

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte ROBERT MACOMBER

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Appeal No. 96-1919  
Application 08/097,438<sup>1</sup>

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ON BRIEF

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Before URYNOWICZ, BARRETT and FLEMING, Administrative Patent Judges.

URYNOWICZ, Administrative Patent Judge.

DECISION ON APPEAL

This appeal is from the final rejection of claims 1, 4-8 and 15. The invention pertains to a circuit that generates an interrupt signal when events are detected and that allows a host device to process all of the detected events without delay. Claims 1 and 4 are illustrative and read as follows:

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<sup>1</sup> Application for patent filed July 26, 1993.

1. A peripheral device for implementing a scalar interrupt-acknowledgment system that utilizes a single interrupt indication when one or more events are detected, the peripheral device comprising:

a detector that detects said one or more events and that generates a plurality of increment signals by generating an increment signal in response to each detected event; and

an unprocessed event counter that counts unprocessed events by incrementing an unprocessed count in response to each increment signal, and by decrementing the unprocessed count by a value of a processed count each time a processed count word is received where each processed count word defines the processed count, that asserts an interrupt signal when the unprocessed count indicates that an event remains unprocessed, and that deasserts the interrupt signal when the unprocessed count indicates that all of the detected events have been processed.

4. A host device for implementing a scalar interrupt-acknowledgment system that utilizes a single interrupt signal when a plurality of events are detected, the host device comprising:

a processor that processes the events detected by an external detector, that generates a plurality of increment signals by generating an increment signal in response to the processing of each detected event, and that generates a plurality of transmit signals by generating a transmit signal each time a number of the detected events are processed; and

a processed event counter that counts a number of processed events by incrementing a processed count in response to each increment signal, that transmits a plurality of processed count words by transmitting a processed count word which represents the processed count in response to each transmit signal, and that resets the processed count in response to the transmission of each processed count word.

The reference relied upon by the examiner as evidence of obviousness is:

Truchard et al. (Truchard)

5,313,622

May 17, 1994

The appealed claims stand rejected under 35 U.S.C. § 103 as unpatentable over Truchard.

The respective positions of the examiner and the appellant with regard to the propriety of these rejections are set forth in the final rejection (Paper No. 7) and the examiner's answer (Paper No. 12)

and the appellant's brief (Paper No. 11) and reply brief (Paper No. 13).

### Appellant's Invention

Appellant discloses a system that counts the number of events received by the system to be processed, and the number of events that have been processed by the system, and asserts and removes an interrupt signal in response to the difference in the counts.

As shown in Fig. 9, a detector 114 detects data packets or events (DP) received from an external bus 118, and generates an increment signal  $V_{\text{INCR1}}$  in response to each detected event DP. An unprocessed event counter 116 maintains a count of the number of unprocessed events by (1) incrementing an unprocessed count in response to each increment signal  $V_{\text{INCR1}}$ , and (2) decrementing the unprocessed count by the value of a processed count each time a processed count word PCW is received. The processed count word PCW, in turn, defines the value of the processed count.

Counter 116 also asserts an interrupt signal  $V_{\text{INT}}$  when the unprocessed count indicates that events remain to be processed, and eliminates the interrupt signal  $V_{\text{INT}}$  when the unprocessed count indicates that all of the events have been processed. A processor 120 processes the events detected by detector 114, generates an increment signal  $V_{\text{INCR2}}$  in response to the processing of each event, and generates a transmit signal  $V_{\text{T}}$  each time a number of events are processed. A counter 122 that counts the number of processed events, transmits a count word PCW in response to each transmit signal  $V_{\text{T}}$ , and resets the count in response to the transmission of each count word PCW.

Opinion

With respect to claim 1, the examiner acknowledges that Truchard does not explicitly give details about decrementing an unprocessed count by the value of a processed count and contends that it would have been obvious to one of ordinary skill in the art to provide an arrangement in Truchard's apparatus because it would have allowed the system to decrement the unprocessed event count whenever an unprocessed event is processed.

As to claim 4, the examiner states that Truchard does not teach transmitting a processed count word which represents a processed count in response to a transmit signal, and resetting the processed count in response to the transmission of each processed count word, and has taken the position that it would have been obvious to provide apparatus in Truchard's system for accomplishing these functions because it would have allowed the system to efficiently keep track of the number of events which are processed, thereby increasing the overall performance of the system.

With respect to the only other independent claim, claim 15, the examiner merely makes reference to his positions with respect to claims 1 and 4.

We will not sustain the rejection of claims 1, 4-8 and 15. With respect to claim 1, Truchard neither counts unprocessed events nor decrements an unprocessed count by the value of a processed count. Contrary to the examiner's position in the final rejection, Truchard's system

counter 18 does not count a number of detected events; at column 4, lines 9-14 and 58-62, the reference discloses that counter 18 measures elapsed time and produces a clock count at the time when trigger signals 34 are detected.

Even if Truchard counted a number of unprocessed, detected events, it has not been established that it would have been obvious for one of ordinary skill in the art to modify the reference by decrementing the unprocessed count by the value of a processed count. There is no teaching or suggestion why one of ordinary skill in the art would have wanted to so modify Truchard. The examiner has merely indicated that Truchard can be modified to provided decrementing. This would have been inadequate to sustain the rejection. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992).

As to claim 4, it has not been shown that Truchard teaches (1) a processor that generates a plurality of increment signals by generating an increment signal in response to the processing of each detected event and that generates a plurality of transmit signals by generating a transmit signal each time a number of the detected events are processed or (2), a processed event counter that counts a number of processed events by incrementing a processed count in response to each increment signal, that transmits a plurality of processed count words by transmitting a processed count word which represents the processed count in response to each transmit signal, and that resets the processed count in response to the transmission of each processed count word. The examiner's position is to the effect that Truchard could have been modified by including such features. Again, that Truchard could have

been so modified is not controlling. It has not been shown that concepts contained in Truchard would have suggested to one of ordinary skill in the art the above subject matter defined in claim 4. The reference has not been shown in any way as relating to the counting of unprocessed events or the decrementing from a count of unprocessed events those events which have been processed.

Whereas the examiner considers that his positions with respect to claims 1 and 4 alone are sufficient to sustain the rejection of claim 15 over Truchard, and we have found that the rejection of claims 1 and 4 cannot be sustained, we will not sustain the rejection of claim 15.

Whereas the rejection of independent claim 4 over Truchard will not be sustained, the examiner's rejection of claims 5-8, which depend therefrom, will not be sustained.

REVERSED

STANLEY M. URYNOWICZ	)
Administrative Patent Judge	)
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	) BOARD OF PATENT
LEE BARRETT	) APPEALS AND
Administrative Patent Judge	) INTERFERENCES
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MICHAEL R. FLEMING	)
Administrative Patent Judge	)

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