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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LEONARD E. PECK, TIMOTHY S. ROMANO, TOM K. EVANS, GARY B. HUGHES and KARL H. NEUMANN

Appeal No. 1997-2164
Application No. 08/277,468

ON BRIEF

Before HAIRSTON, FLEMING and DIXON, Administrative Patent Judges.

FLEMING, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 9 and 11 through 19. Claims 10 and 20 have been canceled.

The invention, as Appellants describe on pages 5 and 6 of the specification, relates to the structure and fabrication of an electrical feedthrough on a vacuum package enclosure. On page 5 of Appellants' specification, the vacuum package enclosure is identified as an enclosure which is meant to be evacuated. As such, the walls of the vacuum package chamber and hermetic seal of the feedthrough separate ambient pressure from the evacuated portion. On page 6 of the specification, Appellants identify that the feedthrough includes a ceramic plate which is sized to be received within an aperture in a wall of the vacuum package enclosure. The ceramic plate has several holes bored into it which receive cylindrical pins. Appellants disclose on page 8 of the specification that the pins are brazed to the ceramic plate and that the ceramic plate is brazed to the enclosure. Appellants' fabrication process, described on pages 8 through 12 of the specification, is such that the assembly is heated once to both braze the pins to the ceramic plate and braze the ceramic plate to the vacuum housing. As a result, the electrical feed- through and vacuum housing are only subjected to the brazing temperatures once.

Independent claim 1 is representative of the invention.

1. A method for preparing an electrical feedthrough, comprising the steps of:

furnishing a ceramic feedthrough plate having a feedthrough plate thickness;

furnishing a vacuum package enclosure structure which receives the feedthrough plate therein;

furnishing at least one metallic feedthrough pin having a length greater than the feedthrough plate thickness;

forming a pin bore through the feedthrough plate for each feedthrough pin, each pin bore having a pin bore size greater than that of the feedthrough pin;

inserting each feedthrough pin into its respective pin bore;

brazing each feedthrough pin into its respective pin bore utilizing a metallic braze alloy; and

brazing the feedthrough plate to the vacuum package enclosure structure, the step of brazing the feedthrough plate to the vacuum package enclosure structure to occur concurrently with the step of brazing each feedthrough pin into its respective pin bore.

The Examiner relies upon the following references:

Guillotin et al. (Guillotin) 3,901,772 Aug. 26, 1975
Oeschger et al. (Oeschger) 4,174,145 Nov. 13, 1979 Bowsky et al. (Bowsky) 4,461,925 Jul. 24, 1984 Mizuhara et al. (Mizuhara) 5,368,220 Nov. 29, 1994
(filed Aug. 4, 1992)

Claims 1 through 4, 9, 12 through 16, 18 and 19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mizuhara and Oeschger.

Claims 1, 3, 6, 7 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Guillotin and Oeschger.

Claims 6 through 8 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mizuhara in view of Oeschger and Guillotin.

Claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over Mizuhara in view of Oeschger and Bowsky.

Claim 11, as presented in the amendment after final rejection under 37 CFR § 1.116, stands rejected under 35 U.S.C.
§ 103 as being unpatentable over Mizuhara and Oeschger.[1]

Rather than reiterate the arguments of Appellants and the

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[1] This rejection is a “new ground of rejection” made in the July 23, 1996 Examiner’s answer. The Examiner asserts that the rejection is necessitated by the amendment under 37 CFR § 1.116 dated November 2, 1995, which was entered into the file by the advisory action dated November 16, 1995.

Examiner, reference is made to the briefs[2] and the answers[3] for the respective details thereof.

Opinion

We will not sustain the rejection of claims 1 through 9 and 11 through 19 under 35 U.S.C. § 103.

The Examiner has not set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art or by the implication contained in such teachings or suggestions.

In re Sernaker, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir.

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[2] Appellants filed an Appeal brief on April 18, 1996. Appellants filed a reply brief on September 26, 1996. On December 9, 1996, the Examiner mailed a supplemental Examiner's answer in response to the reply brief. Appellants filed a reply to the supplemental Examiner's answer on January 14, 1997. On March 31, 1997, the Examiner mailed a communication stating that the Appellants' reply to the supplemental Examiner's answer had been entered and considered.

[3] The Examiner mailed an Examiner's answer on July 23, 1996. On December 9, 1996, the Examiner mailed a supplemental Examiner's answer in response to Appellants' reply brief.

1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." ***Para-Ordnance Mfg.,Inc. v. SGS Importers Int'l Inc.***, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995) ***cert. denied***, 519 U.S. 822 (1996) (***citing W. L. Gore & Assocs., Inc. v. Garlock, Inc***., 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied***, 469 U.S. 851 (1984)).

First, we must determine the scope of the claims. We find that the scope of independent claims 1 and 14 includes a method of making an electrical feedthrough on a vacuum enclosure where there is a ceramic feedthrough plate. The feedthrough plate has several holes bored through it and pins placed through these holes. The ceramic plate is brazed to the vacuum enclosure and the pins are brazed to the ceramic plate concurrently. These limitations are found in independent claim 1,

> a vacuum package enclosure . . . a pin bore through the feedthrough plate . . . inserting each feedthrough pin into it's respective pin bore . . . brazing the feedthrough plate to the vacuum package enclosure structure, the step of brazing the feedthrough plate to the vacuum package enclosure structure to occur

> concurrently with the step of brazing each feedthrough pin into its respective pin bore.

