

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 16

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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Ex parte PAUL R. SAHR  
and  
RICHARD A. STOLL

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Appeal No. 2004-0713  
Application No. 09/900,256

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ON BRIEF

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Before STAAB, McQUADE, and NASE, Administrative Patent Judges.  
NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 to 4 and 7 to 9. Claims 5 and 6, the only other claims pending in this application, have been allowed.

We REVERSE.

### BACKGROUND

The appellants' invention is a power-assisted steering apparatus for turning steerable wheels of a vehicle. The apparatus comprises a rack bar that is connectable with the steerable wheels of the vehicle. Linear movement of the rack bar turns the steerable wheels. The apparatus also includes a hydraulic motor for, when actuated, moving the rack bar linearly and a one-piece monolithic component. The one-piece monolithic component has a pinion gear portion for meshingly engaging the rack bar, a valve sleeve portion for cooperating with a valve core for actuating the hydraulic motor, and a torsion bar portion for connection with the valve core and twisting in response to rotation of the valve core relative to the valve sleeve portion to actuate the hydraulic motor (specification, pp. 1-2). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

Claims 1 to 4 and 7 to 9 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,021,685<sup>1</sup> to Sonoda et al. (Sonoda).

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejection, we make reference to the answer (Paper No. 12, mailed July 30, 2003) for the examiner's complete reasoning in support

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<sup>1</sup> Issued February 8, 2000.

of the rejection, and to the brief (Paper No. 11, filed May 12, 2003) and reply brief (Paper No. 13, filed October 2, 2003) for the appellants' arguments thereagainst.

### OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied patent to Sonoda, and to the respective positions articulated by the appellants and the examiner. Upon evaluation of all the evidence before us, it is our conclusion that the evidence adduced by the examiner is insufficient to establish a prima facie case of obviousness with respect to the claims under appeal. Accordingly, we will not sustain the examiner's rejection of claims 1 to 4 and 7 to 9 under 35 U.S.C. § 103. Our reasoning for this determination follows.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A prima facie case of obviousness is established by presenting evidence that would have led one of ordinary skill in the art to combine the relevant teachings of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) and In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Even when

obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. See In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000).

Claims 1 and 9, the independent claims on appeal, read as follows:

1. A power-assisted steering apparatus for turning steerable wheels of a vehicle, the apparatus comprising:
  - a rack bar connectable with the steerable wheels of the vehicle, linear movement of the rack bar turning the steerable wheels;
  - a hydraulic motor for, when actuated, moving the rack bar linearly;
  - a valve core rotatable to actuate the hydraulic motor; and
  - a one-piece, monolithic component having a pinion gear portion for meshingly engaging the rack bar, a valve sleeve portion for cooperating with the valve core for actuating the hydraulic motor, and a torsion bar portion having a first end for connection with the valve core and a second end fixedly connected to the valve sleeve portion, the torsion bar portion, in response to rotation of the valve core to actuate the hydraulic motor, twisting relative to the valve sleeve portion and relative to the pinion gear portion.
  
9. A power-assisted steering apparatus for turning steerable wheels of a vehicle, the apparatus comprising:
  - a rack bar connectable with the steerable wheels of the vehicle, linear movement of the rack bar turning the steerable wheels;
  - a hydraulic motor for, when actuated, moving the rack bar linearly;
  - a valve for controlling fluid flow to the hydraulic motor;
  - a rotatable tubular input shaft including a rotatable valve core, the valve core having a plurality of axially extending grooves defining a first part of the valve; and
  - a one-piece, monolithic component having a pinion gear portion for meshingly engaging the rack bar, a valve sleeve portion forming a second part of the valve for cooperating with the plurality of grooves of the valve core for actuating the hydraulic motor, and a cylindrical torsion bar portion having a first end connected with the valve core, a second end fixedly connected to the valve sleeve portion, and an intermediate portion axially interposed between the first end and the second end;

relative rotation of the valve core and the valve sleeve portion actuating the hydraulic motor;

the pinion gear portion having a first support portion, a second support portion axially opposite the first support portion, and a toothed portion interposed between the first and second support portion, the first and second support portions being supported for rotation;

the valve sleeve portion being radially interposed between the housing and the valve core, the valve sleeve portion having a cylindrical cavity;

the torsion bar portion and the tubular input shaft being located at least partially within the cylindrical cavity of the valve sleeve portion;

the intermediate portion of the torsion bar portion, in response to rotation of the valve core relative to the valve sleeve portion to actuate the hydraulic motor, twisting relative to the valve sleeve portion and the pinion gear portion, the intermediate portion of the torsion bar portion extending through the cylindrical cavity of the valve sleeve portion and extending out of the cylindrical cavity;

the pinion gear portion, the valve sleeve portion, the cylindrical cavity of the valve sleeve portion, the torsion bar portion, and the tubular input shaft all extending coaxially.

