

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MING GAO YAO, MASASHI SHIRAIISHI, and YI RU XIE

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Appeal 2007-3060  
Application 10/351,082  
Technology Center 2600

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Decided: July 16, 2008

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Before KENNETH W. HAIRSTON, ANITA PELLMAN GROSS, and  
MAHSHID D. SAADAT, *Administrative Patent Judges*.

HAIRSTON, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. §§ 6(b) and 134 from the final rejection of claims 1 to 3, 5 to 13, 15 to 21, 23, 24, and 26 to 31.

The disclosed invention relates to a framing assembly for a micro-actuator. The framing assembly includes a base piece, first and second arms coupled to first and second sides, respectively, of the base piece, and first and second strips of piezoelectric actuator material coupled to the first and second arms, respectively (Figures 4a and 4b; Specification 5).

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

1. A micro-actuator, comprising:

a framing assembly to couple a magnetic read/write head to a suspension assembly, wherein the framing assembly includes:

- a base piece;
- a first arm coupled one end to a first side of the base; and
- a second arm coupled to a second side of the base;
- a first strip of piezoelectric actuator material coupled to the first arm; and
- a second strip of piezoelectric actuator material coupled to the second arm.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Kawai	US 2001/0048573 A1	Dec. 6, 2001
Crane	US 6,362,939 B1	Mar. 26, 2002
Young	US 6,376,964 B1	Apr. 23, 2002

The Examiner rejected claims 1 to 3, 5, 7, 11 to 13, 15, 17, 21, 23, 24, 26, and 28 under 35 U.S.C. § 102(e) based upon the teachings of Crane.

The Examiner rejected claims 6, 16, and 27 under 35 U.S.C. § 103(a) based upon the teachings of Crane and Young.

The Examiner rejected claims 8 to 10, 18 to 20, and 29 to 31 under 35 U.S.C. § 103(a) based upon the teachings of Crane and Kawai.

Turning first to the anticipation rejection, the Examiner contends that “Crane et al. shows (Figs. 4-9) a microactuator, comprising a framing assembly, wherein the framing assembly includes a base piece (30), a first arm (104L) coupled one end to a first side of the base, and a second arm (104R) coupled to a second side of the base, a first strip of piezoelectric actuator material coupled to the first arm and a second strip of piezoelectric

actuator material coupled to the second arm (Col 2, line 17)” (Ans. 4). Appellants contend that the motive element 42 in Crane is not directly or indirectly coupled to the arms 84, and, therefore, does not teach a first strip of piezoelectric actuator material coupled to a first arm, and a second strip of piezoelectric actuator material coupled to a second arm as set forth in the claims on appeal (App. Br. 7).

Crane describes a framing assembly for a micro-actuator 44 (Figs. 2 to 4; Abstract). The framing assembly includes a micro-actuator suspension/base piece 30, a first arm 70/84 coupled to a first side of the base piece, and a second arm 70/84 coupled to a second side of the base piece (col. 6, l. 4 to col. 7, l. 15). Although an electromagnetic motive element 42 provides movement for the arms 70/84 via stators 60 and magnetically responsive element 62 in all of the embodiments (col. 4, ll. 40 to 45), Crane teaches that “other types of motive elements, including electro-static, *piezoelectric elements*, etc. can alternatively be used to move one pad relative to the other for fine position control” (col. 2, ll. 16 to 19) (emphasis added). Crane additionally recognizes that “the various beam designs, slider attachment pads, motive elements, gimbal designs, etc. disclosed and discussed can be combined together with each other or with prior art structures in numerous ways” (col. 19, ll. 11 to 14).

We agree with the Examiner that the motive element 42 in Crane can be a piezoelectric motive element. On the other hand, we agree with the Appellants that Crane does not teach placing such a piezoelectric motive element on each arm 70/84 in Crane. The Examiner’s proposed modification to Crane would simply involve replacing the electromagnetic assembly 42 with a piezoelectric structure that would provide motive force

to the single movable member 62 connected to the arms 70/84. Crane is silent as to placing a piezoelectric material on each of the arms 70/84 as in the claims on appeal. Thus, the anticipation rejection of claims 1 to 3, 5, 7, 11 to 13, 15, 17, 21, 23, 24, 26, and 28 is reversed because each and every limitation in the claims is not found either expressly or inherently in the cited reference to Crane. *In re Crish*, 393 F.3d 1253, 1256 (Fed. Cir. 2004).

Turning lastly to the obviousness rejections of claims 6, 8 to 10, 16, 18 to 20, 27, and 29 to 31, these rejections are reversed because the Examiner's articulated reasons for combining the teachings of Young and Kawai with those of Crane do not overcome the above-discussed deficiency of Crane and fail to support a legal conclusion of obviousness. *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1741 (2007).

The decision of the Examiner is reversed.

REVERSED

gvw

KENYON & KENYON  
333 W. SAN CARLOS STREET  
SUITE 600  
SAN JOSE, CA 95110-2711