

The opinion in support of the decision being entered today  
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* LUCIEN ALFRED COUVILLON JR and MICHAEL S. BANIK

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Appeal 2007-3154  
Application 10/262,817  
Technology Center 3700

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Decided: September 5, 2007

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Before ERIC GRIMES, LORA M. GREEN, and RICHARD M.  
LEBOVITZ, *Administrative Patent Judges*.

GREEN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the  
Examiner's final rejection of claims 1-25 and 32.<sup>1</sup> We have jurisdiction

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<sup>1</sup> The Examiner withdrew the rejection of claims 26-31 over the prior art, stating that the claims were patentable over the prior art of record (Answer 3). We note, in addition, that claims 20 and 23 do not appear to be subject to any rejection.

under 35 U.S.C. § 6(b). Claim 1 is representative of the claims on appeal, and reads as follows:

1. A pump apparatus comprising:
  - (a) a tubular member comprising an electroactive polymer actuator that is configured to expand and contract at least a portion of an inner volume of said tubular member based upon received control signals; and
  - (b) a control unit electrically coupled to said actuator and sending said control signals to said actuator.

The Examiner relies upon the following references:

Adolf	US 5,250,167	Oct. 5, 1993
Kaneto	US 5,556,700	Sep. 17, 1996
Soltanpour	US 6,682,500 B2	Jan. 27, 2004

We reverse.

#### DISCUSSION

Claims 1-6, 8, 9, 14, 18, 19, 21, 24, and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Soltanpour.

According to the Examiner,

In the specification and figures, Soltanpour discloses the device as claimed by Appellant. In particular, Soltanpour discloses a pump apparatus 10 comprising tubular members 17, 17', an enclosed housing 11, an electrically actuated diaphragm 20 (comprised of multiple ionic polymer metal composites) that expands and contracts in response to electrical signals from electrodes 22, 24, controlled by a voltage source and computer controller 43 that can display sensed operational parameters (see FIG 1a, columns 4-6). The pump further comprises check/control valves 16 and 18 between the inlet and outlet, respectively, of the pump apparatus and the pumping chamber. The Soltanpour device varies the inner volume of pumping chamber 14, forcing fluid through the valves to generate a pumping action.

(Answer 4-5.)

To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim.

*Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383, 58 USPQ2d 1286, 1291 (Fed. Cir. 2001).

Appellants argue that Soltanpour does not disclose a pump assembly that is tubular, but that in fact is rectangular (Br.<sup>2</sup> 6). We agree, and the rejection is reversed.

Figure 1a, the figure the Examiner relies upon, is reproduced below.

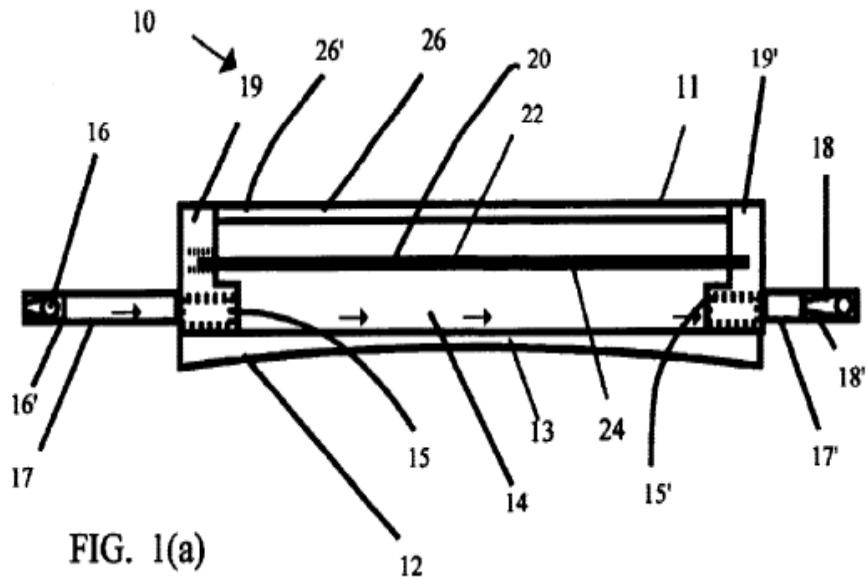


Figure 1a is a side elevational view, partly in section, of the basic pump assembly of the invention of Soltanpour.

