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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHARLES K. CRAWFORD

Appeal 2010-000425
Application 10/934,833
Technology Center 3600

Before STEFAN STAICOVICI, KEN B. BARRETT, and
EDWARD A. BROWN, *Administrative Patent Judges*.

STAICOVICI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Charles K. Crawford (Appellant) appeals from the Examiner's decision to reject under 35 U.S.C. § 103(a) claims 1, 3-7, 9, 20 and 21 as unpatentable over Crawford (US 5,671,956, issued Sep. 30, 1997). Claims 2, 8 and 10-19 have been cancelled. We have jurisdiction over this appeal under 35 U.S.C. § 6.

THE INVENTION

Appellant's invention relates to a thin flange 40 including a first face 41 having a first sealing surface 42 with a knife edge 52 and a second face 49 having a second sealing surface 50 with a knife edge 52 for use with an ultra-high vacuum system. Spec. 7, ll. 14-19 and 8, ll. 4-10 fig. 6, 7 and 8C.

Claim 1 is representative of the claimed invention and reads as follows:

1. A thin flange for use with a vacuum system, the thin flange comprising:
 - a metal member having a diameter and a thickness;
 - a first face of the member, the first face having a first sealing surface
 - a second face of the member opposed and substantially parallel to the first face, the second face having a second sealing surface;
 - wherein the thickness of the member is less than 0.16 inches; and
 - wherein the first sealing surface comprises a knife edge and the second sealing surface comprises a knife edge.

SUMMARY OF DECISION

We REVERSE.

OPINION

The Examiner found that Crawford discloses a flange 10 having a first face with a first knife edge 35 and a second face with a second knife edge 35. Ans. 3. The Examiner further acknowledges that Crawford's flange does not have a thickness of less than 0.16 inches, nonetheless, because Crawford discloses benefits for making a flange as thin as possible (e.g., easy manufacture, less expensive to build, improving conductance), "it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the thickness as small as possible (i.e. less than 0.16 inches) to achieve expected results of improving the function of the flange and system over all." *Id.* See also, Crawford, col. 1, ll. 52-63 and col. 4, ll. 15-35. In other words, the Examiner takes the position that it is not considered inventive to discover the optimum or workable ranges by routine experimentation absent some showing of criticality. Ans. 3.

Appellant argues that Crawford fails to disclose that "the thickness of the member is less than 0.16 inches," as required by independent claims 1 and 21. App. Br. 13. According to Appellant, the minimum thickness of Crawford's flange is 0.68 inches. App. Br. 13 and 14. See also, Crawford, col. 3, ll. 51-52. Hence, Appellant opines that "a claimed range of less than 0.16 inches yields unexpected results relative to the prior art range of 0.68 inches and above." App. Br. 14.

At the outset, we agree with Appellant that Crawford's disclosure of couplers "available in lengths ranging *from* 0.68 inches" to mean that 0.68 inches is the shortest length/thickness available for a coupler according to Crawford's invention. See Crawford, col. 3, ll. 51-52. Emphasis added.

Furthermore, we agree with Appellant that “Crawford demonstrates how difficult it was to design a thin metal flange that would effectively endure stresses and avoid deformation at 0.68 inches.” Reply Br. 4. Crawford specifically discloses that to crush metallic gasket 65 the force exerted on tabs 20 and 22 by mounting bolts is transferred to sealing surface 15 by cylindrical inner web 45. Hence, without the sufficient support of inner web 45 and wall areas 28, tabs 20 and 22 would deflect under a load causing non-uniform gasket crushing. *See* Crawford, col. 3, ll. 6-10 and 22-28 and fig. 5. As such, modifying Crawford’s flange to have a thickness of less than 0.16 inches, as the Examiner proposes, would effectively reduce the amount of material of cylindrical inner web 45 and wall areas 28 that can carry the force exerted on tabs 20 and 22 by mounting bolts, and hence, would affect the flange’s ability to transfer the sealing forces without deformation of tabs 20 and 22.

In conclusion, for the foregoing reasons, we do not agree with the Examiner’s position that modifying the thickness of Crawford’s flange would involve mere routine experimentation. *See* Ans. 4. We agree with Appellant that it would not have been obvious to modify the flange of Crawford to have a thickness of less than 0.16 inches, as called for by independent claims 1 and 21.

Accordingly, the rejection of independent claim 1 and its respective dependent claims 3-7, 9, 20, and independent claim 21 under 35 U.S.C. § 103(a) as unpatentable over Crawford cannot be sustained. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988).

Appeal 2010-000425
Application 10/934,833

DECISION

The decision of the Examiner to reject claims 1, 3-7, 9, 20 and 21 is reversed.

REVERSED

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