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

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STUART W. FLOCKENCIER

Appeal 2006-2232
Application 10/242,188
Technology Center 3600

Decided: March 27, 2007

Before MURRIEL E. CRAWFORD, LINDA E. HORNER, and ANTON W. FETTING, *Administrative Patent Judges*.

CRAWFORD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals from the final rejection of claims 1-8, 10, 12-27, 29, 30-34, 37-39 and 42-51 under 35 U.S.C. § 134. Claims 9, 11, 28, 35, 36, 40 and 41 have been found allowable if drafted to be independent from the

rejected claims. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b) (2002).

The claims are directed to an apparatus and method of controlling the gain of a receiver in an optical detector. Claims 1 and 27 are illustrative:

1. An apparatus, comprising:

an optical detector;

a threshold unit capable of converting an analog optical signal received by the optical detector to a digital representation thereof;

a capture unit capable of capturing the digital representation of the received optical signal;

a process unit capable of processing the captured digital representation; and

an automatic gain control capable of controlling the gain of the optical detector responsive to the content of the processed digital representation.

27. A method for automatically controlling the gain of a receiver in an optical system, comprising:

comparing the intensity of a returned pulse to a target value; and

controlling the gain of an optical detector responsive to the comparison.

The Examiner relies on the following prior art references to show unpatentability:

Wingate	US 3,900,261	Aug. 19, 1975
Rushing	US 6,225,618 B1	May 1, 2001
Kovtun	US 6,510,339 B2	Jan. 21, 2003 (Dec. 6, 2000)

The rejections as presented by the Examiner are as follows:

1. Claims 27 and 32 are rejected under 35 U.S.C. § 102(b) as being anticipated by Rushing.
2. Claims 1 to 8, 10, 12 to 26, 29, 33, 34, 37 to 39 and 43 to 51 are rejected under 35 U.S.C. § 103 as being unpatentable over Rushing in view of Kovtun.
3. Claim 42 is rejected under 35 U.S.C § 103(a) as unpatentable over Rushing and Kovtun and further in view of Wingate.
4. Claims 30 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rushing in view of Wingate.

The Examiner contends that Rushing includes each element of claims 27 and 32. Specifically, the Examiner contends that Rushing discloses comparing the intensity of the returned pulse with a target value.

Appellants contend that Rushing does not disclose comparing the intensity of the returned pulse to a target value but rather discloses comparing the intensity of the returned pulse to a threshold value.

The Examiner contends that Kovtun is analogous art.

Appellants contend that Kovtun is not analogous art.

ISSUES

The first issue in this case is whether Appellants have shown that the Examiner erred in finding that Rushing discloses comparing the intensity of a returned pulse to a target value.

The second issue in this case is whether the Appellants have shown that the Examiner erred in holding that Kovtun is analogous art.

FINDINGS OF FACT

Appellant's invention, as recited in claim 27, is a method of automatically controlling the gain of a receiver in an optical system such as a LADAR system. The method includes the step of comparing the intensity of the returned pulse with a target value. In regard to the problem addressed by the Appellants, the Specification states:

> One concern with virtually all LADAR receivers is the "gain" of their detectors. The gain controls the amount of amplification applied by the detector to a return pulse when it is received. The gain should be commensurate with the intensity of the return pulse. If the intensity of the return pulse is high, then the gain of the detector should be low to avoid oversaturating the detector's components. On the other hand, if the intensity is low, the gain should be high to facilitate subsequent processing, although not so high that "noise" is reported as a return pulse [Specification 4].

Appellants include an automatic gain control ("AGC") 340 to variably control the gain of the detector array 310 (Specification 9). As depicted in Figure 5A, the AGC includes an up/down counter 510 that is driven by an intensity median computation at 520. The intensity median computation

drives the up/down counter 510 up and down depending on whether the intensity of the return pulse is higher or lower respectively than some predetermined value (Specification 11).

A constant false alarm rate ("CFAR") computation at 530 is included. The CFAR imposes an upper limit on the content of the up/down counter 510 and thus the gain of detector 310 upon detection of a noise event (Specification 11).

