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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/496,135	05/27/2005	Keith White	038817.54913US	9775
23911	7590	01/30/2013	EXAMINER	
CROWELL, I. & MORING I.I.P			PETTITT, JOHN F	
INTELLECTUAL PROPERTY GROUP			ART UNIT	
P.O. BOX 14300			PAPER NUMBER	
WASHINGTON, DC 20044-4300			3744	
			NOTIFICATION DATE	
			DELIVERY MODE	
			01/30/2013	
			ELECTRONIC	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KEITH WHITE and FLORIAN STEINMEYER

Appeal 2011-002377
Application 10/496,135
Technology Center 3700

Before JAMES P. CALVE, RICHARD E. RICE, and JILL D. HILL,
Administrative Patent Judges.

HILL, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Keith White and Florian Steinmeyer (Appellants) seek our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1-11. Claims 1, 10, and 11 are the independent claims. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

THE INVENTION

Appellants' claimed invention relates to a cryogenic assembly including a service neck for accessing a superconducting magnet. Spec. 1. Claim 1 is representative of the subject matter on appeal and is reproduced below with the key disputed limitation emphasized.

1. A cryogenic assembly operable to support an electrical, electronic or magnetic device immersed in a cryogenic fluid said cryogenic assembly comprising:
 - a cryogenic fluid container; and
 - a service neck tube having a bounding wall that encloses an interior thereof, and being operable to provide access from an ambient atmosphere to the cryogenic fluid container via said interior;
 - wherein, the service neck tube comprises at least one positive and one negative current lead, which positive and negative current leads form respective distinct current paths that extend from an ambient temperature end of the service neck tube to a cryogenically cooled end thereof, and are electrically insulated from each other;
 - said bounding wall of the service neck tube itself forms a first one of said positive and negative current leads;
 - the second one of said positive and negative current leads is provided in the form of a conductor that is disposed within the bounding wall of the service neck tube; and
 - a space between the bounding wall of the service neck tube and the second one of the positive and negative current leads forms a gas flow path from said cryogenic fluid container to an ambient environment, for venting evaporated cryogenic fluid from said cryogenic fluid container.*

THE EVIDENCE

The Examiner relies upon the following evidence:

Muller	US 5,220,800	Jun. 22, 1993
Inukai	JP 016103846 A	Apr. 15, 1994

THE REJECTION

Appellants seek review of the rejection of claims 1-11 under 35 U.S.C. § 103(a) as being unpatentable over Inukai and Muller.

ANALYSIS

Independent claims 1, 10, and 11 recite, among other things, “a space between the bounding wall of the service neck tube and the second one of the positive and negative current leads form[ing] a gas flow path from said cryogenic fluid container to an ambient environment, for venting evaporated cryogenic fluid from said cryogenic fluid container.”

The Examiner finds that Inukai’s figure 3 teaches a cryogenic assembly operable to support an electrical, electronic or magnetic device (3) immersed in a cryogenic fluid (1), said cryogenic assembly comprising all of the claimed elements including a cryogenic fluid container (2), a service neck tube (comprising 24, 23, 30) having a bounding wall (24), a first current lead (24, 36, 34), a second current lead (25, 23, 37), and a space (annular space between 25 and 24) between the bounding wall (24) of the service neck tube (24, 23, 30) and the second current lead (25, 23, 37) that forms a fluid path. Ans. 4-5.

The Examiner also finds that Inukai’s figure 4 teaches a cryogenic assembly operable to support an electrical, electronic or magnetic device (3) immersed in a cryogenic fluid (1), said cryogenic assembly comprising all of the claimed elements including a cryogenic fluid container (2), a service neck tube (comprising 41B, 42, 43) having a bounding wall (42), a first current lead (47, 42, 51), a second current lead (46, 43, 52), and a space (annular space between 42 and 43) between the bounding wall (42) of the

service neck tube (41B, 42, 43) and the second current lead (46, 43, 52) that forms a fluid path. Ans. 6-7.

The Examiner admits that Inukai does not teach a means for allowing a fluid in the annular space located between Inukai's elements 25 and 24 (figure 3) or the annular space located between Inukai's elements 42 and 43 (figure 4) to flow to the ambient environment. Ans. 7. The Examiner finds, however, that it is old and well known in the art to provide venting means to superconducting magnets and devices so that venting of gaseous cryogen may be accomplished safely, as is taught for example by Muller, which teaches cryogen venting towers. Ans. 7 (*citing* Muller, figures 1-9, col. 3, ll. 40-50; col. 4, ll. 45-61; col. 5, ll. 50-55). The Examiner contends that it would have been obvious to one of ordinary skill in the art, at the time the invention was made, "to provide the venting means of Muller to the cryostat of Inukai for the purpose of preventing an explosion hazard and for the purpose of ensuring the safety of the container of Inukai and the safety of the users of the container of Inukai." *Id.* at 7-8.

Appellants argue that Inukai does not disclose the claimed "space between the bounding wall of the service neck tube and the second one of the positive and negative current leads form[ing] a gas flow path from said cryogenic fluid container to an ambient environment, for venting evaporated cryogenic fluid from said cryogenic fluid container." Appellants explain that the volume contained within Inukai's bushing 21 is filled with liquid nitrogen 38, and as such bushing 21 is incapable of providing access to the fluid container 2 from the ambient atmosphere. Br. 12 (*citing* Inukai, para. [0016]). Appellants further explain that Inukai's fluid container 2 is filled with a cryogenic fluid such as helium, and one skilled in the art would

understand that the bottom end of Inukai's nitrogen-filled bushing 21 would therefore be sealed off from the helium stored in Inukai's fluid container 2, because different cryogenic fluids would not be commingled in a cryogenic assembly. Br. 12 (*citing* Inukai, fig. 3 and paras. [0013] and [0014]).

The Examiner counters that "the allegation is false as there is nothing to prevent vapor from flowing through liquid. Further, the amount of liquid used in the device is a use of the device and therefore the liquid may be at any level." Ans. 14-15.

We agree with Appellants that Inukai does not disclose a space between a bounding wall of the service neck tube and the second one of the positive and negative current leads forming a gas flow path from said cryogenic fluid container to an ambient environment, the gas flow path being capable¹ of venting evaporated cryogenic fluid from said cryogenic fluid container. Even if a flow path exists in Inukai's bushing 21 at the location proposed by the Examiner, the flow path is at best only a circulatory path for the cryogenic fluid contained within the bushing 21. The Examiner has not adequately explained why a skilled artisan would have had a reason to provide a gas flow path in this space to vent evaporated cryogenic fluid from the cryogenic fluid container to an ambient environment based on Muller's general teachings of the use of a pressure relief valve to equalize pressure between a first and a second chamber, a rupture disk to release excess pressure in a cryostat, and towers to receive evaporated helium. We therefore do not sustain the rejection of independent claims 1, 10, and 11

¹ Functional recitations limit the structure defined by an apparatus claim. That is, the structure must be capable of performing the recited function in order to satisfy the functional limitation. *See In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997).

Appeal 2011-002377
Application 10/496,135

under 35 U.S.C. § 103(a) as being obvious over Inukai and Muller. Because we do not sustain the rejection of the independent claim 1, we therefore do not sustain the rejection of claims 2-9 that depend therefrom.

DECISION

We reverse the Examiner's rejection of claims 1-11 under 35 U.S.C. § 103(a) as unpatentable over Inukai and Muller.

REVERSED

MP