

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EINAR JOHAN AASEN, EDWARD JAMES MORLEY,
OLE TERJE MIDLING and ANDERS SANDVIK

Appeal No. 2002-1352
Application 09/051,975

ON BRIEF

Before STONER Chief Administrative Patent Judge, and ABRAMS, and
FRANKFORT, Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's refusal to allow claims 9, 10, 13 and 16 as amended subsequent to the final rejection in a paper filed October 19, 2001 (Paper No. 19) and from the examiner's final rejection of claims 18 through 20 and 23. Claims 11, 12, 14, 15, 17, 21, 22 and 24 through 26, which

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are the only other claims remaining in the application, have been indicated by the examiner to contain allowable subject matter, but are objected to as depending from rejected claims. Claims 1 through 8, 27 and 28 have been canceled.

Appellants' invention relates to a method of manufacturing a two-piece, light weight vehicle wheel wherein a wheel rim part (6) and a wheel center part (5), each formed of alloy material, are joined together utilizing a friction stir welding process. Independent claims 9 and 18 are illustrative of the subject matter on appeal and a copy of those claims may be found in the Appendix to appellants' brief.

The prior art references of record relied upon by the examiner as evidence of obviousness of the claimed subject matter are:

Midling et al. (Midling)	5,813,592	Sep. 29, 1998
Stach '415	6,024,415	Feb. 15, 2000

Claims 9, 10, 13, 16, 18 through 20 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Stach '415 in view of Midling.

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Reference is made to the final rejection mailed May 23, 2001 (Paper No. 13) filtered through the prism of the examiner's answer (Paper No. 23, mailed January 30, 2002) and the supplemental examiner's answer (Paper No. 29, mailed August 28, 2003) for the reasoning in support of the above-noted obviousness rejection and to appellants' brief (Paper No. 22, filed December 19 2001) and reply brief (Paper No. 24, filed March 22, 2002) for appellants' arguments thereagainst.

OPINION

In arriving at our decision on the obviousness issues in this appeal, we have given careful consideration to appellants' specification and claims, the teachings of the applied prior art references, and the respective positions advanced by appellants and the examiner. Upon evaluation of all of the evidence before us, it is our conclusion that the examiner has established a sound case of obviousness with regard to claims 9, 10, 13, 16, 18 through 20 and 23 on appeal and that the rejection of such claims under 35 U.S.C. § 103(a) will therefore be sustained. Our reasoning for this determination follows.

Independent claims 9 and 18 on appeal define appellants' method of manufacturing a two-piece wheel as including, *inter alia*, the step of joining an alloy material center part to an alloy material rim part "by at least one circumferential weld seam" (claim 1) or by "preparing at least two circumferential weld joints . . . [wherein] at least a portion of the first weld joint and at least a portion of the second weld joint are non-parallel" (claim 18). Both of the independent claims go on to indicate that the weld or welds are formed by "friction stir welding" of the center part to the rim part.

In the examiner's view, Stach '415 teaches a method like that set forth in the claims on appeal, except that Stach '415 does not mention friction stir welding. More particularly, Stach '415 teaches a method of manufacturing a two-piece wheel including an alloy material center part (3) and an alloy material rim part (2), wherein the two parts are joined together by at least one circumferential weld seam (S1, S2, S3) formed by "a welding process; such as a fusion welding, a laser welding or an electron beam welding . . ." (Col. 3, lines 10-12). In column 2, lines 3-8, Stach '415 notes that the shell parts (2, 3)

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may be manufactured separately from one another by different processes and from various materials so that, corresponding to the demands on the wheel, the material and the manufacturing process as well as the connecting process, for example, a welding process, can be freely selected.

Although Stach '414 broadly indicates that "a welding process" can be freely selected as the means by which the two wheel parts are joined together and gives examples of some acceptable welding methods which might be employed, that patent does not specifically mention friction stir welding.

To account for this difference between the teachings of Stach '415 and the methods claimed by appellants, the examiner turns to Midling, noting that this patent teaches a method of friction welding for joining metal parts together, and more specifically a friction stir welding process wherein a probe of harder material than the treated workpieces is applied in the welding process. Midling indicates that the process of friction stir welding has been known since about 1993 (from WO93/10935) and gives a general description of the process at column 1, lines 25-30, wherein it is indicated that

Friction stir welding is based on a relative cyclic movement between the probe and the workpieces, urging the probe and workpieces together to create a plasticised region in the

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workpiece region due to generated frictional heat, stopping the relative cyclic movement and allowing the plasticised material to solidify.

Objectives set forth in the Midling patent are to provide an improved friction stir welding probe and process which 1) ensures "high integrity welds free from voids and exhibiting a smooth surface quality" (col. 1, lines 60-61); 2) provides an improved method for friction stir butt welding, which method can also be used for lap welds and for a three or more components joint configuration; and 3) provides "uniform homogenized weld seams exhibiting reduced heat affected zone" (col. 1, lines 66-67). At other points in the Midling patent it is noted that the improved probe and friction stir welding process therein provides sound welded joints or seams having a microstructure which is composed of interlocked plasticised segments of the joined members with minimal material turbulence (col. 2, lines 48-51) and high quality welds both with regard to metallurgical and mechanical properties due to a homogenized weld exhibiting no porosity through the whole weld cross section (col. 4, lines 7-10).