Independent claim 14 contains similar limitations, including "simultaneously with the step of brazing each feedthrough pin into its respective pin bore, brazing the feedthrough plate to the wall of the vacuum package enclosure." The scope of dependent claims 13 and 18, includes the device made by the above method. On page 5 of the Appellants' specification, the vacuum package enclosure is identified as an enclosure which is meant to be evacuated, thus the walls of the vacuum package chamber and the seal of the feedthrough separate ambient air from the evacuated portion. In summary, we find that the scope of independent claims 1 and 14 includes a vacuum package chamber, ceramic feedthrough which has several holes with pins placed therein, wherein the ceramic feedthrough is brazed directly to

the vacuum chamber at the same time the pins are brazed to the ceramic feedthrough.

We find that the scope of independent claim 19, includes an electrical feedthrough on a vacuum enclosure where there is

an aluminum oxide feedthrough plate with several holes. Pins are brazed into these holes and the ceramic plate is brazed to the vacuum enclosure. These limitations are found in claim 19;

> an aluminum oxide feedthrough plate . . . vacuum package enclosure structure sized to receive the feedthrough plate . . . a pin bore through the feedthrough plate for each feedthrough pin . . . a metallic brazed joint between each feedthrough pin and its respective bore . . . a second metallic brazed joint between the vacuum package enclosure structure and the feedthrough plate.

Thus, the scope of claim 19 includes an aluminum oxide feedthrough plate brazed directly to a vacuum package enclosure, where the feedthrough plate has several pins brazed into holes through the plate.

Next, we consider the rejection of claims 1 through 4, 9, 11 through 16, 18 and 19 under 35 U.S.C. § 103 based upon Mizuhara and Oeschger. On page 2 of the Examiner's answer (answer), the Examiner identifies that Mizuhara teaches a ceramic feedthrough plate where there are holes to accept pins, and each pin is brazed to the ceramic plate. The Examiner also identifies that "Mizuhara et al lacks an enclosure and brazing the feed- through plate to the

enclosure." On pages 2 and 3 of the answer, the Examiner states that Oeschger "teaches using a ceramic feedthrough block (14), having a pin brazed therein (Column 5, lines 48-53), in a wall (17) of an enclosure (Column 1, lines 7-10) wherein the ceramic feedthrough block is brazed (Column 5, lines 63-68) to a metal member sealed to the wall using brazing." The Examiner also asserts on page 3 of the answer that Oeschger teaches simultaneously brazing a ceramic member to a metal member and a metal pin to the ceramic member. The Examiner asserts on page 9 of the answer that:

> Oeschger et al states that the brazing techniques used are "well known in the vacuum capacitor and interrupter arts." It would be obvious to use teachings of Oeschger et al for any type of electrical package, and since Oeschger et al specifically states the brazing techniques are known for vacuum components, it would be obvious to use them for a vacuum package.

Finally, on page 9 of the answer, the Examiner asserts that brazing the ceramic directly to the metal wall "would have been obvious to one of ordinary skill in the art at the time the invention was made since it is already brazed to a metal member" and the prior art of record in the case supports this assertion.

Appellants assert on page 5 of the appeal brief (brief) that the combination of Mizuhara and Oeschger do not teach all of the limitations of the claims. Specifically, Appellants assert that "Mizuhara does not disclose a vacuum package structure or brazing a feedthrough plate to such a structure." Appellants also assert that Oeschger's ceramic feedthrough is not on a vacuum package enclosure. Appellants assert on page 5 of the brief that Oeschger's device involves brazing the ceramic to an intermediate body, item 17, which is welded to the vessel. Appellants point out that the intermediate body, item 17, of Oeschger's device is not joined to the wall simultaneously with preparation of the brazed joints. Appellants assert that "to braze the feedthrough pins to a ceramic block, to braze the ceramic block to an intermediate body, and to weld the intermediate body to the wall . . . certainly is not what the present claims recite." Further, Appellants argue on page 4 of the reply brief that the reliance on art of record, which is not applied in the rejection, is improper and does not constitute a clear rejection.

We find that the combination of Oeschger and Mizuhara

does not teach or suggest brazing a ceramic feedthrough plate directly to a vacuum package enclosure, where the feedthrough has several holes with pins brazed in the holes. We find that Mizuhara teaches that metal pins can be brazed to ceramic substrate. See column 2, lines 38 through 46. Mizuhara teaches that feedthroughs are used to provide conductive paths through ceramic articles, and specifically cites a magnetic inductive field flow meter where the feedthrough goes through a ceramic cylinder. See column 1, lines 12 through 20. We agree with the Appellants' statement on page 5 of the brief that Mizuhara does not teach an enclosure of brazing the feedthrough plate to the enclosure.

