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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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

Appeal No. 96-0162
Application 08/030,806[1]

ON BRIEF

Before FRANKFORT, STAAB and CRAWFORD, Administrative Patent Judges.

CRAWFORD, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 1 through 12 and 14-21, which are all the claims pending in the application. Claim 13 has been canceled. Appellant's invention is directed to a flexible

[1] Application for patent filed March 12, 1993.

coupling for connecting driving and driven rotary members. Claim 1 is exemplary of the subject matter on appeal and recites:

1. A flexible coupling for connecting driving and driven rotary members the rotational axes of which may be slightly misaligned relative to one another, said coupling comprising a first connecting means for connecting said coupling to said driving member, a second connecting means for connecting said coupling to said driven member, and at least one rectangular flex frame connected between said first connecting means and said second connecting means, said at least one flex frame having four legs consisting of two short legs generally identical and parallel to each other and two long legs longer than said short legs which long legs are generally identical and parallel to each other and generally perpendicular to said short legs, said legs of said at least one flex frame having cross sections of such dimensions that the stiffness of said coupling with respect to a bending moment applied between said first connecting means and said second connecting means in a plane containing said rotational axes of said driving and driven members is substantially uniform for all angles of said plane about said rotational axis of said driving member.

THE REFERENCES

The following references were relied on by the examiner:

Mayerjak	3,481,158	Dec. 2, 1969
Wirth	4,392,837	Jul. 12, 1983

THE REJECTIONS

Claims 1-6 and 18-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wirth.

Claims 1 and 7-12 and 14-17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Mayerjak.

Rather than reiterate the entire arguments of the appellant and the examiner in support of their respective positions, reference is made to the Appellant's Brief (Paper No. 9) and the Examiner's Answer (Paper No. 11) for the full exposition thereof.

OPINION

In reaching our conclusions on the issues raised in this appeal, we have carefully considered appellant's specification and claims, the applied references and the respective viewpoints advanced by the appellant and the examiner. As a consequence of our review, we have made the determinations which follow.

Appellant's claimed subject matter is a flexible coupling for connecting a driving and a driven rotary member. The coupling includes a first connecting means for connecting the coupling to the driving member and a second connecting means for connecting the coupling to the driven member. There is also included a rectangular flex frame connected between the first connecting means and the second connecting means which includes four legs, which in accordance with claim 1 from which all of the other claims depend have:

> cross sections of such dimensions that the stiffness of said coupling with respect to a bending moment applied between said first connecting means and said second connecting means in a plane containing said rotational axes of said driving and driven members is substantially uniform for all angles of said plane about said rotational axis of said driving member.

Appellant's specification teaches that in prior art flex frames as the input shaft was rotated the stiffness exhibited by the flex frame to the deflection imposed on it varied with the rotational angle of the coupling and that such variation caused the coupling to produce cyclic excitations which lead to shaking or vibration (Specification at pages 2-3 and 8). To solve this problem, in appellant's flex frame, the stiffness of each individual flex frame is such that if the driving end connecting means is fixed, a given bending moment applied to the driven end connecting means will angularly deflect the axes by the same or near the same amount regardless of the angular direction of the bending moment applied to the connecting means.

Appellant has disclosed several ways to accomplish this goal. In a first embodiment, the coupling may be an iso-stiffness frame in which the frame exhibits nearly uniform stiffness throughout a complete revolution of the coupling when flexed by the angular misalignment between the driving and driven shafts (Specification at page 10). In other embodiments, the

coupling includes flex frames of at least two different types with different stiffnesses which compensate one another (Specification at pages 10-12). Appellant's further teach that the dimensions for the frames necessary to meet the above criteria can be determined by trial and error or by numerical stress analysis

We turn first to the 102(b) rejection based on Wirth. The factual determination of anticipation requires the disclosure in a single reference of every element of the claimed invention. In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990); In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990); Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 7 USPQ2d 1315 (Fed. Cir. 1988); Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 7 USPQ2d 1057 (Fed. Cir. 1988); Alco Standard Corp. v. TVA, 808 F.2d 1490, 1 USPQ2d 1337 (Fed. Cir. 1986); In re Marshall, 578 F.2d 301, 198 USPQ 344 (CCPA 1978); In re Arkley, 455 F.2d 586, 172 USPQ 524 (CCPA 1972). Moreover, it is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference. Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). Therefore, in order for the examiner to establish a prima facie case of anticipation based on Wirth, the examiner is obliged to point out where Wirth

discloses a flex frame with cross section dimensions which meet the stiffness criteria recited in claim 1.

The appellant in the specification at page 8 states that as the driving member was rotated the stiffness exhibited by a Wirth flex frame to the defection imposed on it varied with the rotational angle of the coupling. In fact, appellant states that a coupling made of identical rectangular flex frames with long legs thinner than short legs as disclosed in Wirth is more non-uniform than a similar coupling made of four identical flex flames with long and short legs of equal thickness. (Specification at pages 8-9). The examiner has not advanced any technical reasons why this analysis of the appellant is in error.

The examiner, in explaining the rejection under 35 USC § 102(b) of claims 1-6 and 18-21 as being anticipated by Wirth states that:

> Since Wirth includes all of the structure that has been set forth in the claims, the required ratios of stiffness of the members are also inherently met since no specific structure has been set forth that defines how these stiffness are defined.

We do not agree that the structure set forth that defines the stiffness is not defined. The appellant on pages 9 through 32 of his specification defines the structure and how the dimensions are determined.

In addition, in relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); W. L. Gore & Associates, Inc.v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983); In re Oelrich, 666 F.2d 578, 212 USPQ 323 (CCPA 1981); In re Wilding, 535 F.2d 631, 190 USPQ 59 (CCPA 1976); Hansgirg v. Kemmer, 102 F.2d 212, 40 USPQ 665 (CCPA 1939).

The examiner has not provided any such technical reasoning. As appellant's reasoning appears to be sound and the examiner has not explained how it is in error, we conclude that the examiner has not discharged his initial burden and thus we will not sustain this rejection as it is directed to claim 1 and claims 2-6 and 18-21 dependent therefrom.

We turn next to the 102(b) rejection of claims 1, 7-12 and 14-17 as anticipated by Mayerjak. This rejection also rest on the examiner's findings of inherency in the Mayerjak reference of a flex frame having a cross section of such dimension as to meet the stiffness criteria recited in claim 1. The appellant states in the specification that a Mayerjak flex frame which has four legs of the same thickness with one set being longer than

the other does not have cross section dimensions which meet the stiffness criteria recited in claim 1 (See specification at page 6 and pages 8-9). The examiner has, as with the 102(b) rejection based on Wirth, relied on inherency without providing any technical reasoning why (1) the stiffness criteria of claim 1 necessarily flows from the teachings of Mayerjak or (2) the appellant's reasoning set out in the specification as it relates to Mayerjak is incorrect. As we are of the opinion that appellant's reasoning appears to be correct and the examiner has not provided reasoning as to why it is not, we conclude that the examiner has not met the initial burden of establishing anticipation based on inherency. Therefore, we will not sustain this rejection as it is directed to claim 1 or claims 7-12 and 14-17 dependent therefrom.

The decision of the examiner is reversed.

REVERSED

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CHARLES E. FRANKFORT Administrative Patent Judge	)	
LAWRENCE J. STAAB Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
MURRIEL E. CRAWFORD Administrative Patent Judge	)	

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