art is obvious if the improvement is no more than the predictable use of the prior art elements according to their established functions); *In re Kahn*, 441 F.3d 977, 985-88, 78 USPQ2d 1329, 1334-37 (Fed. Cir. 2006); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981);⁴ *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969) ("Having established that this knowledge was in the art, the examiner could then properly rely, as put forth by the solicitor, on a conclusion of obviousness 'from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference.'"); *see also In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988) ("Obviousness does not require absolute predictability of

⁴ The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

success. . . . For obviousness under § 103, all that is required is a reasonable expectation of success.” (citations omitted).

Appellants’ contentions do not successfully rebut the prima facie case of obviousness with respect to any of the grounds of rejection. We recognize that Ungar is directed to a hand-held electric tool that is in a different field of endeavor from the field to which the claimed invention is directed as Appellants point out. Br. 6. However, Ungar’s hand held electric soldering device is held by hand at the workpiece, requiring protection for the hand from heat associated with the use of the device be afforded the user. We are of the opinion that the problem of user safety with respect to held-held laser welding devices where the user’s hand is close to the workpiece requires similar considerations, and the shape of Ungar’s heat protection shield would have commended itself to the attention of one of ordinary skill in this art faced with the problem even though Ungar is in a related area of endeavor. *See, e.g., In re Clay*, 966 F.2d 656, 659-60, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).⁵ With respect to claim 15, we

Keller, 642 F.2d at 425, 208 USPQ at 881.

⁵ A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor’s endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering the problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve.

Clay, 966 F.2d at 659-60, 23 USPQ2d at 1060.

cannot agree with Appellants that the record lacks evidence bearing on the limitations of this claim. Br. 8.⁶ We determined above that one of ordinary skill in this art following the combined teachings of Onodera and Messer Griesheim would have used known means to attach the removable laser reflection shields of Onodera to the circular body of the hand-held laser welding assembly by suitable means which would include clamping the shield to the circular body in any manner. Finally, contrary to Appellants' contentions respecting claims 12, 24, and 26 (Br. 10-11), the record contains evidence showing laser deflection shields containing proximity sensors as we discussed above.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Onodera, Ungar, and Messer Griesheim, further combined with Sugiyama and with Teeple, with Appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 17 and 19 through 26 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The Primary Examiner's decision is affirmed.

⁶ We have not considered the references discussed by Appellants. Br. 8-9. These references are not included in the statement of any ground of rejection advanced on appeal. *Cf. In re Hoch*, 428 F.2d 1341, 1342 n. 3, 166 USPQ 406, 407 n.3 (CCPA 1970).

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

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