In the rejection under 35 U.S.C. § 103 before us in this appeal (answer, p. 4), the examiner (1) determined that Sonoda shows a power steering system with a rack bar, a hydraulic motor, a valve core, a torsion bar and a one-piece, monolithic component having a pinion gear for meshingly engaging the rack bar and a valve sleeve for cooperating with the valve core for actuating the hydraulic motor; (2) ascertained that the torsion bar of Sonoda is fixed to, but not formed as one piece with the monolithic component having the pinion gear and the valve sleeve (i.e., Sonoda lacks the one-piece, monolithic component as set forth in independent claims 1 and 9); (3) concluded that it would have been an obvious engineering choice to use a one piece construction

of Sonoda's pinion gear, torsion bar and valve sleeve, instead of separate parts fixed together, in order to simplify the assembly process. In support of this conclusion of obviousness the examiner cited to In re Larson, 340 F.2d 965, 144 USPQ 347 (CCPA 1965) and In re Lockart, 190 F.2d 208, 90 USPQ 214 (CCPA 1951).

The examiner has incorrectly drawn from the above-noted case law, which turned on specific facts, a general obviousness rule: namely, that forming several pieces integrally as a one-piece, monolithic structure is not considered to be patentable subject matter. No such per se rule exists. See In re Hubbell, 164 F.2d 700, 702-04 76 USPQ 105, 107-09 (CCPA 1947); In re Otto, 121 F.2d 553, 555, 50 USPQ 149, 150 (CCPA 1941). The examiner's citation of Larson, Lockart or any other case as a basis for rejecting claims that differ from the prior art by reciting a one-piece, monolithic structure is improper, if it sidesteps the fact-intensive inquiry mandated by 35 U.S.C. § 103. Thus, in this case, one must determine if it would have been obvious to one of ordinary skill in the art at the time the invention was made to make Sonoda's separate torsion bar as a one-piece, monolithic structure with Sonoda's one-piece, monolithic component having the pinion gear and the valve sleeve.

In this case, we agree with the appellants that the examiner has failed to establish a prima facie case of obviousness for the claims under appeal with respect to

the one-piece, monolithic component limitation as recited in claims 1 and 9. In that regard, it is our determination that there is no evidence that the one-piece, monolithic component limitation would have been obvious to one of ordinary skill in the art at the time the invention was made from the teachings of the applied prior art (i.e., Sonoda). Moreover, the making of the torsion bar, the pinion gear and the valve sleeve as a one-piece, monolithic structure produces a useful, beneficial result with regard to hydraulic balancing as set forth in the brief (pp. 9-11) and reply brief (pp. 1-2).

For the reasons set forth above, we conclude that the examiner's determination of the obviousness of the one-piece, monolithic component limitation has not been supported by any evidence<sup>2</sup> that would have led an artisan to arrive at the claimed invention. In our view, the only suggestion for modifying Sonoda in the manner proposed by the examiner to meet the above-noted limitation stems from hindsight knowledge derived from the appellants' own disclosure. The use of such hindsight

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<sup>2</sup> Evidence of a suggestion, teaching, or motivation to modify a reference may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), Para-Ordinance Mfg., Inc. v. SGS Importers Int'l., Inc., 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), cert. denied, 117 S. Ct. 80 (1996), although "the suggestion more often comes from the teachings of the pertinent references," In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). The range of sources available, however, does not diminish the requirement for actual evidence. A broad conclusory statement regarding the obviousness of modifying a reference, standing alone, is not "evidence." Thus, when an examiner relies on general knowledge to negate patentability (such as making plural elements into a single-piece assembly), that knowledge must be articulated and placed on the record. See In re Lee, 277 F.3d 1338, 1342-45, 61 USPQ2d 1430, 1433-35 (Fed. Cir. 2002) and In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

knowledge to support an obviousness rejection under 35 U.S.C. § 103 is, of course, impermissible. See, for example, W. L. Gore and Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

For the reasons set forth above, the decision of the examiner to reject independent claims 1 and 9, and claims 2 to 4, 7 and 8 dependent thereon, under 35 U.S.C. § 103 is reversed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1 to 4 and 7 to 9 under 35 U.S.C. § 103 is reversed.

REVERSED

LAWRENCE J. STAAB  
Administrative Patent Judge

JOHN P. McQUADE  
Administrative Patent Judge

JEFFREY V. NASE  
Administrative Patent Judge

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