

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ECKHART DAMSON, HELMUT DENZ, MARTIN KLENK, WERNER HERDEN,
WINFRIED MOSER and MATTHIAS KUESELL

Appeal No. 1997-1075
Application No. 08/335,084

ON BRIEF

Before KRASS, DIXON and BLANKENSHIP, Administrative Patent Judges.

BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of Claims 1, 3-15, and 17, all the claims remaining in the application.

We reverse.

BACKGROUND

The invention is directed to a device for determining load in internal combustion engines.

Claims 1 and 3 are independent. Claim 1 is reproduced below.

1. Device for determining load in internal combustion engines, said device comprising a pressure sensor connected with a combustion chamber of an internal combustion engine, said pressure sensor having means for producing an output signal depending on a combustion chamber pressure of said combustion chamber,

a crankshaft angle sensor for detection of a crankshaft angle of the internal combustion engine and processor means for determining a load of said internal combustion engine,

wherein said processor means include means for determining said load from a pressure difference between two of said combustion chamber pressures, said two combustion chamber pressures forming said pressure difference being measured at two different predetermined ones of said crankshaft angle (x1, x2).

The examiner relies on the following reference:

Wataya	4,991,554	Feb. 12, 1991
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Claims 1, 3-15, and 17 stand rejected under 35 U.S.C. § 103 as unpatentable over Wataya.

We refer to the Final Rejection (Paper No. 6), the Examiner's Answer (Paper No. 12), and the Supplemental Answer (Paper No. 14) for a statement of the examiner's position and to the Brief (Paper No. 11) and the Reply Brief (Paper No. 13) for appellants' position.

OPINION

The examiner's statement of the rejection begins with the assertion that the reference "suggests all of the limitations of claim 1, except that Wataya prefers to determine only one pressure signal per cylinder." (Final Rejection, page 2.) The rejection continues, "However, it would have been obvious to take all of the cylinders into account in calculating or updating the load, resulting in measuring 'values' at each cylinder's 'angle'." (Id.) The statement regarding what "would have been obvious" is merely an unsupported conclusion. Moreover, it is not seen how the limitations of Claim 1 may be met by measuring "values" at each cylinder's "angle." The statement of rejection continues with another unsupported conclusion: "Moreover, please note that it would have been obvious to compute a pressure by integrating differential pressures." (Id.)

Beyond these initial difficulties in the rejection, in view of the arguments advanced by the examiner in the Final Rejection, Answer, and Supplemental Answer, the main thrust of the rejection may be summed up in two observations by the examiner. "Wataya shows that it was known in the art prior to the Applicant's [sic] invention [to] apply well-known laws of gas physics to enable the measurement of engine load via a measurement of pressure." (Final Rejection, page 4.)

[T]he reference itself suggests using just the set of equations relied upon by the Applicant [sic] to achieve the desired result, differing only from the Applicant [sic] in the manner in which the necessary data are collected, which is a matter within the purview of the routineer in the art. (Final Rejection, page 6.)

Wataya discloses a device for controlling ignition timing of an internal combustion engine (Fig. 1) that includes a cylinder pressure sensor 10 (which senses pressure in combustion chamber 12), a rotation sensor 14, and a computer unit 11. As disclosed in Figure 4 and column 3, line 19 through column 4, line 7, a single pressure measurement P_c is taken during the cylinder's compression cycle. The pressure measurement is used to determine the quantity of air charged in the cylinder, and ultimately the load on the cylinder. We note that the Wataya disclosure appears to be similar to prior art that appellants set out to improve upon. (See Specification, page 3, lines 6-15.)

In our opinion the Wataya reference, taken with physical gas laws -- knowledge of which may be imputed to the ordinary artisan -- does not support the conclusion of obviousness reached by the examiner. The examiner has not provided evidence (e.g., additional teachings from the prior art) to support the assertion that the differences between the claimed subject matter and the prior art would have been routine to the artisan. The mere fact that the Wataya apparatus and appellants' claimed apparatus share a basis in thermodynamic principles cannot support a contention that any differences in implementation of measurements would have been routine matters in the art. "That the claimed invention may employ known principles does not in itself establish that the invention would have been obvious. Most inventions do." Lindemann Maschinenfabrick GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 489 (Fed. Cir. 1984).

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Appellants argue, inter alia, that the reference does not disclose or suggest the processor means which includes the requirements of the “means for determining [the] load,” as set forth in independent Claims 1 and 3, respectively. (See Brief, pages 8 and 14.)

The examiner has not dealt with the requirements of each of the “processing means” set forth in the independent claims. Although there is discussion between appellants and the examiner regarding the differences between “relative” and “absolute” pressure transducers, the examiner has failed to show how the specific requirements of the claims might be disclosed or suggested by the prior art, whether using “relative” or “absolute” transducers. The evidence presented by the examiner is not sufficient to support a case of prima facie obviousness of the claimed invention. Accordingly, the rejection of Claims 1, 3-15, and 17 is reversed.

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CONCLUSION

The rejection of Claims 1, 3-15, and 17 is reversed.

REVERSED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH L. DIXON)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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)	
HOWARD B. BLANKENSHIP)	
Administrative Patent Judge)	

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Striker Striker & Stenby
103 East Neck Road
Huntington, NY 11743