Claim 1 requires a tubular member comprising an electroactive polymer actuator that is configured to expand and contract at least a portion of an inner volume of said tubular member based upon received control signals. The Examiner points to 17 and 17' as comprising the tubular

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<sup>2</sup> All references to the “Brief” (Br.) are to the Appeal Brief dated December 1, 2006).

member, and 20 as an electrically actuated diaphragm 20 (comprised of multiple ionic polymer metal composites). If 17 and 17' are regarded as the tubular members, and 20 as the electroactive polymer actuator, the tubular member does not comprise the electroactive polymer actuator as they are in different sections of the pump apparatus of Soltanpour, and thus the pump apparatus does not meet the limitations of claim 1.

The Examiner also appears to be construing 14 of Figure 1a (the pumping chamber) as the tubular member (Answer 8). Appellants respond that the pump chamber is not tubular, but is disclosed as being generally rectangular (Br. 6), and that a “tube” is a hollow cylinder, and thus of necessity is curved, and the Examiner’s assertion that a tube may comprise a rectangular shape is contrary to the ordinary usage of tubular (*id.* at 7).

The Examiner responds, citing Merriam-Webster’s Collegiate Dictionary, 10<sup>th</sup> Ed., 2001, that a tube may be defined as “any of various usually cylindrical structures,” and that the use of “usually” in the definition “demonstrates that a tube is not required to have a circular cross-section.” (Answer 7-8.)<sup>3</sup>

We find that Appellants have the better argument. “Tubular” may be defined as “consisting of tubes or a tube.”<sup>4</sup> “Tube” is defined as “a hollow

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<sup>3</sup> The Examiner also cites US Patent 6,045,565 to Ellis as disclosing that a tube may have round, triangular, or square cross-sections. We do not find the Examiner’s citation to Ellis as relevant to the definition of tube in the instant case, as a patentee may be his or her own lexicographer.

<sup>4</sup> *tubular*. Dictionary.com. *The American Heritage® Dictionary of the English Language, Fourth Edition*. Houghton Mifflin Company, 2004. <http://dictionary.reference.com/browse/tubular> (accessed: August 19, 2007).

cylinder, especially one that conveys a fluid or functions as a passage.”<sup>5</sup> Thus, we interpret “tubular member” as excluding a member that has a rectangular cross-section, such as the pumping chamber (14 of Fig. 1a) of the pump apparatus taught by Soltanpour. Moreover, we note that was the initial understanding of the Examiner, as in the rejection, the Examiner pointed to 17 and 17’ of Fig. 1a of Soltanpour as the tubular members, and the geometry of 17 and 17’ is consistent with the definition of tubular proffered by Appellants.

Thus, as Soltanpour fails to disclose a “a tubular member comprising an electroactive polymer actuator that is configured to expand and contract at least a portion of an inner volume of said tubular member based upon received control signals,” the reference fails to teach every element and limitation of claim 1 (on which the remaining claims depend), and the rejection is reversed.

Claims 7, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as being obvious over Soltanpour. But as claims 7, 12, and 13 are dependent from claim 1, the rejection is reversed for the reasons set forth above.

Claims 10, 11, 16, and 17 stand rejected under Soltanpour as combined with Adolf, and claims 15, 22, and 25 stand rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Soltanpour and Kaneto. As Adolf and Kaneto do not remedy the deficiencies of Soltanpour, these rejections are also reversed.

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<sup>5</sup> tube. Dictionary.com. *The American Heritage® Dictionary of the English Language, Fourth Edition*. Houghton Mifflin Company, 2004.  
<http://dictionary.reference.com/browse/tube> (accessed: August 19, 2007).

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## CONCLUSION

In summary, as the Examiner has failed to set forth a prima facie case of unpatentability, we are compelled to reverse the rejections of record.

REVERSED

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