

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 26

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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Ex parte MAGDY YOUNES

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Appeal No. 2003-1548  
Application No. 08/786,957

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ON BRIEF

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Before COHEN, STAAB and BAHR, Administrative Patent Judges.  
BAHR, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-8, which are all of the claims pending in this application. An amendment after final (see Paper No. 20) has been entered.

We REVERSE.

BACKGROUND

The appellant's invention relates to an endotracheal tube for patient ventilation and for measuring airway pressure. Further understanding of the invention may be

obtained from a reading of claim 1, which is reproduced in the opinion section of this decision.

The examiner relied upon the following prior art references in rejecting the appealed claims:

McGrail	4,584,998	Apr. 29, 1986
Lee	4,672,974	Jun. 16, 1987

The sole rejection before us for review is as follows:

Claims 1-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McGrail in view of Lee.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejection, we make reference to the answer (Paper No. 24) for the examiner's complete reasoning in support of the rejection and to the brief (Paper No. 23) for the appellant's arguments thereagainst.

#### OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. For the reasons which follow, we cannot sustain the examiner's rejection.

Claim 1, the sole independent claim on appeal, reads as follows:

1. An endotracheal tube for patient ventilation and for measuring airway pressure comprising:

an elongate wall enclosing and defining an unobstructed elongate passage for delivery of ventilating gas through an open end thereof to a patient airway,  
a chamber formed in said elongate wall adjacent said open end of said elongate passage, said chamber having a highly pliant exterior wall which permits airway pressure to be transmitted directly to the chamber, and  
a lumen formed in said elongate wall extending from said chamber to a location remote from said chamber connected at such a remote location to a pressure measuring apparatus for measuring airway pressure determined by movement of the exterior wall of said chamber causing compression and decompression of gas in said chamber in response to changes in airway pressure and the presence of gas in the lumen.

McGrail discloses an endotracheal tube comprising a plastic tube 4 having a distal end 6, a central body portion 8 and a proximal end 7. McGrail's tube comprises a plurality of lumens, including an irrigation or monitoring lumen 40 for monitoring pressure (see column 6, lines 40-42) formed in the wall 35 of the tube, as shown in Figures 2-4. The lumen 40 ultimately communicates at the distal end of the tube with the inner wall 32 such that the distal opening 42 thereof is located just inside the distal tip of the tube. While McGrail does mention the use of "pressure sensitive devices" (column 5, line 52) in connection with the lumen 40, McGrail does not specify the details of such pressure sensitive devices.

Lee discloses a catheter-tip gauge-pressure transducer system for measurement of pressure within a body conduit or vessel (column 1, lines 41-42) including a pressure-responsive diaphragm having a "front" or "pressure-measuring" side 12 and a

transducer element at the “back” of the diaphragm which provides an electrical signal related to displacement of the diaphragm (column 4, line 65, to column 5, line 3). A lumen 11 runs through the catheter for conducting air at substantially atmospheric pressure from the open proximal end 11 $p$  of the lumen to the “back” or “reference pressure” side of the diaphragm near the distal end 11 $d$  of the lumen so as to make the transducer system read gauge pressure, the pressure relative to the atmosphere (column 5, lines 5-11). The transducer system also includes electrical leads 17 running between the transducer element and an external electronics package 20 including a power and signal processing unit 21 with output leads 22 to a display device 23. The electrical leads 17 may run through the lumen or be embedded in the solid wall or center of the catheter.

The examiner concedes on page 3 of the answer that McGrail lacks a chamber formed in the wall 35 adjacent the open end of the elongate passage having a highly compliant exterior wall and a lumen formed in the wall extending from the chamber to a pressure measuring apparatus for measuring airway pressure determined by movement of the exterior wall causing compression and decompression of gas in the chamber in response to changes in airway pressure and the presence of gas in the lumen, as called for in claim 1. According to the examiner, it would have been obvious “to modify the pressure monitoring lumen of McGrail to be of any well known configuration which

suits the purpose of measuring airway pressure including the use of a chamber having a highly pliant exterior wall as taught by Lee” (answer, page 4).

Appellant argues (1) that, since Lee is directed to a “catheter-tip” gauge-pressure transducer and not specifically to an endotracheal tube, it would not have been obvious to use Lee’s pressure transducer system in combination with an endotracheal tube and (2) that, even if combined, the invention recited in claim 1 would not result. In light of Lee’s reference to pressure measurement using catheter-tip pressure transducers for measuring pressure within a patient’s blood stream or within some other conduit or vessel in the body (column 1, lines 39-42) and McGrail’s teaching (column 1, lines 9-24) of the interchangeable use in the medical art of the terms “catheters” and “tubes” and the use of the term “catheter” to describe a variety of devices, such as endotracheal tubes, we agree with the examiner that one of ordinary skill in the art would have recognized the applicability of Lee’s catheter-tip gauge-pressure transducer system in combination with an endotracheal tube. In our view, it would have been obvious to one of ordinary skill in the art to modify the configuration of McGrail’s lumen 40 so as to communicate the distal end thereof with the external wall of the tube and to provide a diaphragm and transducer at said distal end and to conduct air at atmospheric pressure to the “back” or “reference pressure” side of the diaphragm, with electrical leads running from the transducer through the lumen 40 to an external electronics package, as taught by Lee to achieve the calibration advantages identified by Lee. Nevertheless, the

modification of McGrail suggested by Lee would not result in the invention of claim 1. Specifically, Lee teaches placing the pressure-measuring transducer, which forms at least part of the structure which corresponds to “pressure measuring apparatus for measuring airway pressure”<sup>1</sup> recited in appellant’s claim 1, at the “back” side of the diaphragm, near the distal end of the tube, and thus cannot be considered to be at a “location remote from the chamber,” as called for in claim 1, the chamber being that portion of the lumen in the vicinity of the diaphragm.

For the foregoing reasons, the combined teachings of McGrail and Lee are not sufficient to have suggested the subject matter of independent claim 1 or claims 2-8 depending from claim 1. It follows that we shall not sustain the examiner’s rejection.

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<sup>1</sup> Lee’s remote electronics package 20 does not itself measure pressure, but rather simply receives and processes an electrical signal from the pressure-measuring transducer.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-8 under 35 U.S.C. § 103(a) is reversed.

REVERSED

IRWIN CHARLES COHEN  
Administrative Patent Judge

LAWRENCE J. STAAB  
Administrative Patent Judge

JENNIFER D. BAHR  
Administrative Patent Judge

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