Rushing discloses a densitometer, depicted in Figure 3, which includes an automatic gain control 86. The returned pulse is received by optical detector 82 and sent to automatic gain control 86 through analog to digital converter 90. The pulse signal emerges from analog to digital converter 90 as an 8 bit signal. This 8 bit signal is sent to gain select logic 94 and then to binary up/down counter 96 and emerges as a 3 bit signal (Rushing, col. 5, ll. 1-8). The counter 96 is driven up according to a table depicted in Figure 4. This table indicates that it is desired that the 3 bit signal be 100, 101, or 110. If the signal is 111, and the gain is greater than the minimum gain, the counter counts down. If the signal is 111, and the gain is equal to the minimum gain, the counter remains the same. If on the other hand the signal is 000 and the present gain is less than the maximum gain, the counter counts up and if the present gain is equal to the maximum gain, the counter is unchanged.

According to Webster's online dictionary, a target is a desired goal. Therefore, the goal of having a signal that is 100, 101 and 110 is a target. Specifically, it is the goal or target of the Rushing device to have a signal that is 100, 101, or 110. If this goal is not achieved, and the signal is 000 and the present gain is set to minimum gain, the gain is changed to the

maximum gain. If this goal is not achieved and the signal is 111 and the present gain is maximum gain, the gain is changed to the minimum gain.

Kovtun describes a automatic gain control (AGC) which monitors the amplitude of an output signal 18 and adjusts the gain to keep the maximum amplitude within a certain range (Kovtun, col. 4, ll. 7-9). The Kovtun ACG is used in the environment of an ECG machine. Kovtun discloses that in this environment, the amplitude or gain of the output of the ECG machine must be controlled so that changes not related to the condition of the heart do not cause variations that are not indicative of cardiac function and thereby make interpretation by a physician more difficult (Kovtun, col. 2, ll. 7-23). These changes not related to the condition of the heart amount to an unwanted signal or noise. Kovtun teaches that when this change in the gain is controlled manually by the physician, it detracts the physician's attention away from the patient (Kovtun, col. 2, ll 22-23).

PRINCIPLES OF LAW

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Clay*, 966 F.2d 656, 658-59, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992). *See also In re Deminski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986); *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979). Common sense is used to decide which field a person of ordinary skill in the art would reasonably expected to look for a solution to the problem. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d, 1329, 1335 (Fed, Cir. 2006).

ANALYSIS

As Rushing discloses that the signal detected is compared to a target goal of 100, 101, and 110, Rushing discloses the step recited in claim 27 of comparing the intensity of a returned pulse to a target value. Therefore, we will sustain the Examiner's rejection of claims 27 and 32.

The problem with which the Appellant is involved is the automatic control of the gain of a device so that the gain is commensurate with the intensity of the signal so that the signal may be processed while at the same time minimizing the affects of noise on the signal processed.

Kovtun too is concerned with automatic adjustment of gain of a device so that the gain is commensurate with the intensity of the signal. Kovtun also seeks to minimize the affects of noise or signals not related to cardiac function. While Kovtun is used in the environment of an ECG machine, Kovtun nonetheless is concerned with the same problem addressed by the Appellant. In our view, a person of ordinary skill in the art would reasonably be expected to look to the Kovtun device when looking for a solution of how to automatically control the gain so as to get good signals to process and minimize the affects of noise. Therefore, Kovtun is analogous art.

As such, we will sustain the Examiner's rejection of claim 1 in view of Rushing and Kovtun. We will also sustain the rejection of claims 2, 3, 5-7, 9, 10, 12-14, 16, 18-19, 21, 22, 24-26, 29, 34, 37-39 and 43-47 and 49-51 as the Appellants have not argued the separate patentability of these claims.

In regard to claims 4, 8, 15, 17, 20, 23, 33 and 48, Appellant argues that the Examiner has improperly relied on the principle of inherency (Br. 9). However, a review of the Examiner's Answer reveals that the

Examiner's reliance on inherency was in the alternative and therefore was not the only basis for the Examiner's obviousness determination. The Appellant's contentions have not responded to this alternative reasoning. Therefore, we will sustain the Examiner's rejection of claims 4, 8, 15, 17, 20, 23, 33 and 48.

We will also sustain the Examiner's rejection of claims 30 and 31 under 35 U.S.C. § 103 as being unpatentable over Rushing in view of Wingate and of claim 42 as being unpatentable over Rushing in view of Kovtun and Wingate because the Appellants rely on the arguments made above.

CONCLUSION/ORDER

The decision of the Examiner is *affirmed*.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

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