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Based on the collective teachings of the applied patents, the examiner has concluded that it would have been obvious to the person of ordinary skill in the art at the time of appellants' invention to utilize friction stir welding as taught by Midling to join the alloy rim part (2) and alloy center part (3) of the wheel in Stach '415 together, because such a welding process "is more flexible and provides a smooth finish surface" (Paper No. 13, page 4).

Our evaluation of the combined teachings of Stach '415 and Midling, and the fact that we believe the worker of ordinary skill in the art of two-piece alloy wheels at the time of appellants' invention would have readily recognized that high integrity welds free from voids and exhibiting a smooth surface quality, as well as uniform homogenized weld seams exhibiting reduced heat affected zone, like those in Midling, would be very desirable in the highly competitive alloy wheel art, leads us to conclude that the examiner is correct in his conclusion of obviousness. While it is true that neither Stach '415 nor Midling expressly teaches that using friction stir welding to form a two-piece alloy wheel would be advantageous, we are nonetheless of the opinion that it would have been obvious to a

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person of ordinary skill in the two-piece alloy wheel art at the time of appellant's invention to do so in an effort to achieve high integrity welds in such wheels having the advantageous characteristics set forth in Midling. In that regard, we note that Stach '415 broadly discloses use of "a welding process" (emphasis added) and notes that such welding process may be freely selected based on demands on the wheel, while Midling expressly teaches a welding process for joining metal members and, like Stach '415, specifically mentions joining members formed of aluminum alloys (col. 3, line 23).

Essentially, we view the welding processes specifically mentioned in Stach '415 (col. 3, lines 11-12) and the friction stir welding process as disclosed in Midling as being known alternatives in the art at the time of appellants' invention. In that regard, we note that where two known alternatives are interchangeable for their desired function, an express suggestion of the desirability of the substitution of one for the other is not needed to render such substitution obvious. See In re Fout, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982); In re Siebentritt, 372 F.2d 566, 567, 152 USPQ 618, 619 (CCPA 1967).

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We view appellants' contention in the brief (pages 5-6) that friction stir welding could not even be used to manufacture the vehicle wheels disclosed in Stach '415 as being mere attorney argument unsupported by appropriate evidence. It is well settled that an attorney's argument in the brief cannot take the place of evidence and that arguments of counsel, unsupported by competent factual evidence of record, are entitled to little weight. See In re Payne, 606 F.2d 303, 315, 203 USPQ 245, 256 (CCPA 1979) and In re Pearson, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974).

Moreover, we observe that appellants' contention that the weld joints in Stach '415 (Fig. 6) are linear and, therefore, would not provide sufficient support to withstand the pressure applied by the rotating probe during a friction stir welding process, is without merit since the weld joint (S1) seen in Figure 6 of Stach '415 includes an angular receiving profile (20) which is clearly not linear and which appears fully capable of receiving the pressure of a rotating probe like that used in the friction stir welding process of Midling during formation of the weld seam (S1). Further, we note that in an obviousness assessment like that before us on appeal, skill is presumed on

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the part of the artisan rather than lack thereof. See, In re Sovish, 769 F.2d 738, 743, 226, USPQ 771, 774 (Fed. Cir. 1985). Thus, in combining the teachings of Stach '415 and Midling, we are of the opinion that an artisan would have undoubtedly provided a jig to hold the wheel parts together during the welding process.

As for appellants' contention that Stach '415 does not have a weld arrangement like that required in independent claim 18 on appeal, we note that the weld joints (S1) and (S3) seen in Figure 6 of Stach '415 are each circumferential weld joints and clearly include at least a portion of the first weld joint (S1) and at least a portion of the second weld joint (S3) which are non-parallel.

While we have fully considered the arguments advanced by appellants, we are not convinced thereby that the examiner's conclusion of obviousness as it applies to independent claims 9 and 18 on appeal is in error. Thus, for the above reasons, we will sustain the examiner's rejection of claims 9 and 18 under 35 U.S.C. § 103(a).

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In accordance with appellants' grouping of the claims on page 4 of the brief, we understand that claims 10, 13 and 16 (dependent from claim 9) will fall with claim 9, while claims 19, 20 and 23 (dependent from claim 18) will fall with claim 18. Thus, the examiner's rejection of those claims under 35 U.S.C. § 103(a) is likewise sustained.

It follows from the foregoing that the decision of the examiner rejecting claims 9, 10, 13, 16, 18 through 20 and 23 is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

BRUCE H. STONER JR.)	
Chief Administrative Patent Judge)	
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)	BOARD OF PATENT
NEAL E. ABRAMS)	
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