

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KI-SEON CHO

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Appeal 2007-3128  
Application 10/201,265  
Technology Center 2100

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Decided: November 20, 2007

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Before JOHN C. MARTIN, HOWARD B. BLANKENSHIP, and JOHN A. JEFFERY, *Administrative Patent Judges.*

JEFFERY, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from the Examiner's rejection of claims 1, 2, 4/2, 4/1, 5, 6, 8/6, 8/5, 9, 10, 12/10, 12/9, 24, 25, 26/25, 26/24, 27, 28, 30/28, 30/27, 31, 32, 34/32, and 34/31. Claims 3, 4/3, 7, 8/7, 11, 12/11, 13-23, 29, 30/29, 33, and 34/33 have been indicated as containing allowable subject matter.<sup>1</sup> We have jurisdiction under 35 U.S.C. § 6(b), and we heard the appeal on October 24, 2007. We affirm.

#### STATEMENT OF THE CASE

Appellant invented a conditional select adder of a digital signal processor. Specifically, the invention includes a carry generator that generates a carry of input data  $X_i$  and  $Y_i$  according to an initial carry. A key feature of the carry generator is that according to the XOR result, either predetermined data based on both the input data  $X_i$  and the input  $Y_i$  input to the first input unit, or the initial carry input to the second input unit is selected and output as a carry. Providing such a feature in a carry generator

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<sup>1</sup> Based on the record before us, the current status of the claims is unclear. Specifically, it is unclear whether the amendment filed December 14, 2006 (rewriting dependent claims 3, 7, 11, 29, and 33 in independent form) was actually entered. Although the Examiner indicates in the Office Communication mailed May 9, 2007 that this amendment was entered, the same paper nevertheless indicates that the status of the claims is unchanged. See Office Communication mailed May 9, 2007.

In any event, neither Appellant's nor the Examiner's statements regarding the claim status account for the multiple dependent claims -- some of which contain allowable subject matter and others of which are rejected as indicated above.

reduces power consumption, chip area, logic use, and delay time.<sup>2</sup> Claim 1 is illustrative with the relevant limitations in dispute emphasized:

1. A carry generator for generating a carry of input data  $X_i$  and  $Y_i$  according to an initial carry, the carry generator comprising:

a first input unit which receives predetermined data based on the input data  $X_i$  and  $Y_i$ ;

a second input unit which receives the initial carry; and

a selection unit which receives the result of performing an XOR operation on the input data  $X_i$  and  $Y_i$ ,

wherein *according to the XOR result, either* predetermined data based on *both* the input data  $X_i$  and the input  $Y_i$  input to the first input unit, *or* the initial carry input to the second input unit is selected and output as a carry.

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

New	US 5,629,886	May 13, 1997
Winters	US 6,466,960 B1	Oct. 15, 2002 (filed May 13, 1999)

1. Claims 1, 2, 4/2, 4/1, 5, 6, 8/6, 8/5, 24, 25, 26/25, 26/24, 27, 28, 30/28, and 30/27<sup>3</sup> stand rejected under 35 U.S.C. § 102(b) as being anticipated by New.
2. Claims 9, 10, 12/10, 12/9, 31, 32, 34/32, and 34/31<sup>4</sup> stand rejected under 35 U.S.C. § 103(a) as unpatentable over New and Winters.

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<sup>2</sup> See generally Specification ¶¶ 12-14.

<sup>3</sup> In view of the incorrect claim status noted above, only these claims are subject to this rejection. We therefore presume that the Examiner intended to include only these claims in this rejection.

Rather than repeat the arguments of Appellant or the Examiner, we refer to the Briefs and the Answer for their respective details. In this decision, we have considered only those arguments actually made by Appellant. Arguments which Appellant could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

## OPINION

### *The Anticipation Rejection*

We first consider the Examiner's rejection of claims 1, 2, 4/2, 4/1, 5, 6, 8/6, 8/5, 24, 25, 26/25, 26/24, 27, 28, 30/28, and 30/27 under 35 U.S.C. § 102(b) as being anticipated by New. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

The Examiner has indicated how the claimed invention is deemed to be fully met by the disclosure of New (Answer 4-7). Regarding representative claim 1,<sup>5</sup> Appellant argues that New does not disclose the

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<sup>4</sup> See n. 2, *supra*.

<sup>5</sup> Appellant argues all of the claims rejected as anticipated together as a group. *See* Br. 11-12; *see also* Reply Br. 4-7. Accordingly, we select claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(vii).

limitations in the last clause of the claim, namely “wherein according to the XOR result, either predetermined data based on *both* the input data  $X_i$  *and* the input data  $Y_i$  input to the first input unit, or the initial carry input to the second input unit is selected and output as a carry” (emphasis added).