We find that Oeschger neither teaches brazing the ceramic feedthrough to the vessel nor that the vessel is a vacuum package enclosure. We find that Oeschger teaches a feedthrough connector with a pin (item 13) going through a ceramic feedthrough (item 14). We find that Oeschger teaches that the brazing is done in one step. Specifically, Oeschger teaches that the device is assembled such that the brazing material (items 20, 22 and 23) which hold the ceramic feedthrough (item 14) to body (item 17) and the brazing

material (items 27, 28 and 38) which holds the pin (item 13) to the ceramic feedthrough are all assembled as shown in figure 3 and then introduced to a brazed furnace. See column 4, lines 47 through 50, and column 5 lines 11 through 48. Oeschger teaches that the body is welded to the vessel, which we find to be a separate step. See column 4, lines 17 through 21. Thus, we find that Oeschger teaches that the ceramic feedthrough is brazed to an interim body.

We note that our reviewing court has stated that where a reference is relied on to support a rejection, whether or not in a minor capacity, there would appear to be no excuse for not positively including the reference in the statement of the rejection. ***In re Hoch***, 428 F.2d 1341, 1342, 166 USPQ 406, 407 (CCPA 1970). Accordingly, we are unpersuaded by the Examiner's assertion on page 9 of the answer, that the prior art of record cited in the prior office actions, but not recited in the statement of the rejection show that it is well known in the art to braze ceramic plates directly to the wall of enclosures.

Further, we find that Oeschger teaches that the feedthrough is used for connection between a pressurized

vessel and exterior ambient conditions. See column 3, lines 57 through 60. We do not find that the quotation from Oeschger, on column 3, lines 19 to 21, that "[t]he entire device according to the invention relies upon techniques and processes well known in the vacuum capacitor and interrupter arts," which the Examiner cites on page 3 of the answer, provides the suggestion to use the device of Oeschger on a vacuum package enclosure. Oeschger teaches that the vessel may contain vapor which is corrosive or radioactive under pressure. See column 2, lines 54 through 59. Thus, Oeschger's vessel is not evacuated or a vacuum.

Accordingly, we find that the Examiner has not set forth a ***prima face*** case as neither Oeschger nor Mizuhara teaches or suggests a ceramic feedthrough brazed to a vacuum package enclosure. Thus, we will not sustain the rejection of claims 1 through 4, 9, 11, 12 through 16, 18 and 19 under 35 U.S.C. § 103 as being unpatentable over Mizuhara and Oeschger.

Next, we turn to the rejection of claims 1, 3, 6, 7 and 13 under 35 U.S.C. § 103 as being unpatentable over Guillotin and Oeschger. On page 3 of the answer, the Examiner asserts that Guillotin teaches a ceramic feedthrough plate where there

are holes to accept pins, and each pin is brazed to the ceramic plate. The Examiner also identifies that "Guillotin et al lacks an enclosure and brazing the feedthrough plate to the enclosure." On page 4 of the answer, the Examiner makes the same assertions concerning Oescheger as discussed above.

Appellants assert on page 8 of the brief that the rejection of Guillotin and Oeschger, is improper for the same reasons asserted with respect to the rejection based upon Mizuhara and Oeschger.

We find that the combination of Guillotin and Oeschger does not teach or suggest brazing a ceramic feedthrough plate directly to a vacuum package enclosure, where the feedthrough has several holes with pins brazed in the holes. We find that Guillotin teaches a method of brazing a conductor into a hole in a ceramic feedthrough. See column 1, lines 1 through 9. Guillotin teaches that the method produces a fluid-tight seal between the conductor and the ceramic feedthrough. See column 2, lines 26 through 34. We find that Guillotin does not teach an enclosure, or that the ceramic feedthrough is brazed to the enclosure. As identified above, we find that Oeschger neither teaches brazing the ceramic feedthrough to the enclosure nor

that the enclosure is a vacuum package enclosure.

Accordingly, we find that the Examiner has not set forth a ***prima face*** case as neither Guillotin nor Oeschger teaches or suggests a ceramic feedthrough brazed to a vacuum package enclosure. Thus, we will not sustain the rejection of claims 1, 3, 6, 7 and 13 under 35 U.S.C. § 103 as being unpatentable over Guillotin and Oeschger.

Similarly, we will not sustain the rejection of claims 6 through 8 and 17 under 35 U.S.C. § 103 as being unpatentable over Mizuhara, Oeschger and Guillotin.

Finally, we will not sustain the rejection of claim 5 under 35 U.S.C. § 103 as being unpatentable over Mizuhara, Oeschger and Bowsky. Claim 5 is dependent upon claim 1. We do not find that Bowsky teaches ceramic feedthrough brazed to a vacuum package enclosure. Accordingly we will not sustain the rejection of claim 5 under 35 U.S.C. § 103.

In view of the foregoing we reverse the rejections of claims 1 through 9 and 11 through 19 under 35 U.S.C. § 103.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)
MICHAEL R. FLEMING Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
JOSEPH L. DIXON Administrative Patent Judge	)

MRF:lmb

HUGHES AIRCRAFT COMPANY
BUILDING CO1 A126
P.O. BOX 80028
LOS ANGELES, CA 90080-0028