Appellant emphasizes that for New to anticipate claim 1, the reference must disclose that the selected predetermined data is based on *both* input data  $A_i$  *and*  $B_i$  -- not merely on one or the other as the Examiner contends (Br. 11-12).

The Examiner contends that New’s disclosure (col. 1, ll. 57-62) of selecting either  $A_i$  or  $B_i$  as input data satisfies this claim language (Answer 10). The Examiner also held that the last clause of the claim is drafted in an alternative format (i.e., due to the presence of the term “or”) and that New need only meet one of the two conditions recited in the alternative to anticipate the claim, namely that the XOR result is used to select *either* (1) predetermined data based on both the input data  $X_i$  and the input data  $Y_i$  input to the first input unit, *or* (2) the initial carry input to the second input unit (Answer 11). The Examiner found (*id.*), and Appellant does not deny, that New discloses the second alternative.

Appellant disagrees that the claim is drafted in the alternative form such that only one of the conditions need be present. According to Appellant, since the claim requires a selection of two alternatives according to an XOR result, the two alternatives must be available for there to be a selection (Reply Br. 5-6).

The potentially dispositive issue before us, then, is whether the last clause of claim 1 recites alternative limitations. For if it does, then the New reference need only disclose one recited alternative to anticipate the claim.

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For the following reasons, we conclude that claim 1 does, in fact, recite alternative limitations and thus is satisfied by New, which Appellant does not deny discloses one of the recited alternatives.

For clarity, we have reproduced and rearranged the last clause of claim 1 below and added numerals to emphasize the disputed alternative limitations:

*...wherein according to the XOR result, either*

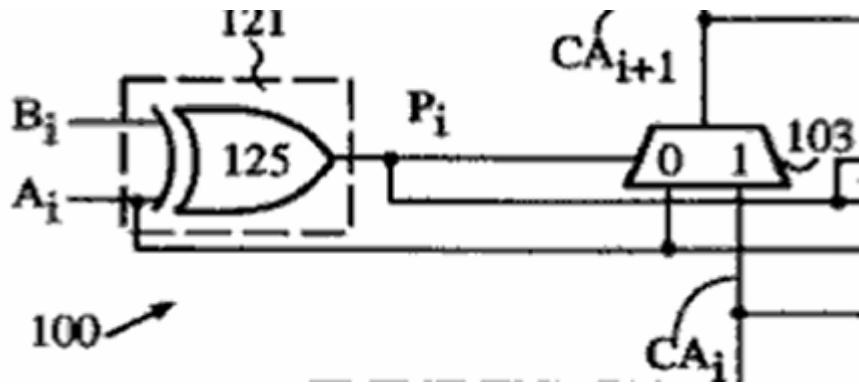
*(1) predetermined data based on both the input data  $X_i$  and the input data  $Y_i$  input to the first input unit, or*

*(2) the initial carry input to the second input unit*

*is selected and output as a carry.*

As this excerpt illustrates, the clause merely calls for selecting either alternatives (1) or (2) according to the XOR result. That is, so long as the XOR operation results in selecting one recited alternative, the claim is fully met.

With this interpretation, we turn to the disclosure of New and, in particular, Figure 6 of the reference. Although the figure depicts a four-bit carry logic structure comprising four cascaded carry logic circuits 100-500, logic circuit 100 is most pertinent to this appeal. The relevant portion of this logic circuit in Figure 6 of New is reproduced below for clarity.



**Relevant Portion of Logic Circuit 100 in Figure 6 of New**

As shown above, input signals  $A_i$  and  $B_i$  are provided to XOR gate 125 which produces an output  $P_i$  (i.e., the XOR result). This output  $P_i$ , in turn, is used by multiplexer 103 to select the signals present at either terminal “0” ( $A_i$ ) or terminal “1” (carry chain signal  $CA_i$ ). This functionality that the Examiner describes on Page 5 of the Answer is undisputed.<sup>6</sup>

In our view, this functionality of New anticipates claim 1 since it satisfies the second alterative of claim 1, namely that, according to the XOR result, *the initial carry input (CA<sub>i</sub>) to the second input unit is selected and output as a carry (CA<sub>i+1</sub>)*.

Simply put, according to the XOR result  $P_i$ , the multiplexer will select one of the recited alternatives. That is all the claim requires.

We find Appellant’s argument that the two recited alternatives must be available for a selection unavailing. The scope and breadth of the claim

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<sup>6</sup> See also New, col. 5, ll. 5-38; Figure 2; col. 1, l. 54 - col. 2, l. 4 (discussing a commensurate carry logic circuit).

language simply does not preclude the selection of one recited alternative according to the XOR result -- an alternative fully met by New.

In reaching this conclusion, however, we emphasize that our decision is based solely on New satisfying *one* alternative limitation. We agree with Appellant that New fails to disclose the first alternative limitation (i.e., selecting predetermined data based on *both* the input data  $X_i$  *and* the input data  $Y_i$  input to the first input unit). Significantly, as illustrated in Figure 6 of New (and the portion reproduced above), *only input signal  $A_i$  is provided to terminal “0” of multiplexer 103*. Moreover, in a discussion pertaining to a commensurate carry logic circuit shown in Figure 2, New indicates that the multiplexer receives an input signal (typically *either* the  $A_i$  or  $B_i$  signal) on one input terminal (New, col. 1, ll. 61-63; Fig. 2) (emphasis added).

The clear import of these teachings is that the multiplexer selects only one input signal ( $A_i$  or  $B_i$ ) -- not both. Contrary to the Examiner’s suggestion, the fact that both input signals are used to produce the XOR result  $P_i$  *merely dictates which alternative is selected*; it has no bearing on the predetermined data corresponding to the first recited alternative (i.e., the signal appearing at terminal “0” of the multiplexer in New). That alternative must be based on both input signals--a feature that is simply lacking in New.

Notwithstanding this deficiency in New, we nevertheless conclude that claim 1 recites alternative limitations, and New discloses one of the recited alternatives. For this reason alone, and because New otherwise discloses all recited limitations of representative claim 1, we will sustain the Examiner’s anticipation rejection of that claim. We will also sustain the Examiner’s rejection of claims 2, 4/2, 4/1, 5, 6, 8/6, 8/5, 24, 25, 26/25, 26/24, 27, 28, 30/28, and 30/27 which fall with claim 1.

*The Obviousness Rejection*

We will also sustain the Examiner's rejection of claims 9, 10, 12/10, 12/9, 31, 32, 34/32, and 34/31 under 35 U.S.C. § 103(a) as unpatentable over New and Winters. We find that the Examiner has established at least a prima facie case of obviousness of those claims that Appellant has not persuasively rebutted. Specifically, the Examiner has (1) pointed out the teachings of New, (2) noted the perceived differences between New and the claimed invention, and (3) reasonably indicated how and why New would have been modified to arrive at the claimed invention (Answer 7-9). Once the Examiner has satisfied the burden of presenting a prima facie case of obviousness, the burden then shifts to Appellant to present evidence or arguments that persuasively rebut the Examiner's prima facie case. Appellant did not persuasively rebut the Examiner's prima facie case of obviousness, but merely noted that the addition of Winters fails to cure the deficiencies of New in connection with the anticipation rejection of the independent claims (Br. 12; Reply Br. 7). The rejection is therefore sustained.

**DECISION**

We have sustained the Examiner's rejections with respect to all claims on appeal. Therefore, the Examiner's decision rejecting claims 1, 2, 4/2, 4/1, 5, 6, 8/6, 8/5, 9, 10, 12/10, 12/9, 24, 25, 26/25, 26/24, 27, 28, 30/28, 30/27, 31, 32, 34/32, and 34/31 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).

AFFIRMED

Martin, *Administrative Patent Judge*, dissenting.

I respectfully disagree with the majority's findings that claim 1 is anticipated by New. The Examiner reads the recited "a first input unit which receives predetermined data based on the input data  $X_i$  and  $Y_i$ " on input terminal "0" of multiplexer 103 (Fig. 6) and reads the recited "a second input unit which receives the initial carry" on terminal "1" of that multiplexer (Answer 10). However, as found by the majority in discussing the first recited alternative of the "wherein" clause (which recites "predetermined data based on both the input data  $X_i$  and the input data  $Y_i$ "), the data that is applied to terminal "0" represents only  $A_i$  and thus is not based on both  $A_i$  and  $B_1$ , as argued by the Examiner. It would seem to follow that the recited "a first input unit which receives predetermined data based on the input data  $X_i$  and  $Y_i$ " likewise fails to read on terminal "0", leaving it unclear how the majority would read this limitation on New.

Furthermore, I am of the opinion that when the "either . . . or" structure of the "wherein" clause is construed in light of the claim as a whole, including the fact that selection is made "according to the XOR result" and the fact that the "predetermined data based on the input data  $X_i$  and  $Y_i$ " and "the initial carry" are applied to the first and second input units,

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respectively, it is clear that the claim is calling for a first XOR result to cause the “predetermined data” to be selected as the output and for a different XOR result to cause the “initial carry” to be selected as the output. As found by the majority, New’s multiplexer 103 is incapable of providing the “predetermined data” as an output.

I therefore would reverse the § 102 and § 103(a) rejections as to all of the rejected